



WALTER A. W.

FRONTISPIECE.—The spiny-faced ant-shrike, hormiguero frentispinoso, *Xenornis setifrons*.

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THE BIRDS OF THE REPUBLIC OF PANAMÁ

Part 3.—Passeriformes:
Dendrocolaptidae (Woodcreepers) to
Oxyruncidae (Sharpbills)

By
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THE BIRDS OF THE REPUBLIC OF PANAMÁ
PART 3: ORDER PASSERIFORMES, SUBORDER
TYRANNI, DENDROCOLAPTIDAE (WOOD-
CREEPERS) TO OXYRUNCIDAE
(SHARPBILLS)

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INTRODUCTION

PART 1 OF THIS ACCOUNT of the avifauna of the Isthmus of Panamá, published December 27, 1965, included 202 species in the 35 families from the Tinamidae (Tinamous) to the Rynchopidae (Skimmers). The second, issued September 27, 1968, covered 208 species in the groups from the Columbidae (Pigeons) through the Picidae (Woodpeckers). The present section covers the first series in the Order Passeriformes, the Perching Birds, in the 8 families from the Dendrocolaptidae (Woodcreepers) to the Oxyruncidae (Sharpbills). In these, 196 species are recognized in Panamá.

The procedure for each species follows that of the two previous parts as outlined in volume 2, pages 2-3. Line drawings and the colored plate for the present section have been made, as before, by Walter A. Weber.

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In the preparation of this section, I have been especially indebted to Dr. Eugene Eisenmann who has given me a detailed summary of his observations and notes on many of the species concerned. His reports and records have assisted measurably in the preparation of these accounts. Staff members in the various museums that I have visited to examine specimens have been uniformly courteous in allowing free access to their collections. Close association with the staff of the Gorgas Memorial Laboratory in Panama City, especially with the present Director, Dr. Martin D. Young, and with Dr. Pedro Galindo and Mr. Eustorgio Méndez, has continued steadily, much to the advantage of my studies. Dr. Galindo has assisted especially in the orthography of local names of the species, as in preceding volumes. Throughout the preparation of these reports my wife, Beatrice Wetmore, has been steadily helpful in checking details in manuscript and proofs.

Order PASSERIFORMES

Family DENDROCOLAPTIDAE: Woodcreepers, Trepadores

This family, restricted to the Americas, currently has 48 species recognized in the vast area between northern México and central Argentina. Though variable in size, with total length ranging from 140 to 330 mm, all are generally similar in body form, with the shafts of the long tail feathers stiffened at the distal end. Most are rather plain in color, the usual pattern being a mixture of brown, dull chestnut, olive, and dull gray, variegated in some with lines or bars of black, buff, and white. They thus blend with the shadows of the forests that are their normal haunts. Like woodpeckers or creepers they climb over the trunks and branches of trees, supported by sharp claws and stiffened tails. The foot has the three anterior toes of the Passeriformes, not the two found in the family of woodpeckers. Their normal flights carry them toward the base of a tree trunk which they then ascend, searching the bark and the moss and other growth on it for their usual food of insects, spiders, and other small prey. While those of Panamá may forage occasionally over fallen logs, in South America some of the larger kinds feed regularly on the ground where tree growth is scattered or open.

Some are regular attendants on moving ant swarms, attracted by the insects flushed by the ants. In such situations several may be found in loose company with birds of other families, assembled because of the abundant food supply. Other than this, woodcreepers normally range singly or in pairs.

Nests placed in natural cavities in trees are lined or padded with leaves or other dry material. The two or three eggs are plain white, sometimes glossy, but without markings. Parents coming to a nest after brief absence frequently bring a bit of dry leaf to add to the nest material.

The usual country name in Panamá is *subipalo*, tree climber, obviously from their climbing habit, varied to *trepador*, climber, of similar derivation. In published manuals an early family name was picicule, taken from accounts written in French, varied to woodhewer, long prevalent from the *Argentine Ornithology* of Sclater and Hudson, published in 1888. As the birds in climbing secure their food by probing or seizing, seldom pecking or hammering woodpecker-fashion, the group name currently has been varied to woodcreeper, which seems more appropriate.

The manner of life of those found in Panamá is remarkable for its uniformity among the varied kinds as they clamber over the trunks of trees. Details of life history of most of the species are little known. It is interesting to note that though members of the family range on the mainland of Panamá from the tropical lowlands to the higher forests of the mountains, none are found on the off-shore islands.

KEY TO SPECIES OF DENDROCOLAPTIDAE

1. Bill two times or more length of head, slender throughout, strongly sickle-shaped 2
Bill short, slightly, if at all, longer than head, straight, or very slightly decurved at tip..... 3
2. Bill reddish brown; body color lighter, more reddish brown.
Red-billed scythebill, *Campylorhamphus trochilirostris brevipennis*, p. 50
Bill dusky or horn brown; body color darker, more olive-brown.
Brown-billed scythebill, *Campylorhamphus pusillus*, p. 53
3. Largest of the family in Panamá; length 285–330 mm, bill strong, 47–55 mm long; body robust, feet large.
Strong-billed woodcreeper, *Xiphocolaptes promeropyrhynchus*, p. 23
Smaller, to very small; length less than 280 mm, with bill weaker, less than 45 mm, in most much less..... 4
4. Under surface buff to buffy white, barred very narrowly with black.... 5
Under surface plain, spotted, or streaked, never barred extensively.... 6
5. Crown and hindneck barred narrowly with black, like the under side of the body.....Barred woodcreeper, *Dendrocolaptes certhia*, p. 25
Crown and hindneck streaked narrowly with buff to buffy white.
Black-banded woodcreeper, *Dendrocolaptes picummus*, p. 30
6. Foreneck and breast plain, without definite spots or streaks..... 7
Foreneck and breast definitely spotted or streaked..... 9
7. Small, wing less than 85 mm; under surface from chin to abdomen gray or greenish gray....Olivaceous woodcreeper, *Sittasomus griseicapillus*, p. 16
Larger, wing more than 95 mm, breast and abdomen brown to grayish brown 8
8. Distinctly brown, throat cinnamon-brown, crown reddish brown.
Ruddy woodcreeper, *Dendrocincla homochroa*, p. 9
Grayish brown, chin gray, crown grayish brown.
Brown woodcreeper, *Dendrocincla fuliginosa ridgwayi*, p. 4
9. Crown and hindneck plain; or if lined or spotted, the markings faint and small, not prominent..... 10
Crown and hindneck heavily spotted or lined with buff to buffy white.. 13
10. Chin and throat plain; foreneck sparsely and finely spotted; wing coverts dull brown like back, secondaries rufous-brown.
Tawny-winged woodcreeper, *Dendrocincla anabatina saturata*, p. 7
Chin, throat, and upper breast distinctly spotted or streaked..... 11
11. Smaller, wing not more than 100 mm; under surface dull brown to olive-brown, foreneck and breast indistinctly streaked with buff..... 12

Larger, wing more than 100 mm; lower surface dull green, heavily spotted with buff to buffy white.

Spotted woodcreeper, *Xiphorhynchus erythropygia*, p. 41

12. Small, tail shorter, less than 75 mm; bill short, acutely pointed.

Wedge-billed woodcreeper, *Glyphorhynchus spirurus*, p. 20

Larger, tail long, more than 80 mm; bill longer, with tip of mandible decurved. Long-tailed woodcreeper, *Deconychura longicauda*, p. 13

13. Bill slender, straight, light-colored, the maxilla straight at tip; side of head pale like malar region and throat.

Straight-billed woodcreeper, *Dendroplex picus extimus*, p. 32

Bill heavier, maxilla dark-colored, wholly or in part, with tip decurved; side of head dark like crown. 14

14. Back black, like crown, heavily streaked with buff.

Black-striped woodcreeper, *Xiphorhynchus lachrymosus lachrymosus*, p. 38

Back grayish brown to reddish brown; streaking present but in most reduced 15

15. Bill stronger, heavier, straight except for tip of maxilla which is decurved; streaks on breast broader, those on abdomen indefinite.

Buff-throated woodcreeper, *Xiphorhynchus guttatus*, p. 34

Bill more slender, decurved for distal half; foreneck, breast, and abdomen with streaks narrower and sharply lined. 16

16. Larger, wing more than 100 mm; crown and hindneck spotted with buff.

Spotted-crowned woodcreeper, *Lepidocolaptes affinis neglectus*, p. 48

Smaller, wing less than 100 mm; hindneck narrowly streaked with dull white to buffy white.

Streak-headed woodcreeper, *Lepidocolaptes souleyetii*, p. 44

DENDROCINCLA FULIGINOSA RIDGWAYI Oberholser: Brown Woodcreeper, Trepador Pardo

FIGURE 1

Dendrocincla ridgwayi Oberholser, Proc. Acad. Nat. Sci. Philadelphia, vol. 56, June 29, 1904, pp. 448, 449 (in key), 458. (Talamanca, Costa Rica.)

Dendrocincla olivacea Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 7, 1862, p. 466. (Atlantic side on line of Panamá Railroad, Canal Zone, Panamá.)

Antedated by *Dendrocops olivaceus* Eyton, 1852, a synonym of *Dendrocincla tyrannina*. (See Ridgway, U.S. Nat. Mus., Bull. 50, pt. 5, 1911, p. 292.)

Chin and throat gray to light grayish brown, merging gradually into the dark shade of foreneck.

Description.—Length 200–220 mm. Adult (sexes alike), upper surface plain brown, varying slightly from grayish brown to faintly rufescent, usually duller on the crown; rump and upper tail coverts cinnamon-rufous; tail cinnamon-rufous, with shafts of quills dull black; wing coverts like back; primaries and secondaries rufescent, the outer primaries tipped with grayish brown; side of head olive to dusky gray, streaked very narrowly with buff; a narrow line of

buff above the auricular region; malar area dull olive; chin and upper throat dull gray to brownish buff, narrowly and indistinctly barred or spotted with dusky; foreneck somewhat more brownish, with shaft lines of brown; rest of under surface light olive-brown to faintly cinnamon, with the under tail coverts dull cinnamon-rufous; under wing coverts ochraceous-buff; under surface of wings tawny-rufous, with dull grayish tips on longer feathers.



FIGURE 1.—Brown woodcreeper, trepador pardo, *Dendrocincla fuliginosa ridgwayi*.

Juvenile, like adult, but faintly brighter, more cinnamon-brown above.

A male taken at Juan Mina, Canal Zone, January 13, 1961, had the iris dark mouse brown; maxilla and mandible (except gonys) dusky neutral gray; line of gonys dull neutral gray; tarsus and toes neutral gray; claws dark neutral gray. Another male from Armila,

San Blas, February 26, 1963, had the iris light mouse brown; culmen dull greenish neutral gray; rest of bill black; tarsus and toes dark neutral gray; claws dusky neutral gray. A female at El Real, Darién, January 23, 1964, had the iris mouse brown; gonyes neutral gray; rest of bill dull black; tarsus and toes bluish neutral gray; claws dusky neutral gray.

Measurements.—Males (10 from Panamá), wing 104.0–109.8 (106.9), tail 84.3–93.5 (87.0), culmen from base 28.2–32.6 (30.5), tarsus 24.0–25.6 (24.8) mm.

Females (10 from Panamá), wing 99.5–103.7 (100.8), tail 82.4–87.1 (84.9), culmen from base 27.3–30.5 (28.8), tarsus 23.1–24.3 (23.8) mm.

Weight, ♂ 40 grams (Cerro Campana, November 1, 1966, G.V.N. Powell).

Resident. Common, in forested areas in the Tropical and Subtropical zones; on the Pacific side from eastern Veraguas (Chitra), and Cerro Campana (at 850 meters), western Province of Panamá, east through the Province of Panamá and Darién (to 600 meters on Cerro Pirre, and 1430 meters on Cerro Malí); on the Caribbean side from the Costa Rican boundary in Bocas del Toro to eastern San Blas (Puerto Obaldía).

This species has not been found in Chiriquí, and on the Pacific side of Veraguas is known only from one male in the British Museum, collected at Chitra by Arcé in 1868. It is found on Cerro Campana in the western sector of the Province of Panamá, and is common from the southern side of Cerro Azul eastward throughout Darién. One banded near the Navy pipeline back of Gamboa, Canal Zone, by F. L. Chapman and E. Tyson, in January 1964, was captured again in the same area by J. R. Karr in late 1968.

A usual encounter with the Brown Woodcreeper is to see it hovering over one of the moving ant swarms found regularly in the forests. Here a pair of the birds, less often one alone, may come low down over the ants, attracted by escaping insects, sometimes clinging, less often perching briefly. When lines of the marauders climb vines, shrubs, or small tree trunks the birds briefly may become quite active. After feeding they may rest quietly in typical clinging posture on some vertical trunk. While they fly about quickly among other birds attendant on the ants, sometimes calling briefly, they are not aggressive. Willis (Univ. California Publ. Zool., vol. 79, 1967, p. 44) found that usually they gave way to threats from companion bi-

colored ant-birds, though the woodcreeper is larger and heavier of body.

As indicated above, the Brown Woodcreeper climbs vertical trunks like other species of the family, with the tail braced firmly for support. On the whole they are quiet and, from their color and the shadows amid which they live, often are inconspicuous. The bill is strong, and though the sharp tip is slightly decurved the bird in its search over the trunks of trees may hammer strongly and persistently on the bark and wood to uncover insect prey. On occasion I have traced such sounds under the impression that the author was a woodpecker. The tips of the shafts of the tail feathers are stiff and firm, affording good support in climbing, but as the points project only slightly beyond the feather vane, they are less evident than in some other species of the family. When one perches at rest across a branch, as it often does for a brief period, it may thus suggest a bird of some other family.

A set of two eggs in the U.S. National Museum, collected near Pacuare, Costa Rica, in May 1876, by José Zeledón, came from a nest of dry moss built inside the hollow stump of a palm. They are white in color, with faint gloss (the shell under low magnification appearing slightly rough). In form they are subelliptical, with measurements of 24.8×19.2 and 26.2×19.5 mm. Skutch (Auk, 1946, p. 339) notes that when *Dendrocincla* leave the nest, they regularly conceal the eggs beneath the loose material of the lining.

To the north this race ranges on the Caribbean slope through Costa Rica and Nicaragua to southeastern Honduras (Río Segovia). Beyond eastern Panamá it is recorded along the Pacific slope through western Colombia south to western Ecuador, and eastward is found to northwestern Antioquia (Villa Artiaga, Necoclí) and the lower Sinú Valley (south to Quebrada Salvajín in western Córdoba).

DENDROCINCLA ANABATINA SATURATA Carriker:
Tawny-winged Woodcreeper, Trepador Alicastaño

Dendrocincla anabatina saturata Carriker, Ann. Carnegie Mus., vol. 6, no. 4, August (September 7) 1910, p. 649. (El Pozo de Terraba = El Pozo del Río Grande, Puntarenas, Costa Rica.)

Throat and faint streaks on upper foreneck light buff; secondaries and inner primaries centrally bright tawny brown, with tips and the upper wing dark like back.

Description.—Length 170–190 mm. Adult (sexes alike), crown and hindneck dull brown, with the feathers usually slightly paler

centrally; back and wing coverts dull brown; rump paler, more rufous; upper tail coverts and tail deep cinnamon-rufous, the latter with the shafts black; primaries and secondaries centrally tawny, with the tips dusky; an indistinct line above the eye pale tawny; side of head sooty brown, streaked behind the eye, and spotted on malar area with dull cinnamon-buff; lores dull grayish buff, tipped with dusky; chin and throat buff; foreneck dusky brown streaked lightly with cinnamon-buff; rest of under surface light umber-brown, becoming cinnamonous on abdomen; under tail coverts and under wing coverts cinnamon-rufous.

A male, collected at Puerto Armuelles, Chiriquí, February 5, 1966, had the iris mouse brown; maxilla and side of mandible fuscous-black; lower surface of mandible neutral gray; tarsus and toes dull gray; claws fuscous-black.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 98.1–102.3 (99.9), tail 74.2–82.6 (77.9), culmen from base 24.1–27.0 (25.3), tarsus 23.8–24.9 (24.5) mm.

Females (10 from Chiriquí and Costa Rica), wing 91.0–99.4 (95.9), tail 70.0–76.5 (71.9), culmen from base 22.8–25.8 (24.4, average of 9), tarsus 22.0–24.6 (23.3) mm.

Resident. Found locally in small number in the tropical lowlands of western Chiriquí (Puerto Armuelles, Alanje, Divalá, Bugaba) less often ranging higher to 1250 meters (Barriles and near El Volcán).

In Panamá this bird is known only from western Chiriquí, where it was first recorded by Salvin (*Proc. Zool. Soc. London*, 1870, p. 192) from a specimen collected by Arcé at Bugaba in 1869. The next report, by Bangs (*Auk*, 1901, p. 367) recorded three males taken by W. W. Brown, Jr., at Divalá. Mrs. M. E. Davidson secured two males at Puerto Armuelles on November 19, 1929, and one at Barriles, January 20, 1931. Another specimen from the higher country was taken by Dr. F. A. Hartman near El Volcán, February 10, 1953.

In the level land below Alanje, on March 8, 1960, I found one in a small tract of forest at Guacimo, where it was feeding over an ant swarm. The bird flew down to the ground several times as I watched it, rose immediately, and returned to a low perch, where it shook its feet alternately, apparently to dislodge clinging ants. When I examined its stomach while preparing it as a specimen I found in it remains of earwigs. Another male was collected March 12 nearby in brush along the Río Escárrea at Canta Gallo, where ants were common, but where I noted no raiding swarms. A few others were

found in February 1966 climbing about below the tree crown in small tracts of forest at Olivo near the coast northeast of Puerto Armuelles.

The subspecies seems never to have been common in the Republic, and undoubtedly has been reduced in numbers through extensive clearing of the forests. Specimens in museum collections change color considerably. Those recently collected are easily distinguished from *D. a. anabatina* by darker, more olivaceous hue above, and the duller shade of the centers of the primaries. In Costa Rica this form ranges in the southwest from the Gulf of Nicoya southward.

Willis (Auk, 1960, pp. 158–159) in British Honduras found these woodcreepers following columns of raiding ants. Usually they clung to tree trunks to seize flying insects flushed by the invaders, or those that alighted near them. He noted their aggressive nature, as frequently they drove at larger ant-tanagers, with these giving way. Skutch (Pac. Coast Avif. no. 35, 1969, pp. 396–414) in a detailed account of studies in Costa Rica also found them following ants. He also verifies their aggressiveness, both with other woodcreepers, and with such larger species as the Golden-naped Woodpecker (*Centurus chrysauchen*) and the Red-crowned (or Wagler's) Woodpecker (*Centurus rubricapillus*) whose nesting and sleeping holes it appropriated.

Skutch found nests of this species placed in natural cavities, some of them open at the top, and others better sheltered in woodpecker holes. In all those seen only one bird, assumed to be the female, was in attendance. In six nests the complete set was of two eggs, ovate in form, and pure white in color. These were placed on flakes of bark, rootlets, green moss, and lichens as the nest lining, with other bits added as incubation progressed. No egg measurements were recorded, apparently since the eggs were not accessible. The young at hatching were covered scantily with long gray down. In one instance a Tawny-winged Woodcreeper usurped a nest cavity of the Streak-headed Woodcreeper (*Lepidocolaptes souleyetii compressus*) in which the latter had two eggs. One of these was hatched and reared by the intruder after the rightful parents had been driven away!

**DENDROCINCLA HOMOCHROA (Sclater): Ruddy Woodcreeper,
Trepador Leonado**

Dendromanes homochrous P. L. Sclater, Proc. Zool. Soc. London, pt. 27, 1859 (February, 1860), p. 382. (Teotalcingo, Oaxaca, México.)

Throat cinnamon-buff; crown and entire wing cinnamon.

Description.—Length 185–195 mm. Adult (sexes alike), crown, rump, wings except tips, and tail chestnut; back dull rufescent brown;

throat and upper foreneck cinnamon-buff; under surface rufescent brown, slightly paler on the abdomen, and more rufous on the under tail coverts; under wing coverts light rufous.

While this species is widely distributed through the Republic it is local in occurrence, mainly in the lowlands, and only in areas of forest. Usually it is found in company with moving ant swarms, where it rests or climbs on the lower tree trunks, often partly hidden by the leaves of the undergrowth. If it remains quiet it may not be noticed. While one may drop down briefly to pick up an insect, most of this prey is captured above the ground. When there is momentary activity among the other ant-birds a Ruddy Woodcreeper may utter a few chattering notes, but on the whole these birds are silent. Their range is in areas of forest, and where these are cut the birds disappear. The only report of nesting that I have seen is by Russell (*Birds British Honduras*, 1964, p. 102) who records observations of Morton E. Peck on the nominate race in British Honduras. Two nests were found in June. One with two eggs "was in a shallow cavity about two feet from the ground in a decayed stump." The second, with three eggs was "in a cavity in the base of a dead palm leaf about five feet from the forest floor."

Two closely similar subspecies are found in Panamá.

DENDROCINCLA HOMOCHROA ACEDESTA Oberholser

Dendrocincla acedesta Oberholser, Proc. Acad. Nat. Sci. Philadelphia, vol. 56, June 29, 1904, pp. 449 (in key), 462. (Southern base of Volcán de Chiriquí, Panamá.)

Characters.—Slightly darker, faintly more olive; averaging somewhat smaller.

A male taken at El Volcán, Chiriquí, March 18, 1965, had the iris light chestnut-brown (matching the color of the adjacent side of the head); distal line of the culmen black; rest of maxilla dull brown; mandible fuscous-black, brownish white above the cutting edge; (color of tarsus not recorded.)

Measurements.—Males (10 from Costa Rica, Chiriquí, and Bocas del Toro), wing 100.5–106.1 (103.8), tail 73.7–81.0 (77.5), culmen from base 25.5–28.5 (26.3), tarsus 26.0–27.6 (27.0) mm.

Females (10 from Chiriquí and Costa Rica), wing 96.8–101.8 (99.6), tail 70.3–76.7 (75.9), culmen from base 24.7–27.7 (25.7), tarsus 24.3–26.5 (25.9) mm.

Resident. Found locally in forested areas in western Chiriquí, mainly in the lowlands, less frequently in the lower Subtropical Zone

(Boquete, El Volcán); one record for adjacent Bocas del Toro (on the upper Río Changuena).

These birds seem never to have been very common, and as forests have been cleared have decreased in number through this curtailment in their habitat. In several seasons in both the mountain area and the lowlands in Chiriquí I have encountered them on two occasions only, both near the Río Chiriquí Viejo west of El Volcán.

The type specimen, in the U.S. National Museum, a bird received from Osbert Salvin in 1872, has printed on the label "Collected by Enrique Arcé Veragua" with the locality "Chiriquí" added by hand. Salvin (Proc. Zool. Soc. London, 1870, p. 177) wrote that Arcé's Chiriquí collections of the period concerned "were formed on the southern slope of the Volcano" with Mina de Chorchá, Bugaba, and Volcán de Chiriquí as the localities. It seems probable that the specimens came from the area bounded by Bugaba and Boquete so that it is appropriate to list the type locality as the southern slope of the volcano.

DENDROCINCLA HOMOCHROA RUFICEPS Sclater and Salvin

Dendrocincla ruficeps Sclater and Salvin, Proc. Zool. Soc. London, May 1868, p. 54. (Near Panamá City, Panamá).

Characters.—Faintly darker, slightly more olive especially on the lower surface; averaging very slightly larger, with somewhat heavier bill.

Measurements.—Males (16 from the Province of Panamá and Chocó), wing 102.1–108.6 (105.8), tail 73.5–83.2 (77.1, average of 14), culmen from base 26.5–28.9 (27.8), tarsus 26.7–28.3 (27.5) mm.

Females (11 from Veraguas, Province of Panamá, and Darién), wing 96.4–100.7 (98.1), tail 66.9–76.7 (70.9), culmen from base 24.8–27.1 (26.0), tarsus 24.9–26.9 (25.9) mm.

Weight, ♂ 41 grams (Cerro Campana, Panamá, November 1966, G. V. N. Powell).

Resident. Found locally on the Pacific slope from eastern Chiriquí (Cerro Flores) and Veraguas (below Santa Fé) east through the Province of Panamá, the Canal Zone, and Darién.

The most western record is of male and female collected by Griscom and Boulton on Cerro Flores in eastern Chiriquí. Others from Veraguas come from the lower slopes below Santa Fé, and from Cerro Montuosa in the northern end of the Azuero Peninsula.

On March 10, 1951, I collected one at 850 meters elevation on the south face of Cerro Campana, the highest report to date in mountain areas. The type specimen in the British Museum, formerly in the collection of P. L. Sclater was "obtained near the city of Panama by the late Mr. William Thomas Hodgetts Chambers-Hodgetts (formerly Chambers) during a temporary visit to the isthmus." The species seems to have been rare in the general area as the only other records are of two brought to Lieutenant-Colonel F. S. Blanton by collectors of the Malaria Control Service, taken in 1955 on August 8 near Cocolí and November 29 on the New Empire Road, west of the Canal. From the Cerro Azul eastward the bird has been more numerous. E. A. Goldman in 1911 secured one west of Chepo on March 20 and two at 100 meters elevation on the south base of Cerro Azul on March 20 and 28. I found two in the same area in 1949 at Utivé on April 22 and 25, and near Chepo from April 16 to 24. Two in the Havemeyer collection at Yale were taken at Puerto San Antonio on the Río Bayano on February 22 and 27, 1927. At the base of Cerro Chucantí and along the Río Majé in March 1950, they were common mainly low down, but one was collected at over 500 meters. Farther west in Darién they appear to be rare. Thomas Barbour collected one on the lower slopes of Cerro Sapo on April 21, 1922. And on March 31, 1959, I secured one near where the Río Tuquesa joins the Chucunaque.

As has been stated, these are forest birds of retiring habit, seen most often in company with raiding ant swarms, usually singly or at most only two or three among the other ant-birds. They may fly out actively above the forest floor if small insects are flushing. But more often are observed climbing quietly or clinging rather low down on tree trunks. When disturbed they retreat rapidly to other resting places and there remain hidden. In the savanna area between the Río Pacora and the lower Río Bayano below Chepo I was interested to find a few ranging singly through open forest. They are easily overlooked in such coverts, as it is more usual to locate them when attracted by moving ant columns. Occasionally I saw one in company with the more abundant *Dendrocincla fuliginosa*, both ranging amicably without apparent competition.

Beyond Darién they continue in northern Chocó, in the lower valley of the Atrato, northwestern Colombia.

**DECHONYCHURA LONGICAUDA (Pelzeln): Long-tailed
Woodcreeper, Trepador Cola de Uñas**

Dendrocincla longicauda Pelzeln, Orn. Bras., Abth. 1, 1868, p. 60. (Manaus, Amazonas, Brazil.)

Small, slender; dark brown, with chin and throat buff; in color pattern similar to the Wedge-billed Woodcreeper, but larger, with longer bill and longer tail.

Description.—Length 170–185 mm. Adult (sexes alike), crown brownish olive to olive, with shaft lines of buff; back and scapulars reddish brown to olive-brown; lower rump and upper tail coverts chestnut; wing coverts somewhat paler than back; wings cinnamon-rufous, with the tips of the primaries dusky; tail, including shafts of the rectrices, chestnut; lores dull grayish white; narrow superciliary streak buff; side of head mixed dusky and buff; chin and throat dull buff; lower foreneck, breast, sides, and abdomen dusky-olive, with the upper breast spotted with buff, the spots bordered narrowly with olive-black; lower breast, and in some the abdomen, with shaft lines of buff; under tail coverts cinnamon; axillars basally white; under wing coverts cinnamon-buff; inner surface of primaries and secondaries basally cinnamon-rufous.

Dr. Thomas R. Howell (Auk, 1956, pp. 517–528) has made a careful analysis of specimens then available from Central America, 29 in number, among them two that he had collected at Arenal in northwestern Nicaragua, a notable extension of the previously known range. These two agree with the series from Costa Rica and are identified as the subspecies *typica*. With only three specimens available from central and eastern Panamá, and only one of these recently collected, differences assigned by Griscom to birds of that area were not apparent so that these three were placed with *typica*. With six additional skins, collected in the eastern area since 1957 it is now apparent that birds from this locality are very faintly darker, more olive above. With due allowance for the extensive color changes as skins age in museums we may now recognize two races in the Republic of Panamá.

As a whole the species ranges from northwestern Nicaragua through southern Central America, and in South America from Colombia and southern Venezuela to northern Bolivia and central Brazil.

DECONYCHURA LONGICAUDA TYPICA Cherrie

Deconychura typica Cherrie, Proc. U.S. Nat. Mus., vol. 14, September 4, 1891, p. 339. (Pozo Azul de Pirris, Province of Puntarenas, Costa Rica.)

Characters.—Slightly more rufescent on dorsal surface.

On the label of the type specimen the collector, José C. Zeledón, noted the iris as dark brown; maxilla black; mandible, tarsus, and feet "plumbeous."

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 92.5–99.9 (96.8), tail 90.0–100.6 (94.8), culmen from base 23.4–25.2 (24.2, average of 9), tarsus 21.7–22.8 (22.1) mm.

Females (10 from Chiriquí, Veraguas, Bocas del Toro, and Costa Rica), wing 84.2–89.5 (86.6), tail 80.1–88.0 (84.2), culmen from base 21.5–23.5 (22.3), tarsus 19.5–21.8 (20.6) mm.

Resident. Rare in lowland forests. Recorded on the Pacific slope in western Chiriquí (Divalá, Bugaba); on the Caribbean side in Bocas del Toro (Almirante) and northern Veraguas (Río Calovévora).

The Long-tailed Woodcreeper was first recorded in the Republic at Divalá, Chiriquí, when W. W. Brown, Jr., collected an adult male and a young female in December 1900 (Bangs, *Auk*, 1901, p. 367). Another, now in the American Museum of Natural History, was taken by H. J. Watson at Bugaba, May 11, 1903. R. R. Benson collected one at Almirante, Bocas del Toro, June 28, 1927, and Benson and Gaffney one on the Río Calovévora, northern Veraguas, September 18, 1926.

In Costa Rica, where it seems to be somewhat more common, Slud (*Bull. Amer. Mus. no. 128*, 1964, pp. 196–197) heard it giving a low chipping call, a repetition of a single note. He also observed it "anting with some small insect too stout-bodied to be an ant." George K. Cherrie (*Anal. Inst. Físico-Geográfico Nac. Costa Rica*, vol. 6, 1893 (1895), p. 72) described a nest found at Pozo Pital on the Río Naranjo, Costa Rica, located in a dead tree trunk about 9 meters from the ground. The nest was placed in a cavity that opened at the top of the stub, and was a little less than a meter deep. The bottom was lined thickly with dry leaves. The female, flushed from the nest, on her return carried a dead leaf to add to the nest material. She was collected and is now in the U.S. National Museum. The two eggs were described as glossy white (like the eggs of woodpeckers.) One was broken as Cherrie descended the tree (due apparently to the attack of biting ants housed in the base of the stub). The other measured 21.8×17 mm.

The Spanish name *cola de uñas*, hook or claw-tailed, referring to the pointed curved tips of the central feathers, used by the birds as a brace in climbing, is from Cherrie's account cited above.

DECONYCHURA LONGICAUDA DARIENENSIS Griscom

Dechonychura typica darienensis Griscom, Bull. Mus. Comp. Zool., vol. 69, April 1929, p. 172. (Cana, Darién, Panamá.)

Characters.—Faintly more olive, less rufescent, above.

Measurements.—Males (2 from eastern Province of Panamá and Darién), wing 91.4, 95.1; tail 88.0, 90.2; culmen from base 23.7 (1 only); tarsus 20.9, 21.0 mm.

Females (8 from eastern Province of Panamá, Canal Zone, Darién, and northwestern Colombia), wing 84.0–88.7 (85.7), tail 80.9–87.6 (83.7), culmen from base 20.0–22.0 (21.2), tarsus 20.2–21.8 (21.1) mm.

Resident. Rare; found mainly in lowland forests; recorded on the Pacific slope from western Province of Panamá (at 850 meters on Cerro Campana), east along the south base of Cerro Azul, the lower Río Bayano (Puerto San Antonio), and near Chimán (Río Corotú) to Darién (Santa Fé, Cana); on the Caribbean side in the Canal Zone (Gamboa, Lion Hill), and San Blas (Mandinga).

This bird, little known in Panamá, in appearance and action is much like the more common Olivaceous Woodcreeper, but differs decidedly in its much darker color. On the few occasions that I have seen it, in heavy stands of forest, the bird climbed upward on tree trunks, in action typical of other members of the family. On Cerro Campana, March 5, 1951, I took one in heavy forest on the southern face below the summit. From the northern Canal Zone there is an ancient specimen collected at Lion Hill about 1865 by McLeannan, and received by the Smithsonian the following year in a collection that came from Thomas Rhodes. While this is the earliest record for the Republic it was not noted in literature until listed by Ridgway (U.S. Nat. Mus. Bull. 50, pt. 5, 1911, p. 286). Earlier, from its poor condition as a specimen, it seems to have been identified by Sclater and Lawrence as *Xiphorhynchus guttatus*, a much larger species. Another record is one in the American Museum of Natural History from Gamboa, collected January 23, 1964, by F. L. Chapman and E. Tyson. A. P. Smith secured three at Puerto San Antonio on the lower Río Bayano in February, 1927. I collected one on the Río Corotú, above Chimán, February 20, 1950. In Darién it was taken by R. R. Benson at Cana, on Cerro Pirre, August 6, 1928. Another

in the American Museum was collected by G. I. Child at Santa Fé, March 3, 1967. At Mandinga in the western San Blas, I found two on February 1 and 14, 1957.

The race probably ranges eastward along the San Blas coast, as we have a female taken by M. A. Carriker, Jr., at Necoclí on the eastern shore of the Golfo del Darién, in extreme northern Antioquia, Colombia. This is near the southern limit for the race, as a specimen from Villa Artiaga 125 kilometers farther south is the paler race, *D. l. minor*.

**SITTASOMUS GRISEICAPILLUS (Vieillot): Olivaceous
Woodcreeper, Trepador Aceitunado**

FIGURE 2

Dendrocopus griseicapillus Vieillot, Nouv. Dict. Hist. Nat., nouv. éd., vol. 26, December 1818, p. 119. (Concepción, Paraguay.)

Small, slender-bodied; forepart of body grayish olive.

Description.—Length 145–160 mm. Adult (sexes alike), crown and hindneck grayish olive; back and scapulars darker, with a light wash of cinnamon; rump and upper tail coverts cinnamon-rufous; alula and wing coverts similar to back but slightly darker; primaries and secondaries cinnamon-rufous, with the inner webs distally dusky; tail cinnamon-rufous, with the shafts of each feather pale dull red; side of head, foreneck, breast, and bend of wing light grayish olive; abdomen slightly paler; under tail coverts cinnamon; under wing coverts and axillars buff to buffy white; band across inner webs of primaries, except outermost, and secondaries pale buff.

The Olivaceous Woodcreeper is typical of its family in its method of climbing steadily on the trunks and branches of trees, differing from the larger kinds found in Panamá in its less robust, slender form, accentuated by the proportionately elongated tail. In Panamá it is a bird of the more open woodlands, mainly of the Pacific slope. As a species it has an extensive distribution from southern México to Bolivia, northern Argentina, and southern Brazil. In this vast area it displays much variation in depth of color, and to lesser degree in form. Those of Panamá differ mainly from the populations found from México to Costa Rica in slightly larger, heavier bill. Two geographic races are recognized in the Republic.

Little is on record as to the life history. Alexander Skutch (Publ. Nuttall Orn. Club, no. 7, 1967, pp. 61–62), near Cañas Gordas, Costa Rica, on March 25, 1964, saw one carry a few dead leaves “into a wide opening about 40 feet up in the side of a tall dead trunk

of a palm (*Euterpe* sp.)." Similar action was repeated twice in early April, and about April 18 incubation appeared to have begun. Dr. Skutch in a morning of observation noted that periods of incubation extended from 2 to 58 minutes, separated by recesses of 7 to 25 minutes when the bird was away. On leaving, the bird climbed above the opening to the top of the trunk and then flew. On returning

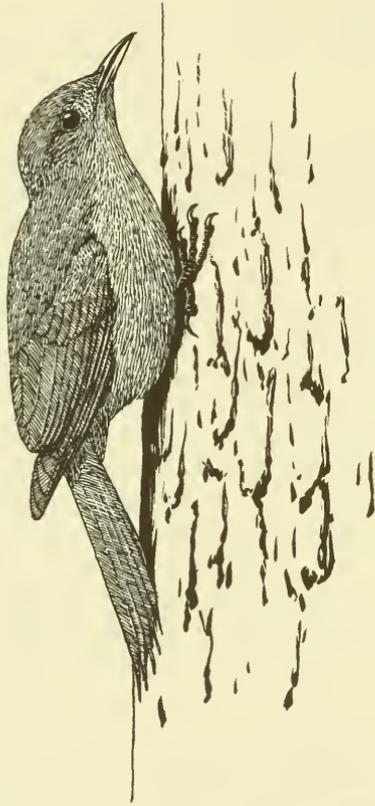


FIGURE 2.—Olivaceous woodcreeper, trepador aceitunado, *Sittasomus griseicapillus*.

it alighted below and climbed to the entrance. Usually on return the woodcreeper brought a small dead leaf or a leaf fragment to add to the nest, which was wholly hidden in the cavity. There were no further observations as some mishap appeared to have broken up the nesting. Only one bird was seen at the site during the part of April when he made his observations.

As I have collected the form *levis* in western Chiriquí at Sereno

on the Panamanian side of the boundary only 10 kilometers distant from Cañas Gordas where Dr. Skutch made his observations, it is probable that the nest was of this race.

SITTASOMUS GRISEICAPILLUS LEVIS Bangs

Sittasomus levis Bangs, Proc. New England Zoöl. Club, vol. 3, January 30, 1902, p. 46. (Boquete, Chiriquí, Panamá.)

Characters.—Slightly duller colored above; faintly darker on lower surface.

A male taken near El Volcán, Chiriquí, March 15, 1965, had the iris dark brown; maxilla fuscous-brown; mandible dull neutral gray; tarsus brownish gray; toes fuscous; claws fuscous-black.

Measurements.—Males (14 from western Chiriquí), wing 75.1–83.3 (80.0), tail 71.3–78.1 (74.8, average of 13), culmen from base 16.0–17.8 (16.9), tarsus 17.6–18.4 (18.0) mm.

Females (12 from western Chiriquí), wing 70.1–75.5 (72.9), tail 65.4–71.7 (67.8, average of 11), culmen from base 15.0–17.1 (15.9), tarsus 17.0–17.9 (17.2) mm.

Resident. Fairly common in the upper Tropical and lower Subtropical zones in Chiriquí, mainly from Boquete west to the Costa Rican border, but ranging east to eastern Chiriquí (Cerro Flores).

Three collected by Mrs. M. E. Davidson, January 3–14, 1932, on the ridge called Chame south of Cerro Flores, loaned for examination by the California Academy of Sciences, with four taken on Cerro Flores itself (1100–1160 meters) by Griscom and Boulton, March 5–13, 1924, are identified as this race, the most eastern records. To the west as noted above I recorded it at Sereno on the boundary with Costa Rica.

SITTASOMUS GRISEICAPILLUS VERAGUENSIS Aldrich

Sittasomus griseicapillus veraguensis Aldrich, Sci. Publ. Cleveland Mus. Nat. Hist., vol. 7, August 31, 1937, p. 83. (Río Mariato, 75 meters elevation, 16 kilometers east of Golfo de Montijo, Veraguas, Panamá.)

Characters.—Slightly lighter colored on the lower surface, especially on the abdomen; also averaging paler above, especially on the head.

A male, collected on Cerro Malí, Darién, February 27, 1964, had the iris reddish brown; maxilla, except as noted, fuscous-black; an indefinitely marked space in front of nostril dull brownish fuscous; cutting edge and gape dull white; mandible neutral gray; tarsus with

front grayish brown, the rear surface pale dull brown; toes dull neutral gray; claws dark neutral gray.

Measurements.—Males (10 from Los Santos, Herrera, Panamá, and Darién), wing 74.0–80.4 (78.0), tail 67.4–74.2 (70.8), culmen from base 16.1–17.8 (16.9, average of 9), tarsus 17.0–17.8 (17.3, average of 9) mm.

Females (10 from Los Santos, Herrera, Veraguas, eastern sector of Panamá, and Darién), wing 65.8–73.8 (70.7), tail 60.0–69.3 (64.2, average of 9), culmen from base 15.2–17.2 (16.1), tarsus 16.0–17.5 (16.8) mm.

Resident. Found locally in wooded areas on the Pacific side from Veraguas and the Azuero Peninsula east through Darién; on the Caribbean slope from northern Veraguas (Calovévora) and northern Coclé (Cascajal) through the Canal Zone to western San Blas (Mandinga).

These woodcreepers frequent gallery forest where, because of their quiet habits and inconspicuous coloration, they may be more common than the scattered records indicate. Aldrich found them in eastern Veraguas back of the Golfo de Montijo, from near sea level to 900 meters in the inland mountains (Cerro Viejo). On the eastern side of the Azuero Peninsula I collected one in the hills called Los Voladores beyond Portobellilo in the Province of Herrera, and another near Parita. On the Pacific side of the Canal Zone, J. R. Karr banded one at Chiva Chiva, December 14, 1968. The American Museum of Natural History has a male collected by E. S. Morton at Fort Kobbe, January 19, 1971. In my own work I have found it most often from the southern side of Cerro Azul eastward. Goldman collected two at 900 meters on Cerro Pirre, and I found it at 1425 meters on Cerro Malí. On the Caribbean side Arcé took one at Calovévora, northern Veraguas (specimen now in the British Museum), and there is one in the U.S. National Museum taken by Heyde and Lux at Cascajal, northern Coclé, on March 13, 1889. On March 1, 1952, I shot one at El Uracillo, farther east in Coclé, but lost it in the dense ground cover. There have been no records for it in the Chagres Basin in the northern Canal Zone or in adjacent Panamá. In February 1957, we saw two or three near Mandinga in the western San Blas.

Eugene Eisenmann reports their call as a thin high trill, accompanied by shivering wings. Stomachs of two taken by Goldman on Cerro Pirre were filled with broken bits of insects, largely remains of fulgorids, but with parts of roach egg cases, ants, an ichneumon fly,

two small caterpillars, and bits of beetles, including weevils, curculionids, a cerambycid, elaterids, and a small scarabaeid.

**GLYPHORYNCHUS SPIRURUS (Vieillot): Wedge-billed
Woodcreeper, Trepador Pico de Cuña**

Neops spirurus Vieillot, Nouv. Dict. Hist Nat., nouv. éd., vol. 31, September 1819, p. 338. (Cayenne.)

A small woodcreeper, with head and under surface reddish brown; distinguished in life from *Sittasomus* by the darker brown crown and the spotted foreneck and upper breast.

Description.—Length 140–150 mm. Adult (sexes alike), above reddish brown, darker on the crown; rump, upper tail coverts, wings, and tail cinnamon-rufous; primary coverts tipped narrowly with dusky; superciliary streak buffy white; cheeks sooty brown, spotted and streaked more or less with dull white; chin and throat buff to cinnamon-buff, spotted lightly with dusky; under surface olive-brown, slightly reddish on under tail coverts; foreneck and upper breast streaked more or less heavily with dull white to buffy white, lines of this color in some continued over the lower breast; under wing coverts white, changing to reddish brown on the edge of the wing.

The wedge-bill, while widely distributed through the Republic, often is absent in forested areas that seem suited to it. They may be overlooked in casual observation, as they climb quietly in spirals or directly upward over tree trunks and large branches. In this climbing movement they have many of the mannerisms of the brown creepers (*Certhia familiaris*) of the North. Like that species, in undulating flight from tree to tree where the forest growth is open, they often dip down near the ground, and so are among the birds caught regularly when mist nets are set. Only rarely have I heard them give low calls.

The bill is strong and pointed, used regularly like that of a woodpecker, so that it is one of the species of the family that merited the older common name of woodhewer. The nest of this species is said to be in natural cavities. Russell (A.O.U. Orn. Mon., no. 1, 1964, p. 103) quotes field notes of Morton Peck in British Honduras who found one "in a shallow cavity in the base of a dead palm leaf. . . . Two eggs were in the nest which was about 8 feet above the ground." Eisenmann (Smiths. Misc. Coll., vol. 117, no. 5, 1952, p. 33) records a nest with two grown young found July 12, 1949, on Barro Colorado Island in a natural cavity.

Stomachs that I have examined have held fragments of small insects and spiders, and, in one instance, remains of seeds, apparently from small berries or drupes. E. A. Goldman's notes record one pecking on a tree that, when a bit of bark fell, dropped after it and caught it adroitly in the air.

There has been some confusion in an understanding of the races represented through southern Central America and Colombia. Study of the considerable series now available in the U.S. National Museum indicates that three slightly marked subspecies may be recognized within the geographical limits of Panamá.

GLYPHORYNCHUS SPIRURUS SUBLESTUS Peters

Glyphorynchus spirurus sublestus Peters, Bull. Mus. Comp. Zoöl., vol. 69, October 1929, p. 443. (Changuinola, Bocas del Toro, Panamá.)

Characters.—General coloration dark; darker, more reddish brown above; darker below, with the throat more cinnamon-buff.

A male, taken on the Caribbean slope of Coclé, at the head of the Río Guabal, March 2, 1962, had the iris dark brown; maxilla and tip of mandible black; base of mandible dark neutral gray; tarsus dark brown; toes dark neutral gray; claws black. In a female, collected near Puerto Armuelles, Chiriquí, February 23, 1966, the iris was dark reddish brown; maxilla fuscous-black, except the basal third of the cutting edge, which was neutral gray; mandible neutral gray, changing to brownish gray at tip; tarsus and toes brownish black; claws dusky neutral gray.

Measurements.—Males (15 from Costa Rica, Chiriquí, Colón, and northern Canal Zone), wing 70.2–78.0 (73.6), tail 63.5–74.6 (67.3, average of 14), culmen from base 12.4–14.1 (13.4); tarsus 16.7–17.8 (17.2) mm.

Females (16 from Costa Rica, Chiriquí, Colón, and Canal Zone), wing 67.3–72.6 (70.2), tail 59.5–66.6 (62.7), culmen from base 12.0–14.0 (12.9), tarsus 16.4–17.5 (17.0) mm.

Resident. Found locally in forests on the Pacific slope in western Chiriquí (Puerto Armuelles, Santa Clara, El Volcán) from near the sea to 1250 meters on mountain slopes; on the Caribbean side from Costa Rica to the northern Canal Zone and Cerro Bruja in eastern Colón; recorded to 1460 meters on the trail from Boquete to the Chiriquí lagoon.

A set of two eggs in the U.S. National Museum was collected May 26, 1892, by Charles W. Richmond (Proc. U.S. Nat. Mus., vol. 16, 1893, pp. 497–498) near the Río Escondido in southeastern

Nicaragua. The nest "was in a small, natural cavity at the foot of a tree level with, if not below, the ground. The eggs, two in number were pure white. Notwithstanding the fact that the eggs were somewhat incubated the bird was engaged in carrying tufts of fine roots to the nest at the time of its discovery." One of the eggs in form is short subelliptical; the other, somewhat broader, is almost short oval. Both show only faint gloss. They measure as follows: 18.2×15.3 , 19.1×15.7 mm. (The population of this species from the Río Escondido is intermediate between *G. s. sublestus* and *G. s. pectoralis* but nearer the latter.)

Schönwetter (Handb. Ool., pt. 14, 1967, p. 16) records the size in a set of two eggs in the British Museum (Natural History) as 19.6×12.7 and 20.3×12.7 mm. While the editor, Dr. Meise, has listed them under the name *sublestus* he cites the range as "Costa Rica bis W. Ecuador u. W. Venezuela" so that the subspecies from this reference is not certain. Skutch (Pac. Coast Avif. no. 35, 1969, pp. 393–394) noted that the male and female share in incubation and in the care of the young. Often as they changed in covering the eggs, they brought small bits of material to add to the nest lining. The young at hatching have long, dark gray down.

GLYPHORYNCHUS SPIRURUS PALLIDULUS Wetmore

Glyphorynchus [sic] *spirurus pallidulus* Wetmore, Proc. Biol. Soc. Washington, vol. 82, February 5, 1970, p. 770. (Charco del Toro, Río Majé, eastern Province of Panamá, Panamá.)

Characters.—Similar in size to *G. s. sublestus* but paler in color; more grayish olive on lower surface, with the back lighter, less reddish brown, and the rump, tail, and wings more rufous-brown.

Measurements.—Males (17 from eastern provinces of Panamá and Colón, Darién, and San Blas), wing 71.7–75.5 (73.9), tail 62.8–69.9 (66.6), culmen from base 12.3–14.2 (13.0), tarsus 16.5–17.8 (17.2) mm.

Females (20 from eastern Province of Panamá, Darién, and San Blas), wing 64.6–73.8 (69.5), tail 59.0–68.0 (62.6), culmen from base 12.2–13.5 (12.9), tarsus 16.0–17.7 (16.7) mm.

Resident. On the Pacific slope through the eastern Province of Panamá including the Cerro Azul and the upper Chagres Valley, to the Chucunaque-Tuira Valley and Cerro Pirre and Cerro Tacarcuna; on the Caribbean side from southeastern Colón in the middle Chagres Valley (head of the Río Frijolito) east to near the Colombian boundary in San Blas (Armila, Puerto Obaldía).

Beyond Panamá it crosses into northern Colombia in the far northern Chocó on the eastern slope of Cerro Tacarcuna and near Acandí on the western shore of the entrance into Golfo del Darién. Beyond this area it merges with the darker, more olive, and slightly smaller race *subrufescens*.

GLYPHORYNCHUS SPIRURUS SUBRUFESCENS Todd

Glyphorynchus spirurus subrufescens Todd, Ann. Carnegie Mus., vol. 31, July 2, 1948, p. 14. (Potedó, Chocó, Colombia.)

Characters.—Darker than *G. s. sublestus*, more olive on the upper surface, including the crown.

Measurements.—Males (12 from western Colombia), wing 66.1–71.8 (69.0), tail 57.4–64.0 (61.9), culmen from base 11.4–12.5 (12.1, average of 11), tarsus 16.3–17.1 (16.7) mm.

Females (13 from western Colombia), wing 63.5–69.5 (66.2), tail 54.0–60.1 (57.4, average of 12), culmen from base 11.2–13.7 (12.1, average of 12), tarsus 15.8–16.7 (16.3) mm.

Resident. Recorded in the valley of the Río Jaqué, southwestern Darién.

The race is known from four females collected at Jaqué on April 4 and 6, 1946, and at the mouth of the Imamadó on the Río Jaqué March 30 and April 11, 1947. These have the following range in measurements: wing 68.1–70.3, tail 58.4–63.8, culmen from base 12.3–12.9, tarsus 15.9–16.6 mm. In small size, dark coloration, and more cinnamon-buff throat, they agree fully with *subrufescens*, here at its northwestern limit. The race is found in Colombia from the lower Atrato Valley in northern Chocó (north to Acandí) and adjacent Antioquia (Villa Artiaga), south in western Colombia to Nariño (probably to northwestern Ecuador.).

XIPHOCOLAPTES PROMEROPHIRHYNCHUS (Lesson):

Strong-billed Woodcreeper, Trepador Grande

Dendrocolaptes promeropirhynchus Lesson, Rev. Zool., vol. 3, September 1840, p. 270. (Bogotá, Colombia.)

A strong-bodied, robust bird, decidedly larger than other woodcreepers found in the Republic; bill long and strong.

Description.—Length 285–330 mm. Bill longer than head, deeper than broad at the level of the nostrils. Adult (sexes alike), crown and hindneck somewhat brownish black, lined with buff; back, scapulars, and wing coverts brown, often with a slight olive cast;

upper back in some with narrow shaft lines of buff; rump and upper tail coverts cinnamon-rufous; primaries and secondaries rufous; tail chestnut to rufous-chestnut, with the shafts much darker; superciliary line streaked rather heavily with white, mixed with blackish brown; auricular region buffy white, lined with dark brown; malar region dark brown streaked with buff to buffy white; chin and throat dull white, the throat lightly spotted and indistinctly barred with dull brown; rest of under surface umber-brown, with shaft lines of white to buff; abdomen grayer, barred indistinctly with brownish black; under tail coverts light cinnamon; under wing coverts cinnamon to buff, barred with black; under surface of primaries and secondaries pale cinnamon to cinnamon-rufous, the primaries tipped with dull gray.

This woodcreeper, largest of its family in Central America, though found from southern México to Veraguas in western Panamá, is known principally from the record of specimens collected. In the northern part of its range south to British Honduras it is recorded from forests of pine. Farther south it is reported from areas of cloud forest in the mountains. In common with its family relatives it has the strong feet, with sharply pointed claws, and rather long tail with stiffened tip, which serve it in climbing the trunks of trees.

Two geographic races are recognized in the Republic, differing in depth of color.

XIPHOCOLAPTES PROMEROPIRHYNCHUS COSTARICENSIS
Ridgway

Xiphocolaptes emigrans costaricensis Ridgway, Proc. U.S. Nat. Mus., vol. 11, September 20, 1889, p. 541. (Naranjo de Cartago, Costa Rica.)

Characters.—Duller in color; more olive, less rufescent brown.

A male in the American Museum of Natural History, collected by Austin Paul Smith, at Aquiares on the slopes of Volcán Turrialba, has the following data on the label: "iris reddish brown, bill horn color, tarsus dark olive." The claws in the dried skin are distinctly reddish brown.

In specimens in the British Museum (Natural History) collected in Costa Rica by C. H. Lankester, the label of a male from Juan Viñas has the iris listed as "chestnut, bill olive horn, feet olive." A female from Cachí has these data marked as "iris red brown, bill olive horn, feet olive."

Measurements.—Males (10 from Chiriquí and Costa Rica), wing

128.8–143.8 (134.4, average of 9), tail 106.0–122.9 (114.4) culmen from base 50.1–54.7 (52.1), tarsus 32.2–34.8 (33.6) mm.

Females (5 from Costa Rica), wing 127.3–136.5 (132.1), tail 111.4–119.8 (115.6), culmen from base 47.5–56.3 (52.3), tarsus 33.0–35.5 (33.9) mm.

Status uncertain; known from a single record.

One in the American Museum of Natural History, received in the Rothschild collection, originally in the Museo Dalmas, is labeled Miramar, 1100 meters, Chiriquí, taken by Antonio Lara, September 1897. The collector is not known to me, nor is the locality (which may have been on the southern slopes of the volcano in the Boquete area). The specimen agrees in coloration with the race of Costa Rica.

According to Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 198) in Costa Rica this race is found rarely in the wetter forest areas "along the northern and eastern sides of the Cordillera Central, and at the headwaters of the Río Reventazón adjacent to the northern end of Talamanca Cordillera."

XIPHOCOLAPTES PROMEROPHIRHYNCHUS PANAMENSIS

Griscom

Xiphocolaptes emigrans panamensis Griscom, Amer. Mus. Nov., no. 280, September 10, 1927, p. 7. (Above Chitra (1100 meters), Veraguas, Panamá.)

Characters.—Darker, more rufescent brown.

Measurements.—Male (1 from Veraguas; type), wing 135.3, tail 117.5, culmen from base 48.5, tarsus 32.0 mm.

Females (4 from Veraguas), wing 127.7–134.8 (132.2), tail 101.8–112.1 (110.2), culmen from base 51.2–53.9 (51.7), tarsus 31.8–33.5 (32.2) mm.

Resident. Rare, recorded near Chitra, Veraguas.

The race was described from a male and four females collected by R. R. Benson in January 1926, at elevations of 900 to 1100 meters. The specimens, in the American Museum of Natural History, are alike in their dark coloration, in which they differ definitely from the grayer race of Costa Rica.

DENDROCOLAPTES CERTHIA (Boddaert): Barred Woodcreeper, Trepador Barreteado

FIGURE 3

Picus certhia Boddaert, Table Planch. enlum., 1783, p. 38. (Cayenne).

Size medium; brown, finely cross-barred with black on head, back, and under surface.

Description.—Length 250–280 mm. Adult (sexes alike), crown and hindneck bright or dull cinnamon-rufous, narrowly barred with black; back, middle and lesser wing coverts olive-brown, barred narrowly with black; rump, upper tail coverts and wings rufous;



FIGURE 3.—Barred woodcreeper, trepador barretrado, *Dendrocolaptes certhia nigrirostris*.

tail rufous to chestnut with the shaft lines brownish black; chin and upper throat dull grayish; side of head, entire lower surface, and under wing coverts buff to cinnamon-buff, narrowly cross-banded with black; under surface of wings cinnamon-brown, with inner webs of outer primaries grayish brown to dusky.

Juvenile, like adult but markings less definite and under tail coverts brighter rufous.

These are true birds of the forest, quiet and retiring in habit, that are found most often moving over raiding ant swarms. Here they come low down in the undergrowth to capture insect prey flushed by the ants, and then retire to higher perches on nearby tree trunks. Often they are seen alone, less frequently two together. At other times single individuals have come when I have been calling in forest cover to attract the smaller birds. In their foraging away from ant swarms they normally rest low down on a tree trunk and then climb slowly upward, with movement and posture that of a woodpecker, as they cling with strong feet and braced tail to the bark. Their search is for small insects and spiders, occasionally uncovered by scaling off projecting fragments of bark, or found in growths of moss or epiphytes. The upward climb may be continued out on larger branches, when the bird loops down to another low perch on a trunk. Stomachs examined have held fragments of beetles, hemiptera, and spiders.

Usually they are quiet birds from which I have heard only low chattering calls. Dr. Thomas R. Howell (Condor, 1957, p. 87) collected a male in breeding condition on July 9, 1954, at El Recreo, Nicaragua, that "uttered scolding notes and loud song . . . téw-wee, téw-wee." This individual also had a brood patch. I have seen nothing more regarding their breeding, except that they are believed to place their nests in natural cavities in trees.

In its widespread range in the forests of Central America from southern México through Panamá the species shows slight geographic variation, which is masked in part by color changes due to foxing in the older examples in museum collections. In the considerable series that I have examined, including both fresh and older material, I have found that (except for a limited area in Quintana Roo) those from southern Veracruz south through Honduras (to the Río Coco on the southern boundary) are slightly paler buff on the lower surface, and somewhat less heavily barred with black on the back. These may be separated as *D. c. sancti-thomae*.

In southwestern Costa Rica in the Río Térraba Valley and the Golfo Dulce area, and on the base of the Burica Peninsula in far southwestern Province of Chiriquí, Panamá, the barring on the under surface and crown is narrower, and the buff duller. This is the race *hesperius* described by Bangs. With this exception, through Costa Rica and all of Panamá birds are brighter, more pale cinnamon-

buff below, and more rufous on the crown, with the black barring averaging very slightly heavier and wider. The back also is somewhat more heavily barred. These are *D. c. nigrirostris* Todd. It should be noted that the supposed character of blacker bill for this race does not hold. This form extends into Colombia to Unguía and Acandí, on the western shore of the Gulf of Urabá, and east through the valley of the Río Sinú, and beyond to Colosó in northwestern Bolívar. *D. c. colombianus* Todd found on the Pacific slope from north central Chocó south to the Río San Juan is definitely darker above and below, and duller rufous on the crown. In the area west of the lower Río Atrato it intergrades with *nigrirostris*, Todd's type material being from this intermediate stock. Two additional forms of limited range in México that have been described may be mentioned to make this survey complete. The subspecies *legtersi* Paynter, of limited range in central Quintana Roo is paler above and below than *sancti-thomae*. The race *sheffleri* Binford of southern Oaxaca has the black bars on the lower surface narrower, with corresponding increase in the buff so that the birds appear paler. The bill also is light colored, both above and below, in contrast to the darker color found in the other races.

As indicated, two subspecies are found in Panamá.

DENDROCOLAPTES CERTHIA HESPERIUS Bangs

Dendrocolaptes sancti-thomae hesperius Bangs, Auk, vol. 24, July 1907, p. 299. (Lagarto, Costa Rica.)

Characters.—Dark bars on lower surface narrower, with buff interspaces duller; crown also duller buff, and more narrowly barred.

A female, collected near Puerto Armuelles, Chiriquí, March 12, 1966, had the iris dark brown; maxilla and tip of mandible black; base of mandible fuscous-brown; cutting edge of maxilla and of mandible for basal half, and the gonys pale brownish white; tarsus and toes dull grayish green; claws dull slate.

Measurements.—Males (10 from Costa Rica), wing 121.0–130.1 (125.4), tail 107.9–121.8 (114.2), culmen from base 39.2–42.3 (40.7), tarsus 28.2–29.6 (28.8) mm.

Females (8 from Chiriquí and Costa Rica), wing 122.0–127.8 (124.8), tail 110.1–119.2 (113.3), culmen from base 38.3–42.6 (39.9), tarsus 26.7–30.6 (28.9) mm.

Resident. Known in Panamá from the base of the Burica Peninsula, and Bugaba in southwestern Chiriquí.

The race ranges mainly in southwestern Costa Rica in the valley of

the Río Térraba (Diquis) and the Golfo Dulce area. It is known at present in Panamá from two records, one the female described above, taken in forest at Olivo, 10 kilometers northeast of Puerto Armuelles. This, the only one seen during several weeks of field work in this area, was clinging in the usual woodpecker-fashion to a tree trunk. Another female in the British Museum, from Bugaba, Chiriquí, collected by Arcé in 1869, compared to *D. c. nigrirostris*, has the buff of the under surface duller, and the black banding faintly narrower. While not wholly typical, it appears nearer *hesperius*, possibly from an area where the two forms concerned begin to intergrade.

DENDROCOLAPTES CERTHIA NIGRIROSTRIS Todd

Dendrocolaptes certhia nigrirostris Todd, Journ. Washington Acad. Sci. vol. 40, no. 7, July 15, 1950, p. 237. (El Hogar, Costa Rica.)

Characters.—Brighter, more cinnamon-buff below; more rufous on the crown; black bars heavier, wider throughout; back more heavily barred.

A female taken at Juan Mina, Canal Zone, January 17, 1961, had the iris wood-brown; maxilla black; base of gonys and gape light wood brown; rest of mandible dusky neutral gray; tarsus fuscous; toes greenish gray; claws dusky neutral gray. Another of the same sex at El Real, Darién, January 25, 1964, had the iris very dark brown; tip of maxilla and basal half of cutting edge of maxilla and mandible dull ivory-white; central line of gonys fuscous; rest of bill black; tarsus and toes dull greenish gray; claws fuscous.

Measurements.—Males (10 from Panamá) wing 125.4–134.7 (129.9), tail 111.5–124.5 (117.7), culmen from base 38.5–41.9 (40.3), tarsus 28.1–30.8 (29.2) mm.

Females (10 from Panamá), wing 122.7–128.8 (125.3), tail 106.8–119.8 (112.2), culmen from base 38.3–42.4 (39.8) tarsus 27.8–30.8 (29.1) mm.

Weight of one male 71 grams (Koford).

Resident. Fairly common throughout lowland forests from Chiriquí (except the Burica Peninsula) east through Darién and San Blas; casually in the mountains to 740 meters on the Río Changuena, Bocas del Toro, and to 1060 meters on Cerro Pirre, Darién.

One taken at Cana on Cerro Pirre had the stomach filled with fragments of cicadas, mixed with a few bits of small beetles.

It is found regularly in the northern Canal Zone near Gamboa and

Juan Mina. E. S. Norton collected one on Cerro Azul, December 10, 1965.

DENDROCOLAPTES PICUMNUS Lichtenstein: Black-banded
Woodcreeper, Trepador Rayado

Dendrocolaptes Picumnus Lichtenstein, Abhandl. Kon. Akad. Wiss. Berlin for 1818-1819, Phys. Kl., 1820, p. 202. (Cayenne.)

Similar to the Barred Woodcreeper, *Dendrocolaptes certhia*, but with crown, side of head and neck, and foreneck streaked with pale buff to buffy white.

Description.—Length 240-260 mm. Adult (sexes alike), crown and hindneck grayish brown, with narrow shaft lines of buffy white; back, scapulars, and wing coverts olive-brown, the upper back usually with shaft lines of buffy white; rump and upper tail coverts cinnamon-rufous; secondaries and inner primaries similar, but darker; outer webs of outer primaries olive-brown; tail chestnut, with the shafts much darker; side of head blackish brown, streaked with white or buffy white; chin and throat white to clay color, the feathers edged with brown; lower foreneck olive-brown to grayish brown streaked with buff, these streaks lined narrowly on either side with black; rest of under surface buffy brown, barred narrowly with black; the streaking lighter on tibiae and flanks; under tail coverts varying from the paler hue of the abdomen to cinnamon; under wing coverts cinnamon-buff, barred with black; under surface of primaries and secondaries light cinnamon-rufous, tips of the primaries dusky gray.

The species is widely distributed from Guatemala and Honduras through Central America and South America to northern Argentina, Paraguay, and Brazil. Two geographic races may be recognized in Panamá.

Little is known of the life of these birds except that their tree-climbing habits are typical of the family. Sclater and Salvin (Proc. Zool. Soc. London, 1879, p. 523) cite a note from Salmon made in Antioquia, northwestern Colombia, that the nest "is made in a hole in a tree, and the number of eggs two." The two eggs in the set collected, now in the British Museum, identified as *Dendrocolaptes picumnus multistrigatus*, a form slightly larger than those found in Panamá, are white and measure 29.2×21.6 mm.

DENDROCOLAPTES PICUMNUS COSTARICENSIS Ridgway

Dendrocolaptes validus costaricensis Ridgway, Proc. Biol. Soc. Washington, vol. 22, April 17, 1909, p. 73. (Laguaria, Santa María de Dota, Costa Rica.)

Characters.—Paler brown above and below; wings and tail slightly paler than in *D. p. veraguensis*.

In two males in the British Museum taken at Cachí, Costa Rica, by C. H. Lankester, the collector noted in one the following colors: "iris brown; bill between horn and bluish horn, feet olivaceous," and in the other, "iris hazel, bill horn, feet olivaceous."

Measurements.—Males (10 from Costa Rica), wing 120.5–130.2 (126.3), tail 113.4–130.8 (117.2), culmen from base 35.1–38.2 (36.0), tarsus 27.4–29.0 (28.0) mm.

Females (6 from Chiriquí and Costa Rica), wing 120.5–125.6 (123.0), tail 107.2–118.0 (113.9), culmen from base 32.9–38.2 (36.3), tarsus 27.5–29.0 (27.9) mm.

Resident. Rare. Recorded from the Boquete region, western Chiriquí.

The first report is that of Salvin and Godman (Biol. Centr.-Amer. Aves, vol. 2, 1891, p. 191) who listed a skin in their collection "said to be from Panamá." This specimen now is in the British Museum (Natural History). W. W. Brown, Jr., collected a female at about 2100 meters elevation above Boquete in April 1901, recorded by Bangs (Proc. New England Zool. Club, vol. 3, 1902, p. 48). There is also a female in the American Museum of Natural History taken by H. J. Watson at 1825 meters above Boquete on May 6, 1903. These are the records to date from the Republic.

Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 199) says of this race in Costa Rica that it is "restricted to wet forest at cool temperatures. It seems to keep higher in the trees than most wood-hewers . . . and is met singly and seldom. It replaces at higher altitudes the congeneric *certhia* of the tropical and lower subtropical belts." Boucard (Proc. Zool. Soc. London, 1878, p. 60), who collected male and female at Naranjo, Costa Rica, in April 1877, says of them that they "were on the same tree . . . busily engaged in building their nest in a hole of the trunk."

DENDROCOLAPTES PICUMNUS VERAGUENSIS Griscom

Dendrocolaptes picumnus veraguensis Griscom, Amer. Mus. Nov., no. 280, September 10, 1927, p. 9. (Chitra, Veraguas, Panamá.)

Characters.—Darker, more reddish brown on back; wings and tail darker, more chocolate-brown; darker, more cinnamon-buff on under surface, including the under surfaces of the wings.

Measurements.—Males (4 from Veraguas), wing 123.0–126.8

(124.8), tail 111.2–117.1 (114.4), culmen from base 37.2–38.1 (37.5, average of 3), tarsus 27.0–27.5 (27.2) mm.

Female (1 from Veraguas), wing 117.6, tail 108.9, culmen from base 35.9, tarsus 27.8 mm.

Resident. Rare, little known; recorded from the highlands of Veraguas.

In addition to three males in the American Museum of Natural History, collected by Benson near Chitra, January 25, and March 11 and 12, 1926, at elevations ranging from 1060 to 1220 meters, Griscom in the original description had available a female received from J. H. Batty, also labeled Chitra with the date April 17, 1901. Another specimen is a male in the U.S. National Museum received from Heyde and Lux, labeled "Capira, Isth. Panama," dated April 21, 1888, and marked "found: open, high forest." The bird agrees in color with the series in New York, but the locality is questionable. Capira is in the level lowlands of the western sector of the Province of Panamá, where this woodcreeper would not be found. It is possible that the specimen was taken at Chitra, where the bird is known, a point visited by the men concerned in June and July 1889.

Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 2, 1891, p. 191) mention one "said to be from Panama," a bird now in the British Museum. It is an example of the race *veraguensis*, but without indication of definite locality, date, or sex.

DENDROPLEX PICUS EXTIMUS Griscom: Straight-billed
Woodcreeper, Trepador Piquirecto

Dendroplex picirostris extimus Griscom, Amer. Mus. Nov., no. 280, September 10, 1927, p. 6. (Aguadulce, Coclé, Panamá.)

Foreneck pale buffy white; bill straight, the tip or entire length light colored.

Description.—Length 190–215 mm. Bill straight, tip of maxilla not decurved. Adult (sexes alike), crown fuscous to blackish brown, marked with narrow elongated spots of pale dull buffy white, changing to broader streaks edged narrowly with black on the hindneck; upper back dull snuff brown; lower back, rump, and upper tail coverts tawny-brown; wings cinnamon-brown tipped with fuscous; wing coverts duller, more olive; tail cinnamon-brown; superciliary white, with the feathers edged with dusky; side of head dull white; throat and upper foreneck white to pale buffy white, edged narrowly on lower foreneck and upper breast with black, the light streaks narrower and more linear on breast; abdomen and sides faintly dull

buffy brown; under tail coverts with shaft lines of dull buff; under surface of wing, except at tip, cinnamon-brown; under wing coverts buff, changing to light buff on edge of wing.

A male, taken at Aguadulce, Coclé, January 18, 1963, had the iris reddish brown; base of maxilla to slightly beyond nostril dark mouse brown; rest pale mouse brown; mandible flesh color; tarsus and toes neutral gray; claws dark neutral gray; under side of toes very dull honey yellow. A female from La Jagua, Panamá, January 12, 1962, had the iris light chocolate brown; tip and base of culmen mouse brown; rest of bill whitish flesh color; tarsus and toes greenish neutral gray; claws mouse brown; pads on under surface of the toes dull greenish yellow.

Measurements.—Males (22 from Panamá), wing 95.4–104.1 (100.3), tail 73.7–89.5 (81.8), culmen from base 27.8–32.5 (29.4), tarsus 21.2–23.2 (22.1) mm.

Females (18 from Panamá), wing 93.5–99.8 (96.6), tail 71.9–82.3 (78.2), culmen from base 27.8–31.9 (29.8), tarsus 21.2–23.4 (22.2) mm.

Resident. Locally fairly common near the sea on the Pacific slope from Los Santos (Tonosí, Pedasí) and Herrera (Río Santa María, Monagrillo) on the eastern side of the Azuero Peninsula, through Coclé (Aguadulce), the eastern and western segments of the Province of Panamá (Bejuco, Río Juan Díaz, La Jagua, Chimán, Majé) and the Canal Zone (Miraflores Locks), to Darién (Garachiné).

This bird was reported first in Panamá by Hallinan (Auk, 1924, p. 319) from one that he collected October 3, 1915, near the mouth of the Río Juan Díaz, east of Panama City. The next records were of three taken by R. R. Benson near Aguadulce, Coclé, in September 1925, the series from which Griscom named the race. The Fifth George Vanderbilt Expedition in 1941 collected one near Garachiné, Darién (Bond and de Schauensee, Acad. Nat. Sci. Philadelphia, Mem. 6, 1944, p. 35) which to date is the only specimen record for that province.

The report by Chapman from Barro Colorado Island (Tropical Air Castle, 1929, p. 405; Life in Air Castle, 1938, p. 235) under the name *Dendroplex picus* "*panamensis*" (a *nomen nudum*) probably refers to observations he made during a visit to La Jagua in company with Karl Curtis, as this woodhewer is not known in the Canal Zone north of the Miraflores Locks.

After field experience with several races of this species in northern South America where I saw them in partly wooded pastures, dry

scrub, and open gallery forest, it was unexpected to find the race of Panamá mainly near the inland border of mangrove swamps. Along the lower Río Santa María in northern Herrera, a short distance inland from the sea, they were fairly common in trees standing in open formation in pastures, and at the La Jagua Hunting Club east of Pacora they followed the wooded border of the swamp inland for 3 to 5 kilometers. Elsewhere they were seen only in the mangroves or immediately adjacent.

In general appearance and habits they resemble *Xiphorhynchus guttatus*, but at rest are easily identified by the light-colored bill, and in flight they appear more reddish brown. In open areas they climbed about rather quietly on the main trunks and larger limbs. In the mangroves they seemed more active as they came out on the smaller branches to inspect and probe dead or curling leaves. Their rattling calls, heard infrequently, are like those I have heard from other members of the species in Colombia and Venezuela.

No account of the nest and eggs has come to my attention. Meise (in Schönwetter, Hand. Ool., pt. 14, 1967, p. 17), gives measurements of eggs of the nominate race *picus* of northern South America (under the generic name *Xiphorhynchus*) as $24.0\text{--}26.6 \times 19.1\text{--}19.9$ mm.

Recently this species has been listed in the genus *Xiphorhynchus*, which it closely resembles in general aspect. The bill, however, differs in being straight and slender to the tip, and from limited material that I have examined, characters in the skull differ also in detail. The bill character especially appears uniform through the wide range of the species in which it is found. The two should be maintained as distinct groups.

**XIPHORHYNCHUS GUTTATUS (Lichtenstein): Buff-throated
Woodcreeper, Trepador Común**

Dendrocolaptes guttatus Lichtenstein, Abhandl. Kön. Akad. Wiss. Berlin for 1818-1819, Phys. Kl., 1820, p. 201. (Province of Bahia, Brazil.)

Distinguished from species with similar color pattern by larger size, stronger, heavier bill, and more robust form.

Description.—Length 215-235 mm. Male and female alike; crown and nape dull black, each feather with a subterminal tear-shaped spot of pale to deep buff; back and wing coverts buffy olive to olive-brown, with a few elongate central streaks of buff, bordered narrowly with black; primaries, secondaries, rump, and tail bright chestnut-brown; throat dull white to cinnamon-buff; rest of under

surface dull buffy brown, with lower foreneck, breast, and sides streaked heavily with buffy white or cinnamon-buff, bordered narrowly with black, these markings becoming fainter on lower breast and abdomen.

Immature (marked by the black mandible), darker, more olive than adults.

This is the most common member of its family, found widely throughout the lowlands wherever there is tree growth, from the dense forests of Bocas del Toro and Darién, to the lines of trees that border streams and the landward edge of mangrove swamps in the savanna areas. In ascending the slopes of the mountains they are found regularly to 300 meters, but above are less common. Near El Valle and on Cerro Pirre a few range to 600 meters elevation. While usually found alone, individuals may travel with the groups of small birds that range in company through the forest, and occasionally join the other gatherings that forage over the traveling ant swarms. Once, on the Río Tuira in Darién, I saw one in company with another individual of the same genus, but of another species, *Xiphorhynchus lachrymosus*, the two moving about near one another.

Usually these woodcreepers are tame, and often show considerable curiosity, as when I have been moving quietly through the undergrowth it has been common to have one fly down to peer at me near at hand. In feeding they climb from near the ground up the tree trunks to the higher branches in the leaf crown. Like woodpeckers they cling with sharp claws, the stiffened tail braced against the bark, and hitch slowly up the vertical trunks and along inclined limbs. They pass easily along the underside of horizontal branches, and frequently remain for some time back down in such locations. With the strong bill they search in crevices, probe in moss and epiphytes, and occasionally with a quick blow knock off a flake of bark. Their movement in search is nearly always upward. While they do not hammer as steadily as do woodpeckers, they use the bill as a pick sufficiently so that the older appellation of "wood-hewer" was not a misnomer. Their food is taken from the miscellaneous insects encountered. Stomachs that I have examined have held Tenebrionids, Cerambycids, Elaterids, and Curculionids among beetles, roach egg cases, cicadas, earwigs, skins of caterpillars, and, in one, bits of a small lizard.

Their call is a rapid repetition of a note that rises in pitch and then falls, a laughing sound usually given behind cover with the

author hidden, so that there is often difficulty in tracing it to the source. The birds are vociferous in early morning and late evening, their notes being one of the especially pleasing jungle sounds.

For so common a species little is known regarding its breeding except that it nests in holes and that its eggs are white.

The usual country name is *subipalo*, though occasionally they are called *pega pega*.

The species is one of wide range from Guatemala and Honduras south through the forested areas of the Tropical Zone to eastern Bolivia and south-central Brazil. The range of individual variation in color is considerable, with fully grown immature birds being always darker than adults. Three slightly marked subspecies may be recognized in the Republic. In examination of study skins it should be kept in mind that the buff tints of the lower surface fade appreciably with passage of years even though carefully protected in museum cases. A series collected by E. A. Goldman in 1911 in the lower Chagres Valley differ more from those I have taken in the same area in the past 15 years than do fresh specimens of the three races here recognized.

XIPHORHYNCHUS GUTTATUS COSTARICENSIS (Ridgway)

Dendroornis lawrencei costaricensis Ridgway, Proc. U.S. Nat. Mus., vol. 10, August 6, 1888, p. 510. (Tucurriquí, Cartago, Costa Rica.)

Characters.—Darker; somewhat deeper reddish brown on back and rump; slightly more olive in the darker hues of the lower surface; streaking above and below somewhat reduced.

A breeding male taken at Puerto Armuelles, Chiriquí, February 19, 1966, had the iris dark brown; maxilla black; mandible light neutral gray; tarsus, toes, and claws brownish gray.

Measurements.—Males (18 from Honduras, Nicaragua, Costa Rica, and Panamá), wing 100.0–108.5 (105.2), tail 82.0–96.8 (88.9), culmen from base 35.6–39.6 (37.6), tarsus 22.5–23.9 (23.1) mm.

Females (10 from Nicaragua, Costa Rica, and Panamá), wing 92.0–99.6 (95.7), tail 76.7–83.7 (80.5, average of 9), culmen from base 30.4–39.5 (35.7), tarsus 21.3–23.5 (22.5) mm.

Range.—Pacific slope in western Chiriquí; Caribbean slope from the Costa Rican boundary in Bocas del Toro to western Colón.

In southwestern Chiriquí in 1966 I found this race fairly common near Puerto Armuelles. Earlier, specimens were taken by W. W. Brown at Divalá in November and December 1900. The bird has

been recorded at numerous localities in western Bocas del Toro. Specimens from the hill country near El Uracillo, Coclé, on the upper Río Indio, agree with the series from farther west. Skins from lower down this valley near the mouth of the stream appear slightly intermediate toward *nanus*.

XIPHORHYNCHUS GUTTATUS MARGINATUS Griscom

Xiphorhynchus guttatus marginatus Griscom, Amer. Mus. Nov., no. 280, September 10, 1927, p. 7 (Santa Fé, Veraguas.)

Characters.—Darker above and below, with the wings and tail more chestnut than in the races *costaricensis* and *nanus*; chin and throat more cinnamon-buff.

Measurements.—Males (10 from Chiriquí and Veraguas), wing 100.5–111.5 (107.4), tail 81.0–93.0 (88.5), culmen from base 33.8–38.8 (37.4, average of 9), tarsus 23.1–24.0 (23.4) mm.

Females (10 from Chiriquí and Veraguas), wing 93.4–100.0 (97.4), tail 78.8–89.0 (82.9, average of 9), culmen from base 34.1–38.4 (36.6), tarsus 22.2–23.5 (23.0) mm.

Range.—Pacific slope in eastern Chiriquí and Veraguas east to the forests of the western side of the Azuero Peninsula.

A male taken May 19, 1953, near Soná, Veraguas, was in breeding condition, and on May 29 I found grown juveniles at Puerto Vidal.

XIPHORHYNCHUS GUTTATUS NANUS (Lawrence)

Dendroornis nana Lawrence, Ibis, ser. 1, vol. 5, no. 18, April 1863, p. 181. (Isthmus of Panamá, type locality here restricted to near Gatun, Canal Zone.)
Dendroornis lawrencei Ridgway, Proc. U.S. Nat. Mus., vol. 10, August 6, 1888, p. 509. (Panamá.)

Characters.—Throat paler buff as in *costaricensis*, but lighter, less olive on lower surface; rump lighter reddish brown; definitely lighter in color than *marginatus*.

A male, collected at La Jagua, Panamá, January 12, 1962, had the iris wood brown; maxilla dull black; mandible light neutral gray, darker at tip and on the sides of the rami; tarsus and toes dark neutral gray; claws darker, nearly black.

Measurements.—Males (16 specimens), wing 100.8–109.9 (105.9), tail 81.0–97.2 (87.1), culmen from base 35.9–40.5 (38.3), tarsus 22.5–23.8 (23.3) mm.

Females (16 specimens) wing 93.5–100.5 (97.8), tail 73.6–86.1 (80.3), culmen from base 34.4–40.1 (36.2), tarsus 22.0–23.3 (22.7) mm.

Range.—Pacific slope from the eastern side of the Azuero Peninsula east through the lowlands to eastern Darién; Caribbean slope from the lower Río Chagres Valley through eastern Colón to extreme western Comarca de San Blas (Puerto Obaldía); intergrades with *X. g. costaricensis* in western Colón.

In the original description Lawrence stated merely that his type specimen, collected by McLeannan, came from the "Isthmus of Panama." This collector, who worked near the Frijoles and Lion Hill stations, is known to have taken birds mainly on the Caribbean slope near the place last mentioned. The type locality is here designated as near Gatun, since Lion Hill, less than 4 miles distant, is now submerged in Gatun Lake. The type specimen, in the American Museum of Natural History, does not have the sex indicated, but from its size (wing 91.4 mm.) appears to be a female.

On Barro Colorado Island, Chapman (Life in an Air Castle, 1938, pp. 35–36) found a nest on April 14, 1937, beneath the elevated floor of one of the buildings. The birds carried in over 7000 small fragments of bark and dead wood for nesting material, and in a slight depression laid two white eggs. Another nest was found in May 1935 in a hole in a papaya. Goldman records a male taken May 30, 1911, near Portobelo, as breeding. On March 4, 1968, at La Jagua, Eisenmann and Ridgely recorded a mated pair at a nesting hole in a dead tree.

Beyond Darién this race ranges widely in northern Colombia from northern Chocó east through the Sinú, Cauca, and Magdalena valleys to western Guajira.

XIPHORHYNCHUS LACHRYMOSUS LACHRYMOSUS
(Lawrence): Black-striped Woodcreeper, Trepador Listado

FIGURE 4

Dendrornis lachrymosus Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 7, 1862, p. 467. (Loma del Leon, Canal Zone, Panamá.)

Large; heavily lined with black and buffy white above and below on the fore part of the body.

Description.—Length 215–245 mm. Adult (sexes alike), crown, hindneck, upper back, and scapulars black, each feather with an elongate central streak of buff, the streaking broader and deeper buff on the back; rump and upper tail coverts cinnamon-rufous; wings cinnamon-rufous tipped with dusky; inner wing coverts cinnamon-rufous edged with black; tail chestnut; side of head buffy white streaked with brownish black; chin and throat buff;

foreneck, breast, and sides, including sides of abdomen, buff, with the feathers margined broadly with brownish black; flanks and center of abdomen, grayish brown; under tail coverts buffy brown with the centers broadly buff; under wing coverts ochraceous-buff.

A male, taken at the head of the Río Guabal, northern Coclé,



FIGURE 4.—Black-striped woodreeper, trepador listado, *Xiphorhynchus lachrymosus lachrymosus*.

March 2, 1962, had the iris dark reddish brown; maxilla, except base of cutting edge, fuscous-black; cutting edge at base light brownish white; mandible neutral gray with a greenish cast; claws black. A female at Puerto Armuelles, Chiriquí, February 16, 1966, had the iris Verona brown; maxilla fuscous-black; mandible pale neutral gray; tarsus greenish gray; toes dark gray; claws dark neutral gray.

Measurements.—Males (10 from eastern Province of Panamá),

wing 119.8–125.6 (122.2), tail 85.8–96.5 (91.2), culmen from base 38.4–40.5 (39.4), tarsus 23.0–24.8 (24.1) mm.

Females (10 from eastern Province of Panamá), wing 112.0–118.7 (115.3), tail 82.9–90.5 (87.2), culmen from base 34.9–39.6 (37.5), tarsus 22.8–24.0 (23.3) mm.

Resident. Common in Tropical Zone forests; on the Pacific side from western Chiriquí and Veraguas (Santa Fé), eastward in suitable terrain through Darién; on the Caribbean side from the Río Sixaola on the Costa Rican boundary, through Bocas del Toro and northern Veraguas (Río Calovévora), northern Coclé (head of Río Guabal), and the Canal Zone, to Puerto Obaldía, San Blas; to 750 meters on Cerro Azul, 600 meters on Cerro Pirre, and 575 meters on Cerro Tacarcuna.

On the Pacific slope it has been reported frequently in western Chiriquí (Puerto Armuelles, Divalá, Bugaba, Bibalaz). Salvin (Proc. Zool. Soc. London, 1867, p. 144) recorded a specimen in collections received from Arcé from "Santiago de Veragua." The bird, dated 1864, marked as a male but with no other data except the locality, is now in the British Museum. The locality may be open to question, as this is the only record for this lowland area. In recent years it has been noted from Barro Colorado Island, near Gamboa, Piña, and on Cerro Azul.

These are strong-bodied birds, distinctly more robust than the buff-throated woodcreeper of the same genus, in life as well as when in the hand. They are definitely birds of the forest, seen mainly on tree trunks and larger branches, most commonly high above the ground, though regularly lower down. Occasionally they range in the shoreward margin of tall mangroves. In climbing they move steadily upward, usually jerkily in rather long hitches, often with the feet widely apart and the body swinging from side to side. As they advance, they peck at the bark, pull off dry scales, and examine bits of moss to peer quickly underneath. I have seen them searching over old wasp nests, and rarely flying out a meter or so to capture an insect on the wing. Once, one picked some object from a dead tree trunk, tossed it up in the air, caught it expertly, and then swallowed it. Usually they range alone, but rarely may move about in company with scattered bands of smaller forest birds. Stomachs that I have examined have held broken bits of small beetles, orthoptera, ants, hemiptera, moths, and spiders.

The call is a repetition of a single rather high-pitched note, a

laughing sound like that of the other common large woodcreeper of this genus found in Panamá, but usually shorter, as well as more pleasingly musical in sound. Apparently the Cuna Indian name of *Yejeje*, heard in 1947 on the upper Río Jaqué, is given in imitation.

This typical race of the species is found to the north through Costa Rica to eastern Nicaragua. To the south of Panamá it continues in Colombia through the lower Atrato Valley and along the western base of the Cordillera Occidental to northwestern Ecuador.

**XIPHORHYNCHUS ERYTHROPYGIA (Sclater): Spotted
Woodcreeper, Trepador Manchado**

Dendrornis erythropygia P. L. Sclater, Proc. Zool. Soc. London, pt. 27, 1859 (February 1860), p. 366. (Jalapa, Veracruz, México.)

Medium size; under surface spotted heavily with buff.

Description.—Length 210–230 mm. Adult (sexes alike), crown and hindneck, especially the fore crown, with narrow shaft lines of pale buff; back and scapulars olive-brown, with scattered narrow shaft lines of pale buff; wing coverts olive-brown; rump and upper tail coverts cinnamon-rufous; wings and tail cinnamon-rufous, secondaries darker, more chocolate, and primaries edged and tipped with olive-brown; lores dusky to black; an indistinct buffy superciliary; side of head dusky-olive spotted and lined more or less with buff; an indefinite buff eye-ring; chin and throat buff, spotted lightly with olive; foreneck, breast, and abdomen somewhat greenish olive, marked heavily with guttate spots of pale buff; lower under tail coverts dull cinnamon, with central lines of buff; under wing coverts and under surface of primaries at base cinnamon-buff.

Throughout the range from southern México to northern Colombia, and along the western coast of South America to western Ecuador, five geographic races are recognized, all on minor characters of slight difference in size, or equally minor distinctions in depth of color. It should be noted also that in museum collections specimens become steadily darker with the markings duller, so that close attention is required to separate the races.

Xiphorhynchus triangularis found in the Andes from Colombia to Bolivia, ranging east in the sierras of northern and western Venezuela, included by some under *erythropygia*, differs in having the feathers of the chin and throat tipped narrowly with greenish olive instead of spotted lightly with this color. In most also the under tail coverts are without cinnamon or with color reduced to show

only the tips of the distal feathers. When the two groups overlap as on the mountain slopes of northwestern Antioquia (near Valdivia), *erythropygia* ranges lower in the tropical and lower subtropical slopes, with *triangularis* higher in the upper Subtropical Zone.

While widely distributed through forested areas, these birds usually range high in the trees and so may come only casually under observation. Their habits in general are like those of allied species of the genus, but through their dull colors and rather indefinite color pattern they do not stand out prominently, and so do not attract attention. Occasionally several may be found associated in loose company. Once I found one in company with a group of the Yellow-browed Tanager *Chlorothraupis olivacea*. Their laughing calls are similar to those of the Buff-throated Woodcreeper but are higher in sound. The breeding season seems to come in April when males become quite noisy.

Two subspecies, differing slightly in color, are recognized in the Republic, one in the west, the other found from the Canal Zone through Darién.

XIPHORHYNCHUS ERYTHROPYGIA PUNCTIGULA Sclater

Dendrornis punctigula, Ridgw. MS, P. L. Sclater, Ibis, ser. 6, vol. 1, no. 3, July, 1889, p. 352. ("Costa Rica" = Naranjo, Costa Rica.)

Dendrornis punctigula Ridgway, Proc. U.S. Nat. Mus., vol. 11, September 20, 1889, p. 544. (Naranjo, Costa Rica.)

Characters.—Lower surface more distinctly greenish olive.

A female, taken near El Volcán, Chiriquí, March 15, 1965, had the iris dark brown; base of maxilla below nasal fossa, and cutting edge along anterior margin very pale brownish white; rest of basal half dull black; anterior half dark mouse brown; mandible very light neutral gray; tarsus and toes neutral bluish gray; claws dull grayish brown.

Measurements.—Males (10 from Costa Rica and Chiriquí), wing 103.0–119.3 (112.1), tail 84.7–98.0 (92.4), culmen from base 33.2–36.3 (33.5), tarsus 22.5–24.2 (23.4) mm.

Females (10 from Costa Rica and Chiriquí), wing 100.9–109.9 (105.5), tail 78.5–91.9 (86.5), culmen from base 30.8–34.8 (32.7), tarsus 22.4–23.9 (23.0) mm.

Resident. Locally fairly common in forested areas in the Tropical and lower Subtropical zones in Chiriquí and Bocas del Toro; reported in older collections east on the Pacific slope to Chitra and on the Caribbean side to Calovévora, both in Veraguas.

Salvin in reporting on collections made by Arcé (Proc. Zool. Soc. London, 1870, p. 193) recorded it from Calovévora, Chitra, and Cordillera del Chucú. Later, with Godman (Biol. Centr.-Amer., Aves, vol. 2, 1891, p. 182), Castillo was added, all of these localities being in the uplands of the Pacific side of Veraguas except Calovévora which is on the Caribbean slope. Earlier (Salvin, Proc. Zool. Soc. London, 1867, p. 144) had listed Santiago also. Specimens with these localities are in the Salvin-Godman collection in the British Museum, so that it is strange that later collectors have not encountered the bird in this province.

In Chiriquí, Arcé found it at Bugaba and W. W. Brown, Jr., in 1901 collected a series at Boquete. It is interesting that it seems to have become rarer in that area as the only specimen recorded by Blake (Chicago Nat. Hist. Mus. Fieldiana: Zool., vol. 36, 1958, pp. 528-529) in the Mönniche collection was one taken at Camp Holcomb, in Bocas del Toro. There is another from that province taken on the Río Changuena, September 11, 1961, by Rudolfo Hinds.

In my own field studies I have found these birds fairly common on the western side of the volcano near El Volcán, and from there westward toward the Costa Rican boundary.

The original description of this race was written by Robert Ridgway, who forwarded the type with his comments to Osbert Salvin in London, engaged at the time in studies of this family. Salvin included "*punctigula*, Ridgw. MS" in his account with a summary of their correspondence. Unexpectedly, this appeared in the *Ibis* for July, 1889, while Ridgway's formal, detailed account was not published until 2 months later, on September 20. Though both Salvin and Ridgway in their writings later assigned the name to the latter, under the rule of priority in publication it is to be credited to Salvin.

XIPHORHYNCHUS ERYTHROPYGIA INSOLITUS Ridgway

Xiphorhynchus punctigula insolitus Ridgway, Proc. Biol. Soc. Washington, vol. 22, April 17, 1909, p. 73. (Cascajal, Coclé, Panamá.)

Characters.—Duller, grayer olive, less greenish on the lower surface; rump and upper tail coverts darker reddish brown; upper back averaging slightly darker.

A male, taken on Cerro Malí, Darién, February 24, 1964, had the iris dark brown; maxilla except cutting edge, fuscous-black; cutting edge and mandible pale neutral gray; tarsus and toes bluish neutral gray; claws fuscous. A female, collected near the Candelaria Hydrographic Station, March 5, 1961, also had the iris dark brown;

maxilla fuscous, becoming fuscous-brown on the distal half, and pale neutral gray at the extreme base, below the nostril; tip of mandible and adjacent cutting edge of maxilla light brown; rest of mandible pale neutral gray; tarsus and toes neutral gray; claws dusky neutral gray.

Measurements.—Males (10 from Panamá, Colón, and Darién), wing 106.2–114.5 (109.9), tail 81.0–93.0 (86.6), culmen from base 32.5–35.8 (33.5), tarsus 22.9–23.8 (23.3) mm.

Females (10 from Panamá and Darién), wing 99.2–108.1 (103.7), tail 79.1–86.7 (83.5), culmen from base 31.8–34.1 (33.0), tarsus 22.4–23.1 (22.7) mm.

Resident. Locally common in forest from Cerro Campana, western Province of Panamá, eastward on both slopes to the Colombian boundary in Darién and San Blas; ranging to 850 meters on Cerro Campana, 600 meters on Cerro Bruja, 1580 meters on Cerro Pirre, and 1450 meters on Cerro Malí.

In the small tracts of forest bordering the savannas at La Jagua I was interested to encounter a few of these birds, elsewhere found in heavily wooded areas in hill country and on mountain slopes. Stomachs of those I have examined have contained broken bits of insects, and also seeds and other remains of berries of some melastome.

This race continues in northern Antioquia in northwestern Colombia.

The type was collected February 13, 1899, by Heyde and Lux, at Cascajal on the Caribbean slope of the Province of Coclé, the Río Cascajal being a tributary of the Río Coclé del Norte. The collectors noted that the bird was taken in "open forest." It comes from near the western limit of the race. The specimen is much changed by foxing but compared to specimens of *punctigula* of similar or older date is duller, less greenish in tone, on the lower surface, and has the rump and upper tail coverts darker reddish brown. Griscom (Bull. Mus. Comp. Zool., vol. 72, 1932, p. 348) was mistaken in his comments on the type locality, as he was not aware that the Province of Coclé on the Caribbean slope was heavily forested along the streams.

**LEPIDOCOLAPTES SOULEYETII (Des Murs): Streak-headed
Woodcreeper, Trepador Cabecirayado**

Dendrocolaptes Souleyetii Des Murs, Iconogr. Orn., livr. 12, December 1848, (1849), "Planche lxxix" = 70, and text. (Payta, Perú.)
(ПАТΡ)

Medium size; back wings, and tail cinnamon-brown; breast, crown, and hindneck streaked with dull white.

Description.—Length 170–195 mm. Adult (sexes alike), crown and hindneck dull dark brown, each feather with a central streak of pale buffy white; back, scapulars, and wing coverts rather dull cinnamon-brown, the upper back in some with streaks of dull white bordered narrowly with blackish brown; rump, upper tail coverts, wings, and tail cinnamon-rufous, with the primaries tipped with dusky; side of head blackish brown, streaked like the crown, with an indistinctly indicated superciliary streak of pale buffy white; chin and throat dull white to pale cinnamon-buff; foreneck, breast, and abdomen grayish brown, each feather with a broad central line of pale buffy white, margined narrowly on either side with a dusky line, these markings often reduced on the under tail coverts; edge of wing dull white, spotted finely with dusky; under wing coverts pale cinnamon-buff; under surface of primaries, except at tips, cinnamon.

Juvenile, like adult, but with streaks on lower breast and abdomen indefinite or absent, replaced in part by a few small, scattered spots of dusky; under tail coverts pale cinnamon-buff.

These are inhabitants of open woodland, small tracts or lines of trees along streams, or the borders of swamps; found less often in extensive forests. Occasionally I have noted them working carefully over lines of posts supporting fences across pastures, or rarely, those separating houses in suburban areas not too densely populated. They range alone or often in couples that may be true pairs or an adult accompanied by an immature bird of adult or near adult size. Their movements are like those of large woodcreepers in that they climb steadily upward, sometimes on trees of small size. Always they are quiet and inconspicuous, except that in the nesting season they utter low melodious trills, a repetition of a single musical note.

The species is widely spread in tropical America from southern México through Central America to northwestern Perú and much of Brazil, including the island of Trinidad.

Two races are found in the Republic.

LEPIDOCOLAPTES SOULEYETII COMPRESSUS (Cabanis)

Thripobrotus compressus Cabanis, Journ. f. Orn., vol. 9, July 1861, p. 243.
(Costa Rica.)

Characters.—Light streaks on lower surface, crown, and hindneck broad and conspicuous, those on the hindneck extending down on the upper back; chin and throat very pale buff to dull white.

A male, taken near Puerto Armuelles, Chiriquí, February 24, 1966, had the iris dark brown; base of maxilla below nostril and mandibular rami dull neutral gray; rest of maxilla dull brown, changing to fuscous on the base of the culmen; rest of mandible pale dull brown, slightly darker at tip; tarsus and toes bluish slate; claws dull black.

Measurements.—Males (10 from Costa Rica, Bocas del Toro, and Chiriquí), wing 90.5–97.8 (93.3), tail 74.5–85.1 (78.9), culmen from base 28.7–31.5 (29.9), tarsus 19.0–19.9 (19.4) mm.

Females (10 from Costa Rica, Bocas del Toro, and Chiriquí), wing 85.3–97.8 (90.7), tail 71.8–80.4 (76.3), culmen from base 27.9–31.0 (29.3), tarsus 18.2–19.8 (19.2) mm.

Resident. Fairly common; on the Pacific slope from the boundary with Costa Rica to eastern Chiriquí; to 1250 meters on Volcán Barú; on the Caribbean side in western Bocas del Toro.

From available records, this race seems never to have been abundant in Panamá. The earliest report is by Sclater (Proc. Zool. Soc. London, 1856, p. 140) who received one from Bridges taken near "the town of David on the large forest-trees." Arcé sent specimens to Salvin (*idem*, 1870, p. 193) from Mina de Chorchá and Bugaba. W. W. Brown, Jr., collecting for Outram Bangs, secured six near David and Divalá from October to December 1900, and one near Boquete in April 1901. A small series in the California Academy of Sciences was collected by Mrs. M. E. Davidson from 1929 to 1930 near Concepción and El Banco, and in December 1931 and January 1932 near San Félix and Cerro Chame. There are two in the American Museum of Natural History from Cerro Flores in eastern Chiriquí.

Through extensive clearing for agriculture, available cover has greatly decreased in these areas. In February 1956 I found scattered individuals along the Río San Félix and in the borders of mangroves near the coast at Las Lajas. In March 1960 I encountered single individuals in the scattered tree growth below Alanje, and on February 24, 1966, found one male near Puerto Armuelles. We have also a male, presented by Dr. Frank Hartman, collected near El Volcán, February 28, 1951. I have found no basis for the inclusion of Veraguas in the range given by Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 342).

On the Caribbean side, *L. s. compressus* has been found rather regularly near Almirante and Changuinola, where I noted a few in

January and February 1958. The bird has not been reported east of Almirante Bay.

In Costa Rica, Skutch (Pac. Coast Avif. no. 35, 1969, pp. 374–384) found these birds sleeping singly in natural cavities, often where the entrance was so located that it gave little shelter from rain. They entered late when evening light was dim, and were abroad at dawn, among the earliest birds to become active. Nests were placed in similar cavities, apparently in preference to abandoned holes of woodpeckers. For nest material male and female brought loose flakes of bark, continuing to add bits as incubation proceeded. Also occasionally they carried away a piece when they left the nest for any reason. The two share in incubation but only one, presumed to be the female, remained in the nest during the night.

Two white eggs, without markings, made the set, examined only by means of a mirror, due to the type and location of the nest cavity.

LEPIDOCOLAPTES SOULEYETII LINEATICEPS (Lafresnaye)

Picolaptes lineaticeps Lafresnaye, Rev. et Mag. Zool., vol. 2, May 1850, p. 277.
(Type locality not indicated.)

Characters.—Light streaks on lower surface, crown and hindneck narrower, less prominent; light streaking on upper back much reduced, in some absent; throat pale cinnamon-buff.

A female, collected at La Jagua, Panamá, January 12, 1962, had the iris dark wood-brown; maxilla and tip of mandible dark mouse brown; rest of mandible dull brownish white; tarsus and toes dull greenish gray; claws dark neutral gray. Another female from Cañita, Panamá, February 8, 1962, had the iris wood-brown; the bare center of the eyelids dull grayish white; the rest of the bare area blackish brown; base of maxilla dull grayish brown; rest of bill light brown; tarsus and toes dull greenish gray; claws dull neutral gray.

Measurements.—Males (17 from Canal Zone, Panamá, and Darién), wing 85.8–97.5 (92.3), tail 68.0–82.5 (74.9), culmen from base 26.2–31.0 (28.7), tarsus 18.0–19.5 (18.8) mm.

Females (11 from Canal Zone, Panamá, and Darién), wing 85.8–95.2 (88.0), tail 68.4–76.2 (72.2), culmen from base 25.8–29.3 (27.5), tarsus 18.2–19.2 (18.7) mm.

Resident. Locally fairly common in the lowlands on both Pacific and Caribbean slopes from the Canal Zone through Darién and San Blas to Colombia; to 600 meters elevation on Cerro Pirre.

This race is more widely distributed and more common than the western *L. s. compressus* as suitable habitat for it is much more ex-

tensive and has been less disturbed. The birds range singly or in pairs through open woodland. I have seen them most often in lower, smaller growth along the playas of the larger rivers, and at the borders of mangroves near the coast. At La Jagua and near Chepo where they were found in the lines of trees bordering the streams and marshes in the open lowlands, in mid-April they were in breeding condition. In feeding they are gleaners from the bark of the trees over which they climb. Stomachs of those that I have examined have been filled with small insects, including a variety of beetles, many ants, roach egg cases, small wasps and bees, pentatomids, caterpillars, and occasionally small moths, and bits of spiders.

Specimens were taken at Jaqué in eastern Darién, and on the Quebrada Venado near Armila, eastern San Blas. In the latter area they are recorded also at Puerto Obaldía. In Colombia this race continues through northern Chocó (Unguía, Acandí), the valley of the Río Sinú in Córdoba, northwestern and central Antioquia, and southern Bolívar through Santander and Norte de Santander to Táchira and Mérida in western Venezuela.

The type specimen, examined in the Museum of Comparative Zoology, has "Lafr. Coll. no. 2227" on the back of the label as its only data. It is in good condition as regards plumage and color. The color of the rump (protected by the tips of the wings), the pattern of pale and dark stripes on the anterior lower surface, and the limited extent of the streaking on the upper back, agree with series from the Canal Zone eastward. This verifies the assignment of the name by Peters (Check-list Birds World, vol. 7, 1951, p. 48). Measurements of the type are as follows: wing 98.2, tail 80.3, culmen from base 28.6, tarsus 18.3 mm.

LEPIDOCOLAPTES AFFINIS NEGLECTUS (Ridgway):
Spotted-crowned Woodcreeper, Trepador Cabecimanchado

Picolaptes affinis neglectus Ridgway, Proc. Biol. Soc. Washington, vol. 22, April 17, 1909, p. 73. (Coliblanco, Costa Rica.)

Medium size; back, wings, and tail cinnamon-brown; breast streaked, crown and hindneck spotted with pale buffy white.

Description.—Length 200–220 mm. Adult (sexes alike), crown and hindneck light sepia-brown, spotted with buffy white, each spot tipped and edged narrowly with black; back and wing coverts umber-brown, the upper back in some streaked lightly with pale buff; rump and upper tail coverts cinnamon-brown; inner primaries and secondaries cinnamon-brown; outer primaries duller, tipped with

dusky, with the shafts black; sides of head dull buff, streaked indistinctly with dusky; a narrow superciliary line buff; chin and throat buff; rest of under surface light grayish brown with each feather centrally buff, bordered laterally narrowly with black, forming broad light streaks; under tail coverts pale cinnamon-buff streaked proximally, plain distally; under wing coverts pale yellow, mixed with pale cinnamon; under surface of inner primaries and secondaries cinnamon-buff.

Juvenile, with the ground color of the under surface somewhat browner.

A male taken at 1900 meters on Volcán Barú March 4, 1965, had the iris dark brown; base of mandible fuscous-black; rest of bill pale neutral gray, becoming lighter at the tip; tarsus and toes dull green; claws dusky neutral gray.

Measurements.—Males (10 from Chiriquí), wing 101.0–112.4 (107.7), tail 88.7–97.0 (93.1), culmen from base 31.5–34.3 (32.6), tarsus 21.3–22.2 (21.7) mm.

Females (10 from Chiriquí), wing 101.5–109.8 (106.4), tail 91.5–98.7 (93.3), culmen from base 31.6–35.1 (33.4), tarsus 21.3–21.9 (21.5) mm.

Resident. Common locally in the mountain forests on Volcán Barú, western Chiriquí, mainly from 1600 to 2500 meters, occasionally down to 1250 meters; above ranging to the limits of suitable tree cover.

I found one occasionally at the Quebrada Barriles and near the lakes on the western slopes of the volcano, but the main range begins at 1600 meters elevation, where I have seen them especially on Cerro Pando above the pass at La Silla, and on the slopes above Cerro Punta. They are common also on the slopes above Boquete, but records to date do not include the forests on the Caribbean side in Bocas del Toro. Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 342) includes "Veraguas" in the range, but in this he may have been misled by older specimens labeled "Veragua," as I have found no valid records in Panamá except on the Pacific side of the great volcano.

Like others of the family they climb steadily up the trunks and over the larger branches of the trees, ranging usually well above the level of undergrowth.

The usual call is a rapid repetition of a single note, suggestive of that of a woodpecker. In early March I have seen pairs examining old woodpecker holes, evidently in search of a nesting site.

An egg that I have seen in the British Museum (Natural History) from Irazú, Costa Rica, collected June 3, 1900 (collector not indicated), is dull white, without luster, and long elliptical in form. It measures 29.8×21.1 mm.

In observations in the Costa Rican mountains, Skutch (Pac. Coast Avif. no. 35, 1969, pp. 385–391) found them in pairs through the year. They sleep singly in holes in trees, retiring late at night, and are out at dawn. Nests that he found were in natural cavities or crevices in tree trunks, or, in one instance, in an old nest hole made by a barbet. The two white eggs were placed on fragments of hard, thin bark. The pair share incubation and the care of the young. In returning to the nest they often brought additional bits of bark to add to the lining, and also often threw out bits of that already present. The newly hatched young had an abundant covering of dark gray down. They appeared to have one brood each year.

CAMPYLORHAMPHUS TROCHILIROSTRIS BREVIPENNIS
Griscom: Red-billed Scythebill, Trepador Pico de Garfio

FIGURE 5

Campylorhamphus trochilirostris brevipennis Griscom, Bull. Mus. Comp. Zool., vol. 72, January 1932, p. 348. (Lion Hill, Canal Zone, Panamá.)

Bill long, strongly curved, light reddish brown; back, wings, and tail russet brown.

Description.—Length 220–240 mm; bill long, slender, strongly decurved. Adult (sexes alike), crown blackish brown, each feather with a central streak of dull buff; hindneck browner, also strongly streaked with buff; back russet brown, usually lined narrowly with buff; rump and upper tail coverts rufescent brown; wings, including coverts, and tail chestnut, tips of the primaries slightly dusky; sides of head and neck streaked with dull buff; chin and throat white to dull buff, the feathers edged with sepia-brown producing prominent light streaks; foreneck and breast light reddish brown, lined with dull buff to buffy white; abdomen, flanks, and under tail coverts somewhat brighter brown, without streaks; under wing coverts and under side of wings cinnamon.

A female taken at Mandinga, San Blas, February 15, 1957, had the iris wood brown; bill light reddish brown, slightly paler on the gonyes; tarsus and toes greenish gray; claws light reddish brown.

Measurements.—Males (10 from Coclé, Canal Zone, San Blas, Darién, and northern Colombia), wing 91.2–98.2 (93.7), tail 74.2–

90.0 (80.6), culmen from base 60.3–65.0 (62.3), tarsus 21.6–23.4 (22.4) mm.

Females (8 from Darién, San Blas, and northern Colombia) wing 87.8–94.5 (90.8), tail 72.3–82.6 (77.5), culmen from base 55.5–60.0 (57.4, average of 5), tarsus 20.9–21.9 (21.5) mm.

Resident. Rare in the forested lowlands; on the Pacific side from the Canal Zone through Darién; on the Caribbean slope, from 2133 meters in the mountains of Bocas del Toro, on the trail leading from



FIGURE 5.—Red-billed scythebill, trepador pico de garfio, *Campylorhamphus trochilirostris brevipeennis*.

Boquete; and from northern Coclé, through the Canal Zone to eastern San Blas (Permé).

The Red-billed Scythebill, recognized as a distinct subspecies, from central and eastern Panamá and northwestern Colombia, has been recorded to the present in the Republic from about 30 specimens, taken during the period of a hundred years, and a few additional sight records.

The first were collected by McLeannan on the Atlantic slope along the line of the Panama Railroad, about 1861 (Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 7, 1861, p. 292). One of these in the

Salvin-Godman collection in the British Museum is labeled Lion Hill Station. Bangs (Proc. New England Zool. Club, vol. 2, 1900, p. 26) recorded male and female taken in March 1900, at Lion Hill by W. W. Brown, Jr. Stone (Proc. Acad. Nat. Sci. Philadelphia, 1918, p. 263) reported a male collected by L. L. Jewel near Gatun, April 14, 1911. E. A. Goldman secured one at Tabernilla, Canal Zone, April 15, 1911, and one at 600 meters near Cana, Darién, March 14, 1912. W. Lamm saw one on Barro Colorado Island, August 17, 1935. Griscom in the original description of this race listed a male from Permé, San Blas.

The most western record of this bird is a male that I collected February 24, 1952, at El Uracillo, Coclé, in the Caribbean lowlands on the headwaters of the Río Indio. From a thicket bordering a small field our attention was attracted by a clear, ringing trill, that finally my companion and I traced to one of these birds resting on a tall palm stub that rose to the level of the leaf crown of the surrounding trees. The bird, partly hidden in a slight depression in the top of the stub, repeated its song at intervals of a minute or two, with the tips of the two halves of the long, curved bill slightly separated. The gonads were in breeding stage. During preparation of the specimen I noted that the dorsal pteryla was only slightly expanded in the center of the back and that it continued uniformly without a break to the base of the tail.

A field note by E. A. Goldman regarding the male that he collected at Tabernilla records that the bird gave a chirping call as it climbed the tree trunk.

In February 1957 I found this scythebill at Mandinga in western San Blas. One taken February 1 as it climbed up small tree trunks in second growth (rastrojo) had the stomach filled with slender-bodied white beetle larvae, from 18 to 25 mm long, with a few fragments of adult beetles. The female taken here in forest tapped the bark steadily as it climbed upward on a tree trunk. Two were seen in company on the following day at the edge of forest.

The stomach of the female collected by Goldman at Cana held the broken fragments of a small scorpion, including the sting at the end of the tail, and parts of two or more roaches, as well as bits of their egg cases.

T. K. Salmon (in Sclater and Salvin, Proc. Zool. Soc. London, 1879, p. 524) near Remedios, Antioquia, Colombia, found a nest of this species "inside a decayed tree, which had been cut off about three feet from the ground, and become hollow to the roots, so that

the nest had no protection from the rain." The single egg, which I have examined in the British Museum (Natural History) is white, with faint gloss, and short subelliptical in form. It measures 23.9×21.0 mm. (Through error Schönwetter, Handb. Ool. pt. 14, 1967, p. 18, lists the size as 28.4×20.8 mm.) I find that male and female skins in the British Museum, collected by Salmon at Remedios, Antioquia, average darker than specimens of *C. t. venezuelensis* from Venezuela, and are to be identified as the race *brevipennis*. Specimens collected for me by M. A. Carriker, Jr., at the Hacienda Belén, on the headwaters of the Río Nechí about 15 kilometers northwest of Remedios also are the subspecies *brevipennis*, so that the egg is to be assigned to that race.

**CAMPYLORHAMPHUS PUSILLUS (Sclater): Brown-billed
Scythebill, Trepador Pico de Hoz**

Xiphorhynchus pusillus P. L. Sclater, Proc. Zool. Soc. London, pt. 28, August 1860, p. 278, footnote. (Bogotá, Colombia.)

Much darker than the related species, with dark brown bill; slightly smaller.

Description.—Length 220–240 mm. Adult (sexes alike), crown, sides of head, and hindneck sooty brown to black, streaked narrowly with buff; back and scapulars brown with narrow streaks, mainly on upper back, of pale buff; rump cinnamon-rufous changing to rufous on upper tail coverts; tail chestnut; wings also chestnut, in some duller on outer webs, tipped with dusky; sides of head and neck sooty; chin and throat buff, the lower feathers edged with sooty black; rest of foreneck, breast, and sides brown, lined narrowly with buff; abdomen usually paler and without streaks; under tail coverts more or less rufescent, with shaft lines of buff; axillars cinnamon; under wing coverts, and anterior under surface of wing cinnamon-buff.

The bill in a male collected by D. Koslovsky, J. Sawyer, and D. B. Means March 18, 1967, at Nueva Suiza, Chiriquí, is marked as dark brown. The label of a male in the American Museum of Natural History collected by Austin Paul Smith April 5, 1920, at Aquiares, Costa Rica, lists the maxilla as black, mandible horn color, tarsus dark olive. This is a rare species that ranges north beyond Panamá through much of Costa Rica, mainly in the highland forests of the Subtropical Zone. The little on record indicates merely that it has the habit of other species of its family in climbing up the trunks and larger limbs of trees.

While the two slightly different populations of Panamá (with one

extending into Costa Rica, as indicated) are currently treated as conspecific with that of the mountains of Colombia and western Ecuador, it should be noted that the latter is paler in general coloration, including the bill and claws in addition to the plumage. It is possible that field studies may indicate that the Central American group is specifically distinct.

CAMPYLORHAMPHUS PUSILLUS BOREALIS Carriker

Campylorhamphus pusillus borealis Carriker, Ann. Carnegie Mus., vol. 6, August 29 (= September 7), 1910, p. 657. (El Hogar, Province of Limón, Costa Rica.)

Xiphorhynchus grandis "Cherrie," Bangs, Proc. New England Zoöl. Club, vol. 3, January 30, 1902, p. 48. (Nomen nudum.)

Characters.—Slightly larger; faintly lighter colored, especially on the under surface.

Measurements.—Males (10 from Costa Rica, Chiriquí, and Bocas del Toro), wing 92.8–101.2 (96.0), tail 82.3–99.4 (89.5), chord of culmen from base 54.0–59.0 (56.2), tarsus 21.0–22.9 (22.0) mm.

Females (10 from Costa Rica and Chiriquí), wing 90.0–99.4 (93.3), tail 79.1–90.1 (82.9), chord of culmen from base 55.2–61.3 (57.4, average of 9), tarsus 21.3–22.7 (22.0) mm.

Resident. Rare, mainly in forests of the Subtropical Zone, in western Chiriquí, and western Bocas del Toro.

The first specimens were collected by Enrique Arcé in Chiriquí, the two in the British Museum (Natural History) having come from him to the Salvin-Godman and Sclater collections. There is another labeled Boquete in the Naturhistorisches Hofmuseum in Vienna purchased from the dealer Rosenberg that I examined in June 1954. The specimen recorded by Bangs under the name "*Xiphorhynchus grandis* Cherrie" as from the "Caribbean slope of Volcán de Chiriquí, 700 feet, June 16, 1901," was collected by W. W. Brown, Jr., at about 215 meters elevation back of Chiriquí Grande, Bocas del Toro, on the trail leading from Boquete to the Chiriquí Lagoon (Mrs. Davidson, Auk, 1936, p. 232). Dr. Frank Hartman presented two to the National Museum taken at about 1375 meters, beyond El Volcán, on the slopes leading to the Silla de Cerro Pando. Another that he collected there west of the Río Chiriquí Viejo on March 8, 1951, was not preserved as a specimen. A male in the American Museum of Natural History was collected March 18, 1967, at Nueva Suiza, below Cerro Punta, Chiriquí, by D. Koslovsky, B. Means, and J. Sawyer. More recently, two males secured by Rudolfo Hinds at

about 750 meters on the upper Río Changuena, Bocas del Toro, were sent to me by Dr. Pedro Galindo.

The few reports on habits in this race have come from observations made in Costa Rica. Carriker (Ann. Carnegie Mus. vol. 6, 1910, p. 658) wrote that "it is found only in the heavy forest, and is almost always seen feeding on a certain species of palm, probing with its long curved bill between the clusters of nuts and between the bases of the leaf-stalks where they emerge from the crown of the tree, evidently in search of some insect." Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 202) describes it as typical of its family in its climbing habits, though unlike others in that he observed that "it sometimes investigates a fallen tree trunk." He noted it at times in foraging companies of mixed species, and speaks of its calls as "by far the longest and most involved" of any species of the family.

Apparently Cherrie at one time planned to name this race, as a specimen in the U. S. National Museum that he collected August 25, 1893, at La Estrella de Cartago, Costa Rica, is marked type with the name *grandis*, a nomen nudum cited in the heading from Bangs.

CAMPYLORHAMPHUS PUSILLUS OLIVACEUS Griscom

Campylorhamphus borealis olivaceus Griscom, Amer. Mus. Nov., no. 280, September 10, 1927, p. 8. (Chitra, 1100 meters elevation, Veraguas, Panamá.)

Characters.—Slightly smaller; somewhat darker, blacker.

Measurements.—Males (5 from Veraguas, eastern Province of Panamá, and Darién), wing 89.7–96.0 (92.4), tail 81.5–84.2 (83.0, average of 4), culmen from base 52.1–56.8 (54.7, average of 4), tarsus 21.9–22.2 (22.0) mm.

Females (4 from Veraguas and Darién), wing 86.9–95.6 (90.1), tail 79.0–86.5 (83.9), culmen from base 55.6–60.5 (57.9), tarsus 21.5–22.1 (21.8) mm.

Resident. Rare. Recorded from the forests in northern Veraguas; on Cerro Azul, Province of Panamá; Cerro Pirre, Cerro Tacarcuna, and Cerro Quía, Darién.

This race was named from a female collected by R. R. Benson at Chitra on the Pacific slope of Veraguas. With the type specimen Griscom listed another, also taken by Benson, from the Río Calovévora on the Caribbean side, which was said to be "darker than the type, with narrower and more restricted shaft streaks." Two older specimens in the British Museum were secured by Arcé at Chitra in 1869. A third in the Naturhistorisches Hofmuseum in Vienna (formerly mounted, but when examined in June 1954, was in the

skin collection), also taken by Arcé, is labeled Calobre, Veraguas. Another male in the U. S. National Museum was taken at Chitra by Heyde and Lux on June 22, 1889.

E. A. Goldman on March 25, 1911, collected a male at 900 meters on Cerro Azul. He secured two others near 1600 meters on Cerro Pirre, Darién in 1912, a male on April 18 and a female on April 29. There are two others in the National Museum from Darién, one of them, a male taken June 7, 1963, by Dr. Pedro Galindo, on Cerro Malí at 1460 meters. Dr. C. O. Handley, Jr., caught a female in a mist net set over a small stream at 1250 meters on Cerro Tacarcuna March 10, 1964.

One from 760 meters elevation on Cerro Quia taken by Dr. Galindo March 16, 1971, is somewhat darker than two from the higher levels of Cerro Tacarcuna.

Family FURNARIIDAE: Ovenbirds, Spinetails, and
Leaf-scrappers; Horneros, Canasteros y Hojarasqueros

This is a family of South American origin, its species mainly of sedentary habit, so that it is reasonable to assume that its spread northward has come since the formation of the isthmian land bridge. Its close allies are found in the woodcreepers, the Dendrocolaptidae, with which some share a climbing habit. Of the 215 living kinds 23 are known in Panamá, the number decreasing steadily northward through Central America until finally there are only 7 that reach southern México. In South America, while some have adapted to life on open lands in the high mountains and on the treeless plains of Patagonia, those of Panamá and northward are, in the main, inhabitants of forests and thickets. They seem averse to crossing open water as the only one that has reached any of the offshore islands of the Isthmus is the Rusty-backed Spinetail, *Cranioleuca vulpina dissita*, a forest inhabitant of Isla Coiba, isolated there with its close relatives far distant in South America.

The widely known name, "ovenbird," for the family comes from the rounded, enclosed nest of dried mud characteristic of one of the better known species of south-central South America. Others construct rounded masses of sticks (often spiny) in some of extraordinary bulk for the size of the birds that build them. Some nest in holes in the ground, or in other cavities. Eggs are unmarked, usually white, though in a few species tinted with blue, green, or buff.

The sequence of genera followed is that of Peters (Check-list Birds of the World, vol. 7, 1951).

KEY TO SPECIES OF FURNARIIDAE

1. Bill with culmen straight from base to tip; distal half of mandible curved upward 2
 Bill with culmen curved downward at tip..... 3
2. Foreneck and breast streaked heavily with dull white.
 Streaked xenops, *Xenops rutilans*, p. 104
 Breast plain, unmarked; foreneck streaked lightly and indistinctly.
 Plain xenops, *Xenops minutus*, p. 107
3. Wing with two definite bars..... 4
 Wing without definite bars..... 5
4. Size small, wing less than 60 mm.
 Double-banded soft-tail, *Xenerpestes minlosi umbraticus*, p. 70
 Larger, wing more than 90 mm.
 Lawrence's tufted-cheek, *Pseudocolaptes lawrencii lawrencii*, p. 79
5. Crown wholly or partly bright rufous-brown..... 6
 Crown not bright rufous-brown..... 9
6. Crown wholly rufous-brown..... 7
 Forehead gray, or dusky gray..... 8
7. Entire dorsal surface rufous to cinnamon-brown.
 Rusty-backed spinetail, *Cranioleuca vulpina dissita*, p. 68
 Only the crown and tail rufous-brown, back duller brown.
 Red-faced spinetail, *Cranioleuca erythrops*, adult, p. 65
8. Back and tail grayish brown.
 Pale-breasted spinetail, *Synallaxis albescens latitabunda*, adult, p. 59
 Back and tail dusky to nearly black.
 Slaty spinetail, *Synallaxis brachyura*, adult, p. 62
9. Tail longer than wing..... 10
 Tail not longer than wing..... 12
10. Tail rufous-brown.
 Red-faced spinetail, *Cranioleuca erythrops*, immature, p. 65
 Tail brownish gray, or slaty black..... 11
11. Tail brownish gray.
 Pale-breasted spinetail, *Synallaxis albescens latitabunda*, immature, p. 59
 Tail slaty black..... Slaty spinetail, *Synallaxis brachyura*, immature, p. 62
12. Breast and abdomen spotted with white or buffy white..... 13
 Breast and abdomen streaked, or without markings; not spotted with white 16
13. Spots small and indistinct, restricted on abdomen; sides rufous-brown.
 Ruddy margarornis, *Margarornis rubiginosus*, p. 73
 Spots prominent, including abdomen..... 14
14. Bill longer, 20 mm or more; side of head dark brown.
 Sharp-tailed creeper, *Lochnias nematura nelsoni*, p. 118

- Bill shorter, less than 17 mm; side of head streaked with white, or buffy white 15
15. Throat white..... Beautiful margarornis, *Margarornis bellulus*, p. 71
Throat buff, or cinnamon-buff.
Spotted barbtail, *Premnoplex brunnescens*, p. 75
16. Shafts of rectrices stiff and firm for entire length; bill somewhat flattened, more slender, height at nostril about equal to width..... 27
Shafts of rectrices flexible at distal end; bill heavier, height at nostril decidedly more than width..... 17
17. Tail black, or very faintly rufescent.
Ruddy leaf-gleaner, *Automolus rubiginosus saturatus*, p. 96
Tail distinctly chestnut, rufous, or cinnamon..... 18
18. Wings mainly bright rufous; side of head cinnamon-rufous like throat and chest, except for a plain grayish brown streak behind eye.
Buff-fronted leaf-gleaner, *Philydor rufus rufescens*, p. 92
Wings dull brown or grayish brown; side of head darker than throat, usually streaked 19
19. Wings gray; tail and rump bright cinnamon-brown..... 20
Wings reddish brown; tail and rump chestnut to rufous-brown..... 21
20. Under surface light rufous-brown; back rufous to chestnut; crown only slightly darker than back.
Rufous-rumped leaf-gleaner, *Philydor erythrocerus fuscipennis*, p. 90
Duller above and below; decidedly less rufous except on side of neck and in superciliary behind eye.
Rufous-rumped leaf-gleaner, *Philydor erythrocerus erythronotus*, p. 91
21. A distinct throat patch of yellow, buff, or white, different in color from breast 22
Throat, foreneck, and upper breast similar in color and pattern..... 24
22. Throat patch light yellow.
Lineated leaf-gleaner, *Syndactyla subalaris*, adult, p. 84
Throat patch buff or white..... 23
23. Crown and hindneck definitely streaked with buff, no well-marked superciliary; buff throat patch narrower, with side of neck streaked.
Striped leaf-gleaner, *Hyloctistes subulatus*, p. 82
Crown and hindneck very faintly streaked; a buff superciliary; the white or buff throat patch extending over side of neck.
Buff-throated leaf-gleaner, *Automolus ochrolaemus*, p. 97
24. Smaller; foreneck and upper breast dull yellowish white, faintly bordered with grayish brown; rest of under surface grayish brown faintly lined with dull yellowish white.
Scaly-throated leaf-gleaner. *Anabacerthia variegaticeps*, p. 88
Larger; foreneck and upper breast distinctly cinnamon-buff to rufous; rest of under surface reddish brown..... 25
25. Crown dark rufous with faint shaft lines of pale cinnamon; foreneck and breast not streaked.
Ruddy leaf-gleaner, *Automolus rubiginosus fumosus*, p. 94
Crown dark grayish brown, the feathers edged with black to produce indefinite lines; throat and breast more or less streaked..... 26

26. A postocular streak of rufous; breast rufous, indistinctly streaked; brighter, more reddish brown on back and rump
 Lined leaf-gleaner, *Syndactyla subalaris*, juvenile, p. 85
 No distinct postocular streak; breast streaked heavily with cinnamon-rufous; duller, darker brown on back and rump.
 Streak-breasted leaf-gleaner, *Thripadectes rufobrunneus*, p. 101
27. Throat and upper foreneck white, with the feathers edged with brown or black. Scaly-throated leaf-scraper, *Sclerurus guatemalensis*, p. 115
 Throat rufous, cinnamon, or gray, unmarked. 28
28. Throat gray; a distinct rufous band on lower foreneck and breast.
 Gray-throated leaf-scraper, *Sclerurus albigularis canigularis*, p. 110
 Throat cinnamon to rufous, shading into darker rufous of breast.
 Tawny-throated leaf-scraper, *Sclerurus mexicanus*, p. 111

SYNALLAXIS ALBESCENS LATITABUNDA Bangs: Pale-breasted Spinetail, Canastero Pechiblanco

FIGURE 6

Synallaxis albescens latitabunda Bangs, Auk, vol. 24, July 1907, p. 298. (Boruca, Puntarenas, Costa Rica.)

Synallaxis albescens hypoleuca Ridgway, Proc. Biol. Soc. Washington, vol. 22, April 17, 1909, p. 73. (Natá, Coelé, Panamá.)

Small, slender, with long, pointed tail; throat white, crown and wing coverts cinnamon-rufous.

Description.—Length 140–152 mm. Adult (sexes alike), fore crown to level of the eyes mouse gray, with indistinct darker shaft lines; rest of crown and nape cinnamon-rufous; lesser and middle wing coverts light cinnamon-rufous, the greater coverts in part slightly paler; rest of upper surface grayish brown, with wings and tail edged lightly with warmer brown; anterior lores grayish white; auricular region mouse gray, lined lightly with white; rest of side of head pale mouse gray; chin and upper throat white; lower throat gray to dusky basally, tipped with white, producing an indistinct spot; sides of neck and breast light mouse gray, slightly paler toward center; lower breast and abdomen white; sides, flanks, and under tail coverts light brown; inner margin of wing feathers, and posterior under wing coverts white; rest and edge of wing pinkish buff.

Immature, upper surface duller, plain brown, with the occiput, wings, and outer margins of tail feathers slightly brighter, more rufescent, especially on the wing coverts; under surface buffy brown, paler, verging toward white on throat and abdomen.

An adult female, collected at La Jagua, Panamá, March 21, 1961, had the iris light brown; maxilla dark neutral gray; mandible neutral

gray, slightly paler at the tip; tarsus yellowish brown, the yellowish shade more prominent on the posterior area; toes dull brownish gray.

Measurements.—Males (16 from Chiriquí, Veraguas, Los Santos, Herrera, and Province of Panamá), wing 52.0–54.8 (53.5), tail 68.1–76.5 (72.5), culmen from base 11.2–13.5 (12.7), tarsus 18.2–19.2 (18.6) mm.

Females (10 from Chiriquí, Veraguas, Herrera, and Province of



FIGURE 6.—Pale-breasted spinetail, canastero pechiblanco, *Synallaxis albescens latitabunda*.

Panamá), wing 50.9–53.7 (52.3), tail 65.7–73.1 (70.0, average of 9), culmen from base 12.3–13.4 (12.7), tarsus 18.0–20.0 (19.0) mm.

Resident. Fairly common locally on the Pacific slope from western Chiriquí to the lower Río Bayano in eastern Province of Panamá; to 1250 meters elevation near El Volcán, Chiriquí.

These are birds of open lands, found on savannas and at the borders of swamps and marshes, where there is low growth of spiny, fine-leaved shrubs, or heavy stands of coarse grasses. As they are shy their presence is known usually from their low, complaining calls, or their brief appearance in the branches of the low thorn shrubs

that is their common shelter. In their short flights barely over the tops of this cover, tail and body tilt quickly, and after progress of a few yards, they disappear at once in the dense cover.

The nest is roughly spherical, made of the dry thorny twigs of the low bushes in which it is located, mixed with a few bits of dry grass or reeds, if in a marshy area. The notes of Major-General G. Ralph Meyer describe one found near Pacora, May 21, 1941, as roughly globular, 200 by 280 mm with a tubular entrance tunnel 350 mm in length. Externally, it was approximately 125 mm in diameter, with a narrow passageway only 50 mm wide. The three fresh eggs were white, with measurements of 19.3×15.0 , 19.3×15.5 , and 19.8×15.7 mm. Skutch (Pac. Coast Avif. no. 35, 1969, p. 340) found that both male and female shared the work of nest-building, incubation, and care of the young.

During the rainy season where shallow water stands beneath the thorny bushes that they inhabit, they may be more readily seen. And then, in this period, when they are nesting, males may rest in the open with partly spread tails while they call.

The brown young in their first plumage resemble their parents only in form as their colors differ completely.

The species is one of wide distribution in suitable terrain from southern México through Central America, and South America east of the Andes to Bolivia and northern Argentina.

When Ridgway described the bird of Panamá as a separate race *hypoleuca* he had available only one specimen, a bird collected by H. T. Heyde and Ernesto Lux, March 31, 1889, at Natá in the province of Coclé. The date of collection is toward the end of the dry season when the heat of the sun, unbroken by cloud cover for weeks, is severe. The bird is considerably faded so that it is decidedly paler throughout than any of the series of 30 normal specimens now available. These do not differ from the population of Costa Rica, so that the name *hypoleuca* is placed in synonymy as suggested by Zimmer (Amer. Mus. Nov., no. 861, 1936, p. 14).

SYNALLAXIS BRACHYURA Lafresnaye: Slaty Spinetail, Canastero Pizarroso

Synallaxis brachyurus Lafresnaye, Rev. Zool., vol. 6, October, 1843, p. 290. (Bogotá, Colombia.)

Small and slender, with long, pointed tail; crown and wing cinnamon-rufous; rest of plumage slaty to brownish gray.

Description.—Length 145–160 mm. Adult (sexes alike), forehead, side of head, and back olive to brownish gray; crown, nape, and wings cinnamon-rufous or reddish chestnut, with the tips of flight feathers olive-brown; upper tail coverts more brownish gray; tail olive to grayish olive, with the shafts black; under surface mouse gray to slate, paler on the abdomen and darker on the breast; upper throat streaked narrowly with white; under wing coverts ochraceous-buff, with the inner webs of the flight feathers cinnamon.

Immature, entire upper surface olive-brown; wings rufescent brown, duller than in adults, with the tips sooty black, edged lightly with dull brown; tail sooty black; upper throat grayish white; rest of under surface grayish olive, grayer on the abdomen; under surface of wing as in the adult.

The iris in the adult bird is bright reddish brown.

Though similar in form to the related Pale-breasted Spinetail, this species differs decidedly in darker coloration, call notes, and the haunts that it frequents. In highland areas I have found them most often in the growths of bracken, common at forest borders, and in dense stands in pastures. Lower down they are seen usually in thickets at forest edge, and along the border of swampy areas. While they may range up to a meter or two, when approached they drop down to near ground level, sometimes so rapidly that they appear to tumble. There they move so quietly under cover that it may be several minutes before they are seen. Often also they rest on some hidden perch. The rattling, churring calls given rapidly may suggest the notes of a wren. Another call is a higher pitched double note.

In handling them I have noticed that they have a pungent, musky odor. Occasionally this is so strong that I have detected it from birds moving through leaves nearby.

The species is found from southeastern Honduras through Central America and Colombia to Ecuador, with one apparently isolated form described from Goias, east-central Brazil. Two subspecies occur in Panamá.

SYNALLAXIS BRACHYURA NIGRIFUMOSA Lawrence

Synallaxis nigrifumosa Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, 1865, p. 180. (Greytown, Nicaragua.)

Characters.—Darker in color throughout; back darker brown, under surface decidedly darker, and the rufous color of crown and wings darker.

Measurements.—Males (14 from Bocas del Toro and Chiriquí), wing 55.0–59.8 (56.5), tail 65.0–75.8 (72.6), culmen from base 14.5–16.8 (15.6), tarsus 20.4–21.9 (21.1) mm.

Females (10 from Nicaragua, Costa Rica, and Bocas del Toro), wing 52.2–56.4 (54.6), tail 64.0–72.9 (69.3), culmen from base 14.5–16.6 (15.5), tarsus 20.0–21.7 (21.1) mm.

Resident. Found locally in the Tropical and lower Subtropical zones on the Pacific slope from the Costa Rican boundary in western Chiriquí (Concepción, 450 meters elevation, Santa Clara, El Volcán at 1350 meters); and on the Caribbean side in western Bocas del Toro (Almirante, Cocoplum, Río Changuena at 725 meters, Changuinola, Cricamola); and northern Veraguas (Río Calovévora).

Two specimens collected in Chiriquí by Arcé (without other data), one in the British Museum and one in the U.S. National Museum, are early reports from this area. Mrs. Davidson (Proc. California Acad. Sci., 1938, p. 258) secured male and female at Concepción, December 7 and 12, 1929. Worth (Auk, 1939, p. 307) mentioned an unoccupied nest seen at 1220 meters on the Río Gariché below El Volcán. In the course of my own field studies I have found this spintail fairly common from El Volcán west toward Costa Rica, ranging to 1350 meters. Lower, near Buena Vista from 600 to 700 meters, it was common, but though I heard it calling daily it was seen only through careful watching, as it remained hidden in dense thickets or stands of bracken.

Two eggs in a set in the U.S. National Museum, collected by Austin Smith at Puerto Jiménez on Golfo Dulce, Costa Rica, July 18, 1922, are somewhat pointed, short subelliptical in form, and are dull white. They measure 21.2×16.5 , and 21.5×16.5 mm. A nest painted by Don Eckelberry (Condor, 1960, opposite p. 413), from one seen in Costa Rica, was made of coarse sticks, with a small opening leading to the inside, placed in a thorny shrub. A photo by Skutch (Nature Mag., vol. 10, 1947, p. 70) shows a similar globular structure, with entrance through a tunnel at one side.

In January and February 1958, these birds were common around Bahía Almirante and near Changuinola, recorded mainly, as usual, from their constant churring chatter. Occasionally one came through shrubbery and vines covering a fence beside our house near the water in the town of Almirante. One was observed carrying sticks for a nest on January 23. Males collected in February and early March

were in breeding condition. The Río Calovévora record is from an immature bird taken by Benson.

With an excellent series of specimens taken in Chiriquí and in Bocas del Toro I find that birds from the two areas both represent *nigrifumosa* though currently those of Chiriquí have been placed with *chapmani*. They show only very slight variation toward that race.

(The author's separates of the paper in which *nigrifumosa* was described, through a printer's error, had the pages wrongly numbered, the reference in the separate to this form being listed as on page 181 instead of 180 as in the original source.)

SYNALLAXIS BRACHYURA CHAPMANI Bangs and Penard

Synallaxis brachyura chapmani Bangs and Penard, Bull. Mus. Comp. Zool., vol. 63, June 1919, p. 25. (Jiménez, Valle, Colombia.)

Characters.—Definitely lighter colored throughout, the chestnut of crown and wings being paler, the back lighter brown, and the under surface lighter gray, with the white on the throat more extensive. The average size is very slightly greater.

Measurements.—Males (10 from the Canal Zone, Darién, and San Blas), wing 56.0–65.3 (59.2), tail 67.6–81.7 (74.3, average of 9), culmen from base 15.7–17.5 (16.4, average of 9), tarsus 21.4–24.4 (22.8) mm.

Females (11 from San Blas and Darién), wing 55.6–60.3 (57.8), tail 65.4–71.8 (69.8, average of 9), culmen from base 14.7–16.6 (15.8, average of 10), tarsus 21.4–23.0 (22.3) mm.

Resident. Rare in the lower Chagres Valley in the Canal Zone; fairly common in western San Blas near Mandinga; common in southeastern Darién on the upper Río Jaqué.

The first record of this race for Panamá is by Sclater and Salvin (Proc. Zool. Soc. London, 1864, p. 354) of specimens received from McLeannan at Lion Hill. There are three from this collector in the British Museum (Natural History) and two in the U.S. National Museum. Lawrence (Ann. Lyc. Nat. Hist. New York, vol. 7, 1861, p. 319) quotes a note from Galbraith, collecting with McLeannan, that they were common. Bangs (Proc. New England Zool. Club, 1900, p. 26) reported five taken at the same locality in March 1900. They now are rare, as the last specimen record is by Goldman who collected an immature female there February 6, 1912. At Mandinga,

in the western San Blas, I found them common in January and February 1957. In Darién they are fairly common on Cerro Pirre, where Goldman found them in 1912, Benson in 1928, and I in 1961. I found them common also on the upper Río Jaqué in 1947, but did not see them lower down near the mouth of the river. The race ranges through western Colombia to western Ecuador.

Stomachs that I have examined have held small beetles of several families, a variety of hemiptera, fly larvae, bits of caterpillars, and of spiders, including eggs.

An egg of the allied *Synallaxis b. brachyura* collected by Salmon at Remedios, Antioquia, reported by Sclater and Salvin (Proc. Zool. Soc. London, 1879, p. 521) is recorded as "pale greenish blue" with measurements of 21.6×16.5 mm.

**CRANIOLEUCA ERYTHROPS (Sclater): Red-faced Spinetail,
Coliaguda Cariroja**

Synallaxis erythroops P. L. Sclater, Proc. Zool. Soc. London, pt. 28, May 1860, p. 66. (Pallatanga, Ecuador.)

Small; long-tailed and slender; crown and sides of head russet.

Description.—Length 145–160 mm. Adult (sexes alike), top, nape, and sides of head, including the malar region, cinnamon-rufous; hindneck, back, rump, and upper tail coverts olive-brown; wing coverts, wings, and tail cinnamon-rufous, becoming darker, more reddish brown on the primaries, which also are dusky on the inner webs and toward the tips; under surface light to buffy olive; flanks and under tail coverts, and in some the abdomen, tinged with reddish brown; under wing coverts ochraceous-buff; inner margin of webs of primaries and secondaries pinkish buff.

Immature, crown olive-brown like back; a narrow superciliary line russet; sides of head and ramal area dull reddish brown, with the posterior auricular area dark olive; somewhat lighter, faintly buffy on under surface, with the flanks and under tail coverts more reddish brown.

This spinetail, a bird of the Subtropical Zone in the mountains, as a species is found in Costa Rica and western Panamá, appears again in Darién, and then ranges from western Colombia south to western Ecuador. It is local, but fairly common in the western end of its range; rare and little known from Darién southward. Two races are recorded from Panamá, one in the western, the other in the eastern mountains.

Vaurie (Class. Ovenbirds, 1971, pp. 11, 22–25) has merged the genus *Cranioleuca* Reichenbach, 1853, with *Certhiaxis* Lesson, 1844, using the latter name for the combined group. In his discussion he seems to justify the action mainly on the location and form of the nest, with some additional data. *Certhiaxis cinnamomea*, as I have seen it in the Chaco in northern Argentina and Paraguay, and in Venezuela, has lived mainly around open lagoons and similar marshy areas. The various species of *Cranioleuca* that I have encountered in Central and South America have been more birds of the forest or, in more open country, of thickets and heavy stands of taller herbaceous plants. Wing form seems somewhat different in the two groups, and there appear other differences. It seems preferable to recognize those of Panamá under the current genus name *Cranioleuca*, until all are better known in detail.

CRANIOLEUCA ERYTHROPS RUFIGENIS (Lawrence)

Synallaxis rufigenis Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 9, 1868, p. 105. (Costa Rica.)

Characters.—Reddish brown of crown, side of head, wings, and tail somewhat paler and brighter; crown cap shorter, not quite reaching the posterior border of the crown; under surface darker, grayer.

An adult male, collected February 26, 1965, near Barriles, Chiriquí, had the iris reddish brown; maxilla and tip of mandible fuscous-black; base of mandible dull reddish brown; tarsus and toes dull brownish green, with the lower surface of the toe pads dull yellow; claws brownish neutral gray.

An adult female, taken March 1, 1954, on the Silla de Cerro Pando, west of El Volcán, Chiriquí, had the iris light brownish red; maxilla dusky neutral gray; tip of mandible pale neutral gray; base of mandible vinaceous; tarsus and toes, including the claws, vetiver green.

Measurements.—Males (10 from Chiriquí), wing 65.9–70.9 (68.5), tail 67.5–74.8 (71.7), culmen from base 14.1–16.4 (15.1), tarsus 18.0–19.7 (18.9) mm.

Females (10 from Chiriquí), wing 64.4–69.2 (66.2), tail 65.4–73.4 (69.2), culmen from base 13.9–15.9 (14.8), tarsus 18.8–19.5 (19.1) mm.

Resident. Fairly common in the subtropical forests on Volcán Barú, from 1200 to 1900 meters elevation, ranging west to the Costa Rican boundary; recorded eastward at Chitira, Veraguas.

Male and female, taken at Chitra, February 13 and March 13, 1926, by R. R. Benson, are slightly darker than those from Chiriquí.

These properly are birds of forest or forest edge, but sufficiently adaptable to range also in low or tall second growth, or in border thickets. Less often they are seen in the tree crown in higher forest. They are found alone, or in pairs in the nesting season (which appears to begin in February); rarely with the small flocks of forest species that feed in company. They move quietly but actively, climbing through masses of creepers or over small branches. In general they are silent, only occasionally giving low, somewhat harsh calls.

On March 17, 1960, beyond the Quebrada Barriles, near the Río Chiriquí Viejo below El Volcán, I found a pair at a ball-shaped nest swinging at the end of a creeper 10 meters from the ground in high second growth. I had hoped that this was in use, but found it empty, and so loosely made that it fell apart when I attempted to collect it.

In the mountains of Costa Rica, Skutch (Pac. Coast Avif. no. 35, 1969, pp. 331-334) found two nests, both large rounded structures, built of green moss, suspended from the ends of drooping branches well elevated above the ground. Each had an entrance near the bottom. Both members of the pair worked at nest-building, incubation, and subsequent care of the young. He was unable to reach the nest to examine the eggs.

CRANIOLEUCA ERYTHROPS GRISEIGULARIS (Ridgway)

Acrochilus erythrops griseigularis Ridgway, Proc. Biol. Soc. Washington, vol. 22, April 17, 1909, p. 72. (San Antonio, 5800 feet, Río Cali, Valle, Colombia.)

Characters.—Darker; crown deeper reddish brown, this color, which forms a cap, extended slightly farther posteriorly to the upper margin of the hindneck; central tail feathers somewhat more reddish brown; somewhat paler underneath.

Measurements.—Males (10 from Darién and western Colombia), wing 64.6-71.0 (67.2), tail 62.3-67.7 (64.2, average of 9), culmen from base 13.1-15.2 (14.2), tarsus 18.7-19.8 (19.2) mm.

Females (10 from western Colombia), wing 60.3-64.7 (63.3), tail 53.9-63.6 (60.1, average of 9), culmen from base 12.7-15.2 (14.5), tarsus 18.1-19.2 (18.6) mm.

Resident. Known in Panamá from two specimens, a male from Cerro Malí at 1460 meters, and a female from Cerro Pirre at 1580 meters.

This little-known population of the Darién mountains was mentioned by Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 338) with the statement "Mt. Pirri, Darien (fide Chapman)" and no other comment. This must refer to a female taken May 1, 1912, by E. A. Goldman on Cerro Pirre, at 1580 meters elevation near the head of Río Limón. The collector, in a brief manuscript note, said of it "only one shot in the top of a very tall tree." The bird is in somewhat worn plumage with the central tail feathers in molt. There is in addition a male sent to me by Dr. Pedro Galindo, taken on June 3, 1963, at 1460 meters on Cerro Malí, a spur of Cerro Tacarcuna, Darién. The two specimens are slightly darker on the lower surface, and also faintly darker on the back than *rufigenis* from Chiriquí and Costa Rica. They are assigned to *C. e. griseigularis* Ridgway from western Colombia, but with better material, may prove to be separable as a distinct subspecies.

Alden Miller (Univ. California Publ. Zool., vol. 66, 1963, pp. 21–22) found a nest of this race at San Antonio, Valle, Colombia, on March 17, 1958. This he described as "a bulky, hanging, covered mass of vegetation on a hanging limb roughly a foot and a half in diameter and 30 feet above the ground." Oates and Reed (Cat. Coll. Birds Eggs Brit. Mus., vol. 3, 1903, p. 177) list two eggs collected by T. K. Salmon near Frontino, Antioquia, Colombia. These, according to Schönwetter (Handb. Ool., pt. 14, 1967, p. 27) are white, and measure 22.4×15.2 , and 24.1×16.5 mm.

CRANIOLEUCA VULPINA DISSITA Wetmore: Rusty-backed
Spinetail, Coliaguda Rojiza

Cranioleuca vulpina dissita Wetmore, Smithsonian Misc. Coll., vol. 134, no. 6, July 8, 1957, p. 55. (Isla Coiba, Panamá.)

Small, long-tailed and slender; russet brown above, buffy below, side of head dull buff.

Description.—Length 130–140 mm. Adult (sexes alike), spot on either side of forehead behind the nostril, and lores white; crown russet; back and scapulars tawny; wings and tail russet; rump snuff brown; narrow superciliary pinkish buff; sides of head dull cream-buff, faintly streaked with dusky; throat white; sides of neck, breast, and abdomen light buffy brown; sides and flanks somewhat darker; under tail coverts tawny; under wing coverts and edge of wing cinnamon-buff with edgings of tawny; inner webs of primaries and

secondaries dark mouse gray, edged widely toward base with dull tawny.

Measurements.—Males (3 specimens), wing 62.8–65.8 (64.1), tail 59.6–61.4 (60.3), culmen from base 14.0–15.4 (14.8), tarsus 17.2–18.0 (17.7) mm.

Females (3 specimens), wing 61.6–62.4 (61.9), tail 58.2–60.3 (59.5), culmen from base 14.6–15.3 (15.1), tarsus 17.0–17.8 (17.4) mm.

Resident. Fairly common, in forested areas on Isla Coiba.

During January and February 1956, I found these interesting birds from the borders of the swampy woodlands along the lower Río Catival inland to the higher forest of the uplands, ranging through the borders of thickets and in the forest up into the lower branches below the high tree crown. They were seen singly, and usually were difficult to find in the dense cover of leaves of the forest tangles that they frequented. Their method of progression was by climbing through the denser cover, at times up vertical tree trunks (but without using the tail as a brace), rather than over the more open branches, a method of movement for which their large, strong feet are definitely suited. On the whole they were like the Red-faced Spinetail, *Cranioleuca erythrops rufigenis* of the Subtropical Zone forests of the Volcán de Chiriquí.

The general appearance is that of the forms now allocated under the species name *Cranioleuca vulpina* (Pelzeln), found mainly in Brazil, with two forms recorded north to the valley of the Orinoco in Venezuela, and eastern Colombia. From these the bird of Isla Coiba differs in brighter brown coloration on the lower surface. While relationship to the *vulpina* group is evident, it is possible that further information may demonstrate that the bird of far distant Coiba is a separate species.

Two sets of three eggs each of the typical form *Cranioleuca vulpina vulpina* in the U.S. National Museum were collected by Ernest G. Holt at Conceição de Araguaya, southeastern Pará, Brazil, November 15 and 17, 1926. The nests were irregular accumulations of rootlets and other material placed in bushes on the river bank, one 20 centimeters in diameter, located a meter and a half above the ground, the other 25 by 35 centimeters, elevated 4 meters or so. The nest chambers were cavities in the lower portion of the mass, "lined with finely shredded inner bark and a few lichens." In each set

one egg was fresh, the other two slightly incubated. The eggs are plain white, without gloss, in form subelliptical, two in one set being very slightly pointed at the small end. One set measures 20.2×15.8 , 20.9×15.1 , 21.3×15.9 , the other in which one egg is slightly damaged 20.4×15.9 , and 20.7×15.6 . There should be noted also the account of Dr. Emilia Snethlage (Journ. f. Orn., 1935, pp. 541–542) of eggs attributed to this nominate race found on the rio Tapajoz, Brazil, that are described as “grünlich weisse.”

XENERPESTES MINLOSI UMBRATICUS Wetmore:
Double-banded Soft-tail, Rabiblando Bifajeado

Xenerpestes minlosi umbraticus Wetmore, Smithsonian Misc. Coll., vol. 117, no. 2, September 25, 1951, p. 4. (Punto Muchimbo, Río San Juan, Valle, Colombia.)

Small, dark above, with white line over eye, two white wing bars, yellowish white below; warblerlike in actions.

Description.—Length 110–120 mm. Adult (sexes alike), fore crown dull black, shading posteriorly to blackish mouse gray on the hindneck, edged in the latter area with deep mouse gray; back and scapulars dark olive-gray; rump and upper tail coverts light grayish olive; primaries and secondaries sooty black, edged faintly with sooty brown; wing coverts blackish mouse gray, the middle and greater series tipped with white to form two white wing bars; middle rectrices and outer webs of others deep olive-gray, the inner webs of the latter deep mouse gray, the two outermost edged on the inner web with pale olive-gray; lores olive-buff; a narrow, but prominent, superciliary line white; side of head deep olive-buff, darker behind the auricular area; below dull white, washed indistinctly with pale yellow; a few light flecks of dark neutral gray on the sides of the neck and of the upper breast; under tail coverts olive-buff; bend of wing and axillars Marguerite yellow; under wing coverts white; inner webs of primaries edged with dull white.

Measurements.—Males (the type and another from Darién), wing 57.1–57.3 (57.2), tail 41.6–45.6 (43.6), culmen from base 13.4 (1 specimen), tarsus 15.3–16.0 (15.6) mm.

Females (2 from Darién), wing 52.5–54.9 (53.7), tail 42.2–42.6 (42.4), culmen from base 12.8–13.7 (13.2), tarsus 14.8–15.1 (14.9) mm.

Resident. Rare, known in Darién from the lower Tuira Valley, the lower Río Sambú, and Garachiné.

The first record in Panamá of this little-known bird is a female taken by W. B. Richardson on the Río Cupe at Cituro, a short distance inland from Boca de Cupe, on May 7, 1915. This was listed incorrectly by Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 338) from "Tacarcuna," as Cituro is on the southern side of the Tuira Valley toward the base of Cerro Pirre. On February 25, 1927, Crosby and Griscom collected a pair near the head of tidewater on the Río Sambú. Griscom (Amer. Mus. Nov., no. 282, 1927, p. 6) wrote that the "two birds were with a flock of Warblers, small Tanagers and Honey Creepers in a small flowering tree on the edge of an Indian clearing, and were acting and feeding just like Warblers." Dawson Feathers, with the George Vanderbilt Expedition for the Academy of Natural Sciences, collected one (of uncertain sex) at Garachiné, Darién, April 20, 1941, "in low country, near the ocean." These are the records known at present.

The race, described from Punto Muchimbo, Valle, on the Río San Juan, ranges in western Colombia east to the Río Sinú. It differs from the nominate subspecies of eastern Colombia (described from Bucaramanga, Santander) in decidedly darker color on the upper surface, especially on the head, where the light streaking on the fore crown in the nominate race is faintly or not at all indicated. (For other comments see Vaurie, Oiseau Rev. Française Orn., 1971, p. 124).

MARGARORNIS BELLULUS Nelson: Beautiful Margarornis,
Trepador Bello

Margarornis bellulus Nelson, Smithsonian Misc. Coll., vol. 60, no. 3, September 24 (27), 1912, p. 12. (Head of Río Limón, Cerro Pirre, Darién, Panamá.)

A tree creeper of sparrow size, rusty brown, with white throat and under surface heavily spotted with white.

Description.—Length 140–150 mm. Tail as in *M. rubiginosus*. Adult (sexes alike), crown and hindneck dark olive-brown, each feather edged with dull black; forehead spotted lightly with dull white; back and lesser wing coverts dull reddish brown, with indistinct shaft lines of black; greater wing coverts, outer webs of primaries and secondaries, rump, upper tail coverts, and tail rufous-chestnut; inner webs of primaries and secondaries and shafts dusky; concealed bases of inner primaries and secondaries cinnamon-rufous, narrow superciliary dull white, changing to buff posteriorly; side of

head and ramal area dusky, lined more or less with white behind the eye; throat and upper foreneck white; rest of under surface dull reddish olive-brown, marked throughout by elongated spots of white or very pale yellow, each bordered narrowly with black; proximal half of under wing coverts dusky; distal half and edge of wing dull white, mixed slightly with dusky.

A female, taken on Cerro Malí, Darién, February 27, 1964, had the iris dark mouse brown; maxilla, except the cutting edge, fuscous-brown; edge of maxilla and mandible pinkish neutral gray, paler and more reddish on mandibular rami; tarsus dark brown, with the toes and claws somewhat grayer.

Measurements.—Males (5 from Darién), wing 71.6–77.8 (74.7), tail 65.1–71.0 (67.7), culmen from base 14.6–15.7 (15.0), tarsus 19.6–21.2 (20.1, average of 4) mm.

Females (3 from Darién), wing 73.1–74.9 (73.8), tail 66.5–69.0 (67.6), culmen from base 15.2–16.0 (15.7), tarsus 19.1–20.5 (19.7) mm.

Resident. Rare on the higher levels of Cerro Pirre and Cerro Malí, Darién.

The four males and two females from which this little-known bird was described were collected by E. A. Goldman on April 23 and May 1, 1912, at elevations of 1370 to 1580 meters near the head of Río Limón, on Cerro Pirre. A brief note by the collector on May 1 records that three were together in the top of a very tall tree, and that another was taken on a tree trunk.

On June 5, 1963, Dr. Pedro Galindo collected a male at 1460 meters, on Cerro Malí, near where that ridge joins the main mass of Cerro Tacarcuna. On February 27, 1964, I caught a female near our camp in a mist net set on this same ridge, at an elevation 30 meters lower. The stomach of this individual (which was not in breeding stage) was filled with finely ground remains of small insects.

Examination of the series of eight, now in the U.S. National Museum, verifies the observations of Dr. Nelson in the original description, of the close resemblance of *bellulus* to *Margarornis squamiger perlatus* of the higher levels of the Andes in Colombia. The differences seen in the bird of Darién in duller reddish brown above, and in reduction in number and size of the light spots on the lower surface, are definite in comparison with the series of more than 50 *perlatus* now available. These include representation from the northern area of the Cordillera Occidental in Colombia, where the two populations have their nearest approach. The duller coloration

and reduced spotting in *bellulus* are so definite, and the geographic separation by the broad area of the lowlands of the lower Atrato Basin so complete, that the two, while allied, are best grouped under separate species names, united in the bond of a superspecies.

MARGARORNIS RUBIGINOSUS Lawrence: Ruddy Margarornis,
Trepador Colorado

Small; reddish brown with white throat; often climb like woodpeckers.

Description.—Length 150–160 mm. Tail long, graduated, with tip elongated, the projecting shafts flexible, and only slightly stiffened; outer rectrix about three-fourths the length of the central pairs. Adult (sexes alike), crown and hindneck chestnut-brown; forehead slightly paler; rest of upper surface, including most of wings and tail, cinnamon-rufous; inner webs and tips of primaries dusky; side of head, including malar region, wood brown; slightly marked buff superciliary streak; chin and throat dull white; rest of under surface cinnamon-buff, paler centrally, darker on sides and under tail coverts. In the nominate race upper breast spotted with pale buffy white, the spots minutely tipped with black; paler feathers of lower neck and upper breast barred slightly with dusky; under wing coverts buff, darker externally, slightly marked with dusky-brown; inner webs of primaries and secondaries edged narrowly with ochraceous-buff.

The species is one that is little known in Panamá, where it is found in the western mountains, with two subspecies recognized.

MARGARORNIS RUBIGINOSUS RUBIGINOSUS Lawrence

Margarornis rubiginosus Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, 1865, p. 128. (San José, Costa Rica.)

Characters.—Paler rufescent brown on back, wings, and tail; crown somewhat duller; under surface lighter, more grayish on center of breast and sides; breast definitely spotted with white.

A female collected near 2400 meters elevation on the west face of Volcán Barú, March 11, 1965, had the iris dark brown; base of maxilla, including the nasal opercula, fuscous-brown; rest of maxilla dull Verona brown, darker on the tip of the culmen; mandible pinkish white; tarsus, toes, and claws dark grayish brown.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 74.2–79.0 (77.1), tail 71.8–79.1 (74.3), culmen from base 13.2–14.7 (13.9), tarsus 20.0–21.4 (20.5) mm.

Females (10 from Chiriquí and Costa Rica), wing 73.6–77.2 (75.8), tail 70.5–78.8 (74.0, average of 9), culmen from base 13.0–14.7 (13.9), tarsus 20.0–20.5 (20.2, average of 9) mm.

Resident. Uncommon in forested areas in the higher mountains of western Chiriquí from the eastern side of the great volcano west to the Costa Rican boundary.

In my few encounters I have found these quiet little birds in heavy forest on the higher mountain slopes, ranging alone or occasionally in pairs. Some have worked over dead leaves lodged among parasitic plants, or through the mossy growth covering the branches. Others have climbed up vertical tree trunks, with the tail braced, woodpecker-fashion, as a support. In this they resemble woodcreepers, though it will be noted that the tail tip is more flexible. Their actions on the whole, however, except for this use of the tail, are more those of a wren.

In Costa Rica, where they appear to be more common, Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, pp. 203–204) has found them at times moving in mixed bands of small forest birds. Their calls, described as “thinly whistled,” or chipping, resemble in general those of the other species that are their companions. They range in Panamá in the central highlands and along the Cordillera de Talamanca. As they are found on the Caribbean slope, it is probable that they will be encountered on the higher inland mountains of Bocas del Toro when these are better known.

MARGARORNIS RUBIGINOSUS BOULTONI Griscom

Margarornis rubiginosa boultoni Griscom, Amer. Mus. Nov., no. 141, October 31, 1924, p. 4. (Cerro Flores, 1675 meters, eastern Chiriquí, Panamá.)

Characters.—Brighter, more rufous-brown above; head darker, distinctly rufescent; lower surface brighter, more rufous; white spotting on breast reduced in amount, or in some absent; slightly smaller.

Measurements.—Males (2 from Veraguas) wing 70.0, 72.8; tail 62.0, 67.2; culmen from base 13.5, 14.4; tarsus 19.6, 19.6 mm.

Females (6 from eastern Chiriquí and Veraguas), wing 69.6–72.0 (71.2), tail 64.5–72.7 (67.2), culmen from base 14.0–15.5 (14.7, average of 5), tarsus 19.2–19.8 (19.6) mm.

Resident. Little known; found in the mountains of eastern Chiriquí and Veraguas.

The race was described from two females collected at a high camp on Cerro Flores, in eastern Chiriquí. The elevation given as “6000

feet" in the original description seems to be wrong as both the type and the female taken with it have the labels marked 5,500 feet (1675 meters). The race was named for Rudyerd Boulton, Griscom's companion on the expedition during which it was collected.

In the original description Griscom mentions a specimen in the British Museum, a male, collected by Arcé in "the mountains back of Calobre," a specimen that I have examined. In February and March 1924, Benson secured a male and four females near Chitra, Veraguas, at 1220 to 1340 meters elevation.

**PREMNOPLEX BRUNNESCENS (Sclater): Spotted Barbtail,
Fafao Punteado**

FIGURE 7

Margarornis brunnescens P. L. Sclater, Proc. Zool. Soc. London, pt. 24, June 16, 1856, p. 27, pl. 116. (Bogotá, Colombia.)

Small, but rather robust; dark olive-brown, heavily spotted with dull white to buff on under surface.

Description.—Length 135–145 mm. Outer rectrix much less than half the total length of the tail. Adult (sexes alike), crown and hindneck olive to grayish olive, the feathers edged with dusky; forehead spotted or streaked with buff; rest of dorsal surface dull brown, with faintly indicated edgings of dusky; upper back and scapulars in some with shaft lines of pale buff; some also with the wing coverts spotted with buff, tipped with black; wings somewhat more reddish brown; tail dark dull brown, verging toward black; lores, and the slightly marked superciliary line, buff; side of head dusky-gray lined with pale buff; chin and throat deep buff, the feathers margined lightly with dusky; rest of under surface olive, spotted and lined heavily with buff to buffy white with dusky margins, the light markings largest on the center of the breast; under tail coverts more reddish brown; under wing coverts pale buff to grayish white; a slight cinnamon edging on inner webs of primaries and secondaries.

As a species this bird is widely distributed in mountain forests from Costa Rica through Panamá to Colombia, northern Venezuela, Ecuador, Perú, and Bolivia. Through the present study, based on larger series of specimens than available earlier, two forms are recognized in Panamá. Typical *brunnescens*, ranging in the Andes of Colombia south to Perú, compared to the populations of Panamá, is darker above, with the crown more olive, the tail blacker, and the

rest of the dorsal surface darker brown. On the lower surface the throat and the markings on the foreneck and breast are darker buff.

The Spanish name in the heading above is the one by which this species is known in Venezuela.

The action of Vaurie (Classification Ovenbirds, 1971, pp. 13, 34)



FIGURE 7.—Spotted barbtail, fafao punteado, *Premnoplex brunnescens*.

in merging the genus *Premnoplex* with *Margarornis* needs further study. In the wing not only are the primary feathers shorter, but this same distinction holds in the supporting skeleton in the bones of humerus, forearm, and hand, these being definitely weaker in *Premnoplex* than in *Margarornis rubiginosus* and *M. squamiger*. Body size also is less. It seems appropriate to continue use of *Premnoplex* as a separate genus pending further information.

PREMNOPLEX BRUNNESCENS BRUNNEICAUDA (Lawrence)

Margarornis brunneicauda Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, May 1865, p. 130 (in text). (Costa Rica.)

Premnoplex brunnescens distinctus Griscom, Amer. Mus. Nov., no. 280, September 10, 1927, p. 5. (Chitra, 4000 feet, Veraguas, Panamá.)

Premnoplex brunnescens mionophilus Wetmore, Smithsonian Misc. Coll., vol. 117, no. 2, September 25, 1951, p. 6. (Cerro Campana, Province of Panamá, Panamá.)

Characters.—Somewhat lighter, faintly less reddish brown above, including the crown.

On the specimen label of a male in the British Museum (Natural History), taken at Cachí, above the Río Reventazón, Costa Rica, the collector, C. J. Lankester, noted the iris as dull brown; bill black; feet fleshy horn.

Measurements.—Males (18 from Chiriquí, Bocas del Toro, Veraguas, and western Province of Panamá), wing 60.5–67.4 (63.1), tail 55.1–69.5 (60.3), culmen from base 14.6–16.4 (15.7), tarsus 18.9–20.0 (19.4, average of 17) mm.

Females (17 from Chiriquí, Veraguas and western Province of Panamá), wing 60.0–63.0 (61.5), tail 51.4–61.8 (57.8), culmen from base 15.4–16.8 (16.0), tarsus 18.5–19.7 (19.3) mm.

Resident. Found in mountain forests, from western Chiriquí (1200 to 2150 meters) east to the end of the mountain chain on Cerro Campana (900 meters); reported on the Caribbean side on the upper Río Changuena (730 meters), Bocas del Toro, and Calovévora, northern Veraguas.

I have seen these birds mainly in cloud forest or in dense, more humid stands elsewhere, usually where branches and trunks were grown with moss and epiphytes. While these are usual haunts the birds are found also in more open stands, even occasionally in second growth. In the higher levels three or four may move about with the mixed bands of small birds frequent in tropical woodlands. Always the barbtails are quiet and inconspicuous, not seeming especially timid, but usually difficult to follow because of rough terrain. The call is a low chipping note. In the trees they work along the smaller branches, searching mouselike through growths of mosses and large epiphytes, or they climb the vertical trunks, moving easily, aided by the tail braced against the bark. In this the projecting tips of the vanes, while flexible, are stiff enough to afford firm support. They seem to range mainly over the lower branches rarely going into the high tree crown. They may be caught occasionally in mist nets near the ground.

Dr. Alexander Skutch (Publ. Nuttall Orn. Club, no. 7, 1967, pp. 64–67) gives an interesting account of a nest found in dense forest in southern Costa Rica. The structure “composed of mosses, liverworts, and fine, dark-colored rootlets” was placed in the side of a rotting log that had fallen across a small stream. A rounded entrance tube (figured with the description) led upward to a chamber that held two white eggs, examined through a small mirror illuminated by a flashlight. Both parents were noted entering the nest, so that apparently they shared in incubation. When in a few days the eggs disappeared his observations came to an end. He included other data made with Paul Schwartz in Venezuela, in which a related subspecies was found at night sleeping in a nest of similar form.

Oates and Reid (Cat. Coll. Birds Eggs Brit. Mus., vol. 3, 1903, p. 182) list an egg in the Crowley collection from Colombia that is “closely elliptical in shape and devoid of gloss.” Schönwetter (Handb. Ool., pt. 14, 1967, p. 30) gives its measurements as 21.6×16.8 , and of another egg in the Nehr Korn collection as 21.0×16.5 mm. These are listed as of the nominate form *Premnoplex b. brunnescens*.

With more extensive series for examination, and a clearer understanding of the slight variations found in shades of color (including the foxing in older specimens), the variations on which subspecies have been described from Veraguas and Cerro Campana now are recognized as of only individual nature. The population that ranges in the mountain chain from Costa Rica to terminate at the lowlands in the center of the Isthmus is to be recognized as one geographic race.

PREMNOPLEX BRUNNESCENS ALBESCENS Griscom

Premnoplex brunnescens albescens Griscom, Amer. Mus. Nov. no. 280, September 10, 1927, p. 5. (East slope, Cerro Tacarcuna, head of Río Cutí, Chocó, Colombia.)

Characters.—Very slightly browner above; buff of throat faintly paler.

A male taken on Cerro Malí, Darién, February 22, 1964, had the iris brown; maxilla and cutting edge of mandible black; rest of mandible very pale pinkish white; tarsus and toes fuscous; claws fuscous-black.

Measurements.—Males (6 from Darién and northwestern Colombia), wing 58.2–63.2 (60.0), tail 54.5–64.4 (57.1), culmen from base 15.5–16.2 (15.8, average of 5), tarsus 18.8–19.9 (19.3) mm.

Females (7 from Darién and northwestern Colombia), wing 56.8–

64.0 (60.3), tail 48.8–58.5 (56.2), culmen from base 15.1–16.7 (16.2), tarsus 18.0–19.7 (18.9) mm.

Resident. Rare, on the higher slopes of Cerro Pirre, Cerro Malí, and Cerro Tacarcuna, Darién.

This race was first collected by E. A. Goldman who secured four males and three females at the head of Río Limón on Cerro Pirre from April to June, 1912, at elevations of 1370 to 1580 meters. His notes record them as climbing the trunks of small trees. Between April 3 and 13, 1915, H. E. Anthony secured four at 1400 meters on the head of the Río Cutí, on the eastern slope of Cerro Tacarcuna across the boundary in Chocó, Colombia, these serving as the base for Griscom's description. Pedro Galindo secured one on Cerro Malí, a spur of Tacarcuna, in Darién on May 28, 1963. The following year I collected male and female there on February 22 and 27. Two others taken on February 14 and 18 by C. O. Handley, Jr., were preserved in formaldehyde. In the stomach of one of those collected on Pirre by Goldman I found finely ground fragments of Scarabaeid and Brenthid beetles, bits of ants and other hymenoptera, roach egg cases, and spiders.

PSEUDOCOLAPTES LAWRENCII LAWRENCII Ridgway:
Lawrence's Tufted-cheek, Cotí Castaño

Pseudocolaptes lawrencii Ridgway, Proc. U.S. Nat. Mus., vol. 1, 1878 (1879?), pp. 253, 254. (La Palma de San José, and Navarro, Costa Rica.)

Pseudocolaptes lawrencii panamensis Griscom, Amer. Mus. Nov., no. 141, October 31, 1924, p. 4. (Cerro Flores, 6000 feet elevation, eastern Chiriquí, Panamá.)

Size medium, brownish, with white throat, and a tuft of elongated buffy feathers on either side of the neck. Adult (sexes alike), crown dusky, streaked and tipped narrowly with pale brown; hindneck similar but with streaking broader; back and scapulars tawny-brown tipped faintly with dusky; rump and upper tail coverts tawny-rufous; tail cinnamon-rufous, with feather shafts chestnut; lesser wing coverts tawny-brown, with centers dusky; middle and greater coverts black, tipped with ochraceous; inner secondaries cinnamon-rufous; rest of secondaries and primaries black to brownish black, with the outer webs edged indistinctly with cinnamon-rufous; lores indistinctly grayish white; side of head dull black, lined narrowly with dull white; an indefinite buffy line behind eye; chin, throat, and side of neck pale buff, feathers of the latter area distinctly elongated in a projecting tuft; lower foreneck and upper breast pale buff edged with dusky

or olive; lower breast and abdomen dull buff, with the partly concealed feather bases dull gray; flanks and under tail coverts cinnamon-brown; under wing coverts ochraceous-buff; edge of wing buff; inner margins of wing feathers dull buffy white.

Immature, with crown and side of head black, or partly so; fore-neck and breast more heavily marked with black; neck tuft, lower breast, and abdomen cinnamon-buff; bill shorter, but nearly as long as the head, with lower margin of mandible dull white, rest olive or black.

Measurements.—Males (10 from Chiriquí, Bocas del Toro, and Costa Rica), wing 102.9–111.8 (107.7), tail 86.6–106.2 (94.6), culmen from base 20.9–24.4 (22.4, average of 8), tarsus 25.9–28.0 (27.1) mm.

Females (10 from Chiriquí and Costa Rica), wing 96.0–101.0 (98.0), tail 84.8–93.5 (86.9), culmen from base 20.6–28.5 (24.0), tarsus 25.1–26.7 (25.8) mm.

Resident. Rare and little known in the higher mountains of western Panamá from Chiriquí and Bocas del Toro to eastern Veraguas.

The first report for Panamá is by Salvin (Proc. Zool. Soc. London, 1870, p. 192) of one forwarded by Arcé, collected on the Cordillera de Chucú, Veraguas, now in the British Museum, a male with the date 1869. A second of the same sex in that collection, also taken by Arcé, is marked "Calobre," Veraguas, 1870. The locality given, which is in the lowlands east of San Francisco, is questionable, as the bird is known only from the mountains. The species was reported next by Bangs (Proc. New England Zool. Club, vol. 3, 1902, p. 44), who received four specimens collected by W. W. Brown, Jr., on the slopes of the mountains above Boquete, at elevations of 1200 to 3125 meters. Griscom (Amer. Mus. Nov., no. 141, 1924, p. 4) took a male at 1825 meters on Cerro Flores, March 17, 1924. During the period between 1932 and 1952 Tollef B. Mönniche secured three, one at Camp Cilindro at 1580 meters on the Holcomb Trail, across the divide in Bocas del Toro, and two on Cerro Copete, in Chiriquí, at above 3000 meters on the volcano (Blake, Fieldiana: Zool., vol. 36, 1958, p. 530). The U.S. National Museum has one specimen, a female, taken February 3, 1953, at 2133 meters on Cerro Copete, received from Dr. Frank A. Hartman. Dr. E. Tyson informs me that he saw these birds in 1965 at 2300 meters elevation on the western slopes of Volcán Barú. Dr. Eisenmann has found it at 2100 meters on the old trail from Cerro Punta to Boquete, working among the epiphytes on high branches 30 meters or more above the ground.

In Costa Rica the tufted-cheek seems to be more common, though as yet little is known of its life history. M. A. Carriker, Jr., (Ann. Carnegie Mus., vol. 6, 1910, p. 638) wrote that the "tree-creeper is found only at high altitudes, seldom if ever being taken below 6,000 feet. . . . It is most abundant on the high volcanoes for about 1,000 feet below timber-line . . . a very noisy bird, always chattering and continually moving about in the trees. It is usually seen in pairs." Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, pp. 204-205) wrote that the "center of abundance of this species is in the upper portion of the montane belt in the central highlands . . . Personally, I found the bird common only at the base of the crater on Turrialba Volcano. Its numbers diminish rapidly with decreasing elevation, and the bird is quite uncommon if not rare in the lower montane belt." He saw them "at the borders of woodland and frequenting the trees . . . in the parklike pastures. . . . It creeps along the under sides of limbs like a woodhewer, and it specializes in rummaging the masses of epiphytes that help give the montane cloud forests their fantastic appearance."

Skutch (Pac. Coast Avif. no. 35, 1969, pp. 327-330) in the high mountains of Costa Rica describes the call as "several sharp notes followed by a low clear trill that becomes slower and ends with well-spaced stronger notes." He found a nest about 9 meters from the ground in an old woodpecker hole in a dead trunk so decayed that he was not able to examine the eggs. As incubation progressed the single bird in attendance continued to bring in plant material to add to the nest lining.

An egg in the British Museum (Natural History) from Irazú, Costa Rica, without other data, is dull white, subelliptical in form, with measurements of 24.8×19.3 mm.

With the larger number of specimens now available than to Griscom in 1924, I find that characters on which he separated birds of eastern Chiriquí and Veraguas as a race, *panamensis*, are those of individual variation. It seems appropriate to consider the closely similar *lawrencii* of southern Central America and *boissonneautii* of northwestern South America as a superspecies, with two species under the two names mentioned. The suggestion of Zimmer (Amer. Mus. Nov., no. 862, 1936, p. 3) that *Pseudocolaptes johnsoni* Lönnberg and Rendahl, described from Ecuador (Ark. Zool., vol. 14, 1922, p. 69), be listed as a race of *lawrencii* which it seems to resemble, may be accepted pending further information.

**HYLOCTISTES SUBULATUS (Spix) : Striped Leaf-gleaner,
Hojarasquero Listado**

Sphenura subulata Spix, Av. Spec. Nov. Bras., vol. 1, 1824, p. 82, pl. 83, fig. 1.
(Amazon River.)

Medium size; similar to the Lineated Leaf-gleaner but bill larger, longer than tarsus; throat and upper foreneck cinnamon-buff.

Description.—Length 165–180 mm. Adult (sexes alike), upper surface dark dull brown to blackish brown; crown and hindneck sooty black, striped prominently with light brown, each feather with a shaft line of pale buff (in the darker race of western Panamá the light streaking continued on the upper back); wings rufescent brown; lower back, tail, and upper tail coverts rufous-chestnut; sides of head dusky, streaked with dull buff; chin and throat buff, the feathers in part edged with dusky, especially on the lower throat; rest of foreneck, breast, and abdomen buffy olive, in some more or less streaked indistinctly with dull buff; under tail coverts wholly or partly cinnamon to cinnamon-buff; under wing coverts and edge of wing cinnamon-buff; inner webs of primaries and secondaries pale cinnamon-buff.

These are forest birds, the species being widely distributed from eastern Nicaragua through Costa Rica and Panamá. Beyond, it is found in northern South America through Colombia and western Venezuela to Ecuador, eastern Perú and eastward in Brazil in the upper Amazon Valley. Two distinct subspecies are found in Panamá, one in the west and one in the east. Neither is common, and the birds are little known. As their general appearance suggests that of the somewhat larger *Automolus ochrolaemus* they may be confused with that more common species which lives in the same haunts.

The species was not recorded in the early collections made by McLeannan and Arcé.

HYLOCTISTES SUBULATUS VIRGATUS (Lawrence)

Philydor virgatus Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, 1867, p. 468. (Angostura, Costa Rica.)

Characters.—Darker, distinctly streaked with buff to buffy white, narrowly on crown, hindneck, and back, more broadly on the lower foreneck and breast.

A male in the British Museum (Natural History) collected at La Cristina, Costa Rica, February 10, 1907, by C. H. Lankester, has the following data on the label: "Iris brown; bill dusky horn; feet

olivaceous." In museum specimens the lower surface of the mandible usually is dull buffy white.

Measurements.—Males (10 from Costa Rica, Chiriquí, Veraguas, and Coclé), wing 81.9–86.4 (83.6), tail 64.8–69.3 (67.2), culmen from base 22.4–27.0 (24.5), tarsus 20.0–21.8 (20.7, average of 9) mm.

Females (10 from Costa Rica, Chiriquí, Bocas del Toro, and Veraguas), wing 79.7–82.9 (80.8), tail 63.5–68.4 (65.7), culmen from base 23.3–25.3 (24.3), tarsus 20.0–21.6 (20.8) mm.

Resident. Rather rare on the Pacific slope in western Chiriquí, Veraguas, and southern Coclé; on the Caribbean side in Bocas del Toro and northern Veraguas.

In Panamá this race is rather widely distributed in the Tropical Zone, but nowhere has it been reported common. The first record for the Republic is a male from Natá, Coclé, taken December 11, 1888, by H. T. Heyde and Ernesto Lux. Their original label has the notation "open wood." This record, published by Ridgway (U.S. Nat. Mus. Bull. 50, pt. 5, 1911, p. 200), was the basis for inclusion of this race in Panamá by Griscom and others.

In Chiriquí, H. J. Watson took three at Bugaba, in October and November, 1903. I collected a pair on February 23, 1955, on the Quebrada Candela, 5 kilometers east of Sereno on the Costa Rican boundary, at 1125 meters in gallery forest, where they were in company with a scattered group of several kinds of small forest birds. While most of the company were searching through leaves, mainly on the outer branches, the pair of leaf-gleaners examined the epiphytes on the tree trunks and larger limbs, digging out dead leaves and other bits of trash in their search for food. One worked at one airplant for some time, cleaning out the miscellany that had lodged amid the leaves. Another record is of a female given to me by Dr. F. A. Hartman, taken by one of his collectors February 11, 1960, in heavy forest at 1525 meters on Cerro Pando, above the Río Chiriquí Viejo. Two were collected near Santa Fé, Veraguas, by R. R. Benson, in February and March 1925.

From the Caribbean side there is a specimen in the American Museum of Natural History, taken by Horace Loftin at Almirante, Bocas del Toro, October 17, 1965; and four males and two females taken by Benson at the Río Calovévora, eastern Boca del Toro, from August 26 to September 14, 1926. This area seems to be the only one where the race has been found in numbers.

HYLOCTISTES SUBULATUS CORDOBAE de Schauensee

Hyloctistes subulatus cordobae de Schauensee, Acad. Nat. Sci. Philadelphia, Notulae Naturae, no. 332, June 17, 1960, p. 1. (Cerro Murucucú, 1500 meters, Córdoba, Colombia.)

Characters.—Grayer above, less rufescent brown; back without streaks; crown with streaks less definite; under surface paler, with streaking less sharply marked.

Measurements.—Males (5 from eastern Province of Panamá, Darién, and northwestern Colombia), wing 82.1–88.1 (85.5), tail 63.8–71.0 (69.0), culmen from base 23.5–26.4 (24.4), tarsus 20.5–21.4 (20.9) mm.

Females (4 from Darién, Colón, and San Blas), wing 80.7–82.3 (81.5), tail 61.0–64.6 (62.3), culmen from base 19.0–24.7 (22.5), tarsus 20.3–21.4 (20.9) mm.

Resident. Rare. Known from specimens taken in eastern Colón, eastern Province of Panamá, and Darién.

The first report of this forest species is of two females collected June 5, 1911, by E. A. Goldman, in a thicket on the Río Cascajal on the north base of Cerro Bruja, eastern Colón. A male in the Academy of Natural Sciences in Philadelphia was taken on the Fifth George Vanderbilt Expedition on Cerro Sapo, Darién, in April 1941. I collected one at Jaqué, Darién, April 7, 1946, and another that flew into a mist net on the Río Tacarcuna at the site of the old village on the base of Cerro Malí March 10, 1964. The latter was among other small birds in attendance on a raiding column of ants. Griscom received one from Hasso von Wedel, from Ranchón in eastern San Blas. These are the available records to the present.

The type locality, given as "Murucucú" in the original description, appears to refer to Cerro Murucucú, located east of the Río Sinú, in southern Córdoba, northwestern Colombia.

SYNDACTYLA SUBALARIS (Sclater): **Lineated Leaf-gleaner,**
Hojarasquero Rayado

FIGURE 8

Anabates subalaris P. L. Sclater, Proc. Zool. Soc. London, pt. 27, August 1859, p. 141. (Pallatanga, Ecuador.)

Medium size; similar to the Striped Leaf-gleaner but bill smaller, shorter than tarsus; throat and upper foreneck pale buff.

Description.—Length 170–195 mm. Adult (sexes alike), crown and hindneck blackish brown, with very narrow shaft lines of buffy

brown; back and wings dull brown to olive-brown, the back lined narrowly with shaft lines of white to dull white; outer webs of primaries dull chestnut-brown; rump, upper tail coverts, and tail chestnut-rufous; side of head and neck dusky, streaked with pale buffy white; chin and upper throat buffy yellow; under surface dull brown to grayish



FIGURE 8.—Lineated leaf-gleaner, hojarasquero rayado, *Syndactyla subalaris*.

brown, the under tail coverts more rufescent, streaked narrowly with dull white, the streaking broader on foreneck and breast, reduced to narrow lines on abdomen; under wing coverts and inner margins of primaries and secondaries cinnamon-buff.

Juvenile, similar in general to adult in markings, but colors much brighter, with greater contrast in pattern; crown and hindneck blacker, with the slight, narrow streaks cinnamon; rest of upper surface more reddish brown; rump, tail, and wings as in adult; malar

streak black, spotted with dull white; foreneck, side of neck and center of breast cinnamon, with very narrow shaft lines of buffy white; sides, flanks, and abdomen warm brown; under tail coverts cinnamon-brown; under wing coverts bright cinnamon, but wing edgings on under surface as in adult. The bill is definitely shorter than in the mature bird.

This is a species of mountain forests, found in Costa Rica and western Panamá, in Darién, and in the Andes from Colombia, south to Ecuador and Perú, including the mountain areas of western Venezuela.

Two distinct races are recognized in Panamá, one in Chiriquí, the other in Darién.

SYNDACTYLA SUBALARIS LINEATA (Lawrence)

Anabazenops lineatus Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, 1865, p. 127. (Angostura, Costa Rica.)

Characters.—Lighter, brighter brown above; decidedly lighter, more greenish brown on under surface; chin and upper throat darker buff; larger.

A male in the British Museum, taken by C. H. Lankester at Cachí, Costa Rica, May 8, 1912, has the following data on the label: "iris brown, bill black, ochraceous on gonys, feet yellowish olive."

Measurements.—Males (10 from western Chiriquí), wing 90.0–94.6 (92.4), tail 80.0–92.5 (85.5), culmen from base 20.7–22.0 (21.3), tarsus 22.2–23.8 (22.9) mm.

Females (10 from western Chiriquí), wing 83.7–89.0 (86.9), tail 77.0–83.0 (80.3), culmen from base 20.6–22.3 (21.2), tarsus 21.8–23.1 (22.6) mm.

Resident. Fairly common in Subtropical Zone forests on the Pacific slope, in western Chiriquí from 1580 to 2130 meters, and in Veraguas (Santa Fé, Chitra); recorded also from Calovévora on the Caribbean side in northern Veraguas.

They are found singly or in pairs, at times with the scattered flocks of small forest birds that feed in company. With active movement they range from the undergrowth to the high tree crown, climbing alertly over vines and along the tree limbs, moving quickly to cling to the sides or undersurface of twigs and larger branches. In the course of such activities they may hang briefly, braced with tail pressed against the branch, while they pull out dead leaves lodged among epiphytes, in search of the insects that form their food. Less frequently I have found them in small clearings in the forest, feeding

through low, weedy growth immediately above the ground. They are mainly silent, the usual notes being clicking sounds without much force or character.

The record from Calovévora, northern Veraguas, is based on specimens in the British Museum taken by Arcé (see Salvin, Proc. Zool. Soc. London, 1870, p. 192). Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 2, 1891, p. 163) list it also from Calobre, Veraguas, a lowland record that is questionable.

SYNDACTYLA SUBALARIS TACARCUNAE (Chapman)

Xenicopsis subalaris tacarcunae Chapman, Amer. Mus. Nov., no. 86, August 28, 1923, p. 16. (Head of Río Cutí, 1400 meters, east slope of Cerro Tacarcuna, Chocó, Colombia.)

Characters.—Darker, more olive, less reddish brown above; grayer on lower surface; chin and throat paler, more yellow; smaller.

A male, taken on Cerro Malí, Darién, February 22, 1964, had the iris dark reddish brown; maxilla fuscous-black; extreme tip of mandible and a line covering upper half, becoming broader on the rami, dusky neutral gray; rest pale dull greenish white; gape honey yellow; tarsus and toes dull green; claws dusky neutral gray, paler at the tip.

Measurements.—Males (10 from Cerro Pirre and Cerro Malí, Darién), wing 84.2–89.4 (87.6), tail 73.2–80.5 (76.8), culmen from base 20.2–22.1 (20.6), tarsus 22.2–23.0 (22.6) mm.

Females (10 from Cerro Pirre and Cerro Tacarcuna, Darién), wing 81.3–89.1 (84.6), tail 71.3–79.1 (74.7), culmen from base 19.7–21.5 (20.7), tarsus 22.0–23.6 (22.7) mm.

Resident. Fairly common in the Subtropical Zone forests of Darién; recorded on Cerro Pirre between 1220 and 1580 meters, and Cerro Malí and Cerro Tacarcuna from 1400 to 1460 meters; ranging on the eastern slope into northern Chocó, Colombia.

Like the western race, these are active birds that range from the top branches of the undergrowth to the lower tree crown. Once I saw one climbing a vertical tree trunk, woodpecker fashion, bracing with the tail so that I thought that it was a woodcreeper until I had it in hand. Those collected had eaten insects. On Cerro Pirre, E. A. Goldman in April 1912 found them rather common, ranging from bamboo thickets near the ground to the larger limbs of the trees above. A male taken April 23 was in breeding condition. In a brief memorandum he refers to their "rather harsh rattling notes."

**ANABACERTHIA VARIEGATICEPS (Sclater) : Scaly-throated
Leaf-gleaner, Hojarasquero Serrano**

Anabazenops variegaticeps P. L. Sclater, Proc. Zool. Soc. London, pt. 24, 1856 (January 26, 1857), p. 289, (Córdoba, Veracruz, México.)

Xenicopsis variegaticeps idoneus Bangs, Proc. Biol. Soc. Washington, vol. 19, July 30, 1906, p. 108. (Boquete, Chiriquí, Panamá.)

Rather small, plain brown above, with lightly streaked crown and cinnamon-buff superciliary; throat and upper foreneck yellowish buff.

Description.—Length 145–160 mm. Adult (sexes alike), crown and hindneck grayish olive, with narrow shaft lines of dull white, and edgings of dusky; back and scapulars brown; rump somewhat more buffy; wings somewhat more russet; tail chestnut; lores dusky to dark gray, whiter immediately in front of eye; eye-ring and superciliary cinnamon-buff; auricular region dusky, streaked on lower portion with dull buffy white; an indistinct malar streak; chin and throat yellowish buff; the feathers on lower throat margined narrowly with dusky; rest of under surface buffy brown, in some with broad, very faintly indicated pale buff streaks; flanks darker brown; distal under tail coverts in males faintly more rufescent; under wing coverts, axillars and edge of wing ochraceous-buff; edgings of inner webs of primaries and secondaries slightly duller.

A male, taken at El Volcán, Chiriquí, February 27, 1965, had the iris brown; maxilla and tip of mandible fuscous; rest of mandible dull greenish becoming yellow at extreme base; tarsus dull olive-green; toes, including claws, dull yellowish green.

A female from the same locality, collected March 1, 1954, had the iris dark brown; maxilla fuscous; mandible pale dull greenish; basal half of cutting edge of maxilla and a line on the lower edge of the mandibular ramus honey yellow; tarsus and toes dull yellowish green.

Measurements.—Males (10 from Chiriquí), wing 84.5–92.2 (88.3), tail 66.7–72.2 (70.0), culmen from base 17.5–18.9 (18.0), tarsus 19.0–19.9 (19.6) mm.

Females (10 from Chiriquí) wing 79.0–81.3 (80.1), tail 61.2–68.3 (65.3), culmen from base 16.8–18.5 (17.5), tarsus 18.1–19.5 (18.8) mm.

Resident. Fairly common in the upper Tropical and Subtropical zones in the mountains of western Chiriquí, from 1250 to 1900 meters.

Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 339) listed this species from Chiriquí and Veraguas, the latter in error as it is

known in Panamá only from western Chiriquí. The record by Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 2, 1891, p. 162) for Bibalaz, a locality near Bugaba, may also be questioned as this is in the lowlands.

In my brief encounters with this species I have found them climbing up and over heavy vines when in appearance and action they resembled *Xenops*. They seemed to move rather slowly, giving low calls.

I have found no account of their nesting.

This mountain inhabitant is found from Veracruz south through Central America to western Chiriquí. As noted in the description the definitely streaked crown and cinnamon-buff superciliary separate it clearly from *A. striaticollis* and its races of South America in which the crown is plain and the superciliary dull yellow. In view of this, and of the wide gap in their ranges it seems appropriate to regard the two as separate species.

**PHILYDOR ERYTHROCERCUS (Pelzeln) : Rufous-rumped
Leaf-gleaner, Hojarasquero Rabadillirufó**

Anabates erythrocerus Pelzeln, Sitzungsber. Kais. Akad. Wiss. Wien, Math.-naturwiss. Cl., vol. 34, 1859, pp. 105, 128. (Manaus, Brazil.)

Of medium size; crown grayish brown, back brownish, tail cinnamon; a prominent light-colored superciliary; side of neck rufous.

Description.—Length 165–180 mm. Adult (sexes alike), crown dusky-brown, bordered by a pale buff superciliary that becomes rufous-cinnamon behind the eye, and merges with a band of the same color on the side of the neck; an indistinct nuchal band of the same color; back dull buffy brown; wings dusky; rump, upper tail coverts, and tail rufous; side of head dusky, streaked with dull buff; chin and upper throat pale buff changing to pale olive-buff on foreneck, extending thus to abdomen; sides and flanks dull cinnamon-brown; under tail coverts brighter, more cinnamon-rufous; under wing coverts and axillars pale cinnamon.

Immature, crown chestnut-brown; hindneck, back, and scapulars chestnut; rump and upper tail coverts rufous-chestnut; tail chestnut-rufous; chin and throat buff to cinnamon-buff; rest of under surface tawny-ochraceous.

The species is one of wide range, extending from west-central Panamá through Colombia, Ecuador, eastern Perú, and northeastern Bolivia to northern Brazil; found also in Guyana, Surinam, and French Guiana (not recorded in Venezuela). In Panamá two races

are recognized, one, little known, in Veraguas and Coclé, and one in eastern Panamá.

In the examination of these birds it should be remembered that immature individuals in more rufous colors differ decidedly from the adults. In the considerable number seen, many also have had wing and tail not quite fully grown so that they do not give useful measurements.

PHILYDOR ERYTHROCERCUS FUSCIPENNIS Salvin

Philydor fuscipennis Salvin, Proc. Zool. Soc. London, May 1866, p. 72. (Santiago, Veraguas.)

Characters.—Darker, more rufescent above, more cinnamon-brown on under surface.

Measurements.—Males (4 from Veraguas and Coclé) wing 89.2–90.0 (89.7), tail 66.0–69.0 (67.6), culmen from base 18.4–19.7 (19.1), tarsus 20.2–20.7 (20.4, average of 3) mm.

Females (2 from Veraguas), wing 83.3–84.1 (83.7), tail 63.2–64.4 (63.8), culmen from base 19.3–19.8 (19.5), tarsus 19.4–19.4 (19.4) mm.

Resident. Rare, recorded in Veraguas, from near Santiago and Chitra on the Pacific slope, and from the Río Calovévora to northern Coclé on the Caribbean side.

The type specimen in the British Museum (Natural History) collected by Enrique Arcé was recorded in the original description only as from "Veragua" (this being the only locality on the label). In the introduction to the paper including the original description, Salvin wrote that during "the past year two collections were forwarded to Mr. Godman and myself by Enrique Arcé from Veragua. One was made near Santiago de Veraguas, and the other near a small village called Santa Fé. . . . Arcé is now at Chiriqui, and I trust ere long to receive a collection from that district." The following year Salvin (*idem*, 1867, pp. 129–160) gave a full account of these three early collections. In the introduction he wrote of them that the "first and largest was from a village called Santa Fé, which is described as situated twelve leagues on the Panama side of Santiago the capital of Veragua; the next was from the neighbourhood of Santiago itself; and the third from a district beyond Santiago," which was from the Cordillera de Tolé. In this account (p. 143) *fuscipennis* is listed from "Santiago de Veragua."

The type was the basis of all further accounts until Ridgway (U.S. Nat. Mus. Bull. 50, pt. 5, pp. 204–205) included a second record from

Cascajal, Coclé, from a male collected by H. Th. Heyde and Ernesto Lux on March 3, 1889. On the back of the label is the notation "Irides dark brown," the date, and "found: virgin forest."

In the American Museum of Natural History there is a specimen received from the taxidermist and collector J. H. Batty, without date, marked as taken at Chitra, Veraguas, by Arcé. The sex, marked as female, from the measurements is probably male. The preparation resembles that of Arcé. Two other specimens in this Museum, both males, were collected by Benson and Gaffney on the Río Calovévora on the Caribbean slope of northern Veraguas August 18 and 31, 1926.

**PHILYDOR ERYTHROCERCUS ERYTHRONOTUS Sclater and
Salvin**

Philydor erythronotus Sclater and Salvin, Nomencl. Av. Neotrop., 1873, pp. 66, 160. (Bogotá, Colombia.)

Characters.—Decidedly paler above; anterior half of superciliary line lighter, buffy white; tail paler, more rufous; under surface of body paler, with sides, flanks, and under tail coverts lighter in color.

A female, collected March 6, 1964, at 575 meters elevation near the old Tacarcuna village site on the Río Tacarcuna, had the iris dark wood brown; maxilla fuscous-black; rami and cutting edge of mandible dusky neutral gray; gonys and rest of lower surface of mandible dull yellowish white.

Measurements.—Males (10 from Darién), wing 90.0–95.8 (91.8), tail 67.4–73.2 (69.4), culmen from base 18.4–19.8 (19.1), tarsus 19.0–20.5 (20.0) mm.

Females (10 from eastern Province of Panamá and Darién), wing 80.4–83.4 (82.1), tail 59.8–66.7 (63.7), culmen from base 17.1–18.8 (18.2), tarsus 18.6–20.2 (19.4) mm.

Resident. Recorded locally on the Pacific side from the higher elevations of Cerro Azul, in the upper Tuira Valley, and on Cerro Pirre and Cerro Tacarcuna, Darién; on the Caribbean slope in the Chagres Valley above Gamboa, and in eastern San Blas.

The first report for Panamá was a female taken by E. A. Goldman near 750 meters on Cerro Azul, eastern Province of Panamá, March 26, 1911. The following year he found this bird common near Cana on Cerro Pirre, Darién, where he secured a series of 10 specimens.

A series in the American Museum of Natural History was collected from March to May, 1915, by W. B. Richardson, one of the

party under the leadership of Harold Anthony, in the upper Tuira Valley at Tapalisa, Cituro, and the old Tacarcuna village site at the base of Cerro Tacarcuna. Barbour and Brooks took one on the Río Esnape, Darién, April 3, 1922. Griscom received several from eastern San Blas, taken by Wedel near Ranchón and Puerto Obaldía.

In my own studies I found the Rufous-rumped Leaf-gleaner first at 600 meters on Cerro Azul March 31, 1949. On Cerre Pirre in late January and early February 1961, it was common at 460 meters in the upper valley of the Río Setegantí, and on March 6, 1964, I took one at 575 meters on the Río Tacarcuna.

These are birds of the heavy forests where they range rather low, climbing actively over branches, particularly those that are broken and dead, to search among the epiphytes. While their method of climbing may suggest that of a woodpecker, they are quicker and more active in much of their movement. To the eyes of a naturalist trained in the north they seemed completely strange, unlike any northern species.

The stomachs of three from Cana, preserved by Goldman, I found crammed with a variety of small insects, and a few remains of spiders and their eggs. The insects taken included roaches, and their eggs, bits of a wasp, a pentatomid, a caterpillar skin, and numerous beetles of a variety of species.

**PHILYDOR RUFUS RUFESCENS (Lawrence): Buff-fronted
Leaf-gleaner, Hojarasquero Anteadó**

Automolus rufescens Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, 1866, p. 345. (Birris, Province of Cartago, Costa Rica.)

Of medium size; decidedly light rufescent brown throughout; side of head, superciliary, and throat ochraceous.

Description.—Plumage plain, without streaks. Length 180–200 mm. Adult (sexes alike), forehead dull cinnamon changing to buffy grayish brown on crown and hindneck; back and scapulars tawny-brown; rump and upper tail coverts lighter, more buffy; tail cinnamon-rufous; wings the same, with primary coverts dull russet, and tips of primaries dusky; superciliary line, side of head and of upper neck and throat ochraceous, with the auricular region darker brown to dusky; rest of under surface duller ochraceous, darker and browner on flanks and under tail coverts; under wing coverts and inner webs of primaries and secondaries ochraceous-buff.

Specimens in the American Museum of Natural History, collected in Costa Rica by Austin Paul Smith, have colors noted on the labels

as follows: A male from Navarrito, July 5, 1920, iris dark, maxilla dark, mandible pale plumbeous, tarsus olive-green. A female from Navarro, October 21, 1920, iris dark, maxilla dark, mandible pale plumbeous, tarsus olive.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 99.5–104.5 (101.0), tail 83.0–90.5 (86.5, average of 9), culmen from base 19.9–22.0 (21.2), tarsus 23.5–24.8 (24.2) mm.

Females (3 from Chiriquí and Costa Rica), wing 92.4–96.6 (94.2), tail 82.3–87.8 (84.5), culmen from base 20.4–21.3 (20.9), tarsus 23.4–24.4 (23.8) mm.

Resident. Rare in the higher mountain forests of western Chiriquí, and the adjacent Caribbean slope in Bocas del Toro, from 1650 to 2130 meters.

The first report in Panamá for this little known species is a specimen in the British Museum received in the Salvin-Godman collection labeled "Isthmus of Panama (ex H. Whitely)." The preparation of the skin resembles that of *E. Arcé*. Von Berlepsch (Proc. U.S. Nat. Mus., vol. 11, 1888, p. 565) mentions "a specimen from Veragua [= Chiriquí] in my collection," possibly from the same source. Bangs (Proc. New England Zool. Club, vol. 3, 1902, p. 44) received male and female, collected by W. W. Brown, Jr., in 1901 above Boquete in March, and on the Caribbean slope of the volcano in June. Blake (Fieldiana: Zool., vol. 36, 1958, pp. 530–531) listed two males and a female from above Boquete, taken at Alto de Chiquero March 13, Velo, October 2, and Lérica, October 17.

In Costa Rica the species is somewhat better known though apparently far from common. Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 206) said of it "this seldom-seen species inhabits the cool and wet middle altitudes, mostly the Caribbean slopes of the central highlands, also the Dota region. . . . It ranges vertically from the upper half of the subtropical belt, or lower in cloud-forested pockets, to the upper limit of the lower montane belt.

"This ovenbird is strictly arboreal, usually keeping well above the ground in forest, along its borders, or at breaks in the mountain terrain. I have seen it, as a rule, singly, the only one of its kind in a traveling mixed flock; I have one observation of an individual foraging alone. An action bird, it searches limbs energetically. . . . Occasionally I heard it make single-note cries."

The nest of the species *Philydor rufus* does not appear to have been described, nor have I seen an account of the nesting of the race found in Panamá. Schönwetter (Handb. Ool., Lief. 14, 1967, p. 31)

lists eggs of two related subspecies of South America of about the same size. A set of two of *Philydor rufus columbianus* in the Kreuger collection from Venezuela measure $21.0-25.7 \times 16.0-17.6$ mm. (While listed from "Maracay" which is in the lowlands, it is presumed that they were collected in the highlands of the Cordillera de la Costa, where the race *columbianus* is known to nest.) Four eggs of the more southern race in South America *Philydor rufus rufus* measure $22.8-24.4 \times 17.0-18.0$ mm. The eggs are white.

**AUTOMOLUS RUBIGINOSUS (Sclater): Ruddy Leaf-gleaner,
Hojarasquero Garganticanelo**

Anabates rubiginosus P. L. Sclater, Proc. Zool. Soc. London, pt. 24, 1856 (January 26, 1857), p. 288. (Córdoba, Veracruz, México.)

Medium size; crown rufescent, throat cinnamon.

Description.—Length 185–205 mm. Adult (sexes alike), dark above, crown and hindneck dark chestnut or dusky-maroon; back and scapulars dark tawny-brown, or maroon-brown; wings more rufescent; rump and upper tail coverts rufous-chestnut or dusky-maroon; tail chestnut or black; side of head brownish chestnut, auricular area grayer; chin, throat, and upper breast dark cinnamon-rufous, or chestnut, with the throat feathers appearing paler because of the white feather bases; rest of underparts cinnamon-tawny to olive, darker on the sides and flanks, with under tail coverts rufous to chocolate; under wing coverts and inner webs of primaries and secondaries cinnamon-rufous.

These are birds of the more humid mountain forests found from México through Central America and northern South America to Perú, southern Venezuela and French Guiana. They are nowhere common, and are little known.

Their range is not continuous, and as they vary widely geographically in depth of color, numerous forms have been recognized. Two of these are found in Panamá, one of a general dark reddish brown color in western Chiriquí, and the other, much blacker, on Cerro Pirre and Cerro Tacarcuna, in Darién.

AUTOMOLUS RUBIGINOSUS FUMOSUS Salvin and Godman

Automolus fumosus Salvin and Godman, Biol. Centr.-Amer., Aves, vol. 2, July 1891, p. 158. (Bibalaz, south base of Volcán de Chiriquí, Chiriquí, Panamá.)
Automolus xanthippe M. E. McLellan Davidson, Proc. Biol. Soc. Washington, vol. 45, September 27, 1932, p. 167. (Barriles, 1200 meters, Chiriquí, Panamá.)

Characters.—Crown maroon-brown, back tawny-brown, wings darker; throat cinnamon-rufous; breast and abdomen cinnamon-tawny.

Measurements.—Males (4 from Chiriquí), wing 91.5–95.1 (93.2), tail 78.7–82.3 (81.2), culmen from base 26.1–27.6 (27.0, average of 3), tarsus 27.4–28.1 (27.8) mm.

Females (3 from Chiriquí), wing 84.0–84.7 (84.2), tail 75.8–78.2 (76.8), culmen from base 26.8–27.3 (26.9), tarsus 26.4–27.7 (26.9) mm.

Resident. Rare in Subtropical Zone forests on the southern and western base of Volcán Chiriquí.

This well-marked form, definitely darker than the populations of farther north in Central America, is one that is known from few records.

The type, and for a period the only known specimen, was taken by Enrique Arcé in the last of the collections that he made for Salvin, at Bibalaz on the southern base of the great volcano. At this period Arcé's activities centered around Bugaba (below Concepción). As the bird is one of the Subtropical Zone it is supposed to have come from the higher country to the north of Concepción. The type specimen, which I have examined in the British Museum, is marked as a male, but from the wing measurement of 83.3 mm apparently was a female. Griscom in 1935 knew of only four specimens.

Mrs. M. E. McLellan Davidson (Proc. Biol. Soc. Washington, 1932, p. 167) collected a female January 28, 1931, at Barriles, near the Río Chiriquí Viejo in Chiriquí, which through lack of comparative material she believed was distinct and so named it *xanthippe*, as indicated in the heading above. The next report was of a male collected by Dr. Frank Hartman, taken February 24, 1949, on Cerro Pando, beyond El Volcán, west of the Río Chiriquí Viejo. In work in this area in March 1954, I had occasional glimpses of them but they were shy so that it was March 7 before I secured my only specimen, a male. The birds ranged low down in undergrowth in the forest, their presence known from their curious whistled call, *ka-kweek*, a note easily imitated. They seemed curious and regularly came near, but always under cover of leaves so they were hidden. They were heard on several occasions here and also farther west at Santa Clara through the rest of the month, but we were never able to see another. The following year I heard the calls on February 10, in dense cover along the Río Chiriquí Viejo, and again on February 17 near Santa Clara, but from birds that remained concealed in heavy

cover. Clearing of undergrowth was proceeding rapidly in these areas and in subsequent years I was unable to find others.

My notes record that the dorsal pterylosis showed a distinct rhomboidal expansion in the center of the back that was without break in the center.

AUTOMOLUS RUBIGINOSUS SATURATUS Chapman

Automolus nigricauda saturatus Chapman, Bull. Amer. Mus. Nat. Hist., vol. 34, December 30, 1915, p. 644. (Alto Bonito, 460 meters, Antioquia, Colombia.)

Characters.—Much darker than *A. r. fumosus*; crown dark chestnut; back and scapulars maroon-brown; tail black; upper breast chestnut; rest of lower surface olive, darker on the sides and flanks with the under tail coverts chocolate.

Immature (specimen from the Río Jurubidá, Chocó, Colombia), dorsal surface and side of head as in adult; throat and upper foreneck cinnamon-buff, becoming cinnamon on sides of neck and lower foreneck, with the tips and sides of the feathers olive-brown; color of lower breast as in adult but with scattered shaft lines of pale buff.

Measurements.—Males (10 from Darién, Antioquia, and Chocó), wing 79.4–88.1 (83.8), tail 69.5–74.0 (71.7), culmen from base 23.2–26.7 (24.5, average of 10), tarsus 24.5–26.9 (25.6) mm.

Females (8 from Darién and Chocó, Colombia), wing 80.4–83.8 (82.0), tail 68.0–71.2 (70.0), culmen from base 22.8–24.6 (23.7, average of 6), tarsus 24.0–25.9 (24.9) mm.

Resident. Rare; known in Panamá from Cerro Pirre, and from La Laguna, 975 meters elevation on the southwestern ridge of Cerro Tacarcuna, Darién.

The race was first recorded by Griscom (Bull. Mus. Comp. Zool., vol. 69, 1929, p. 170) from a female collected by R. R. Benson at Cana on Cerro Pirre in 1928. It was found next, also a single specimen, a male, collected by Dr. Pedro Galindo, June 17, 1963, at La Laguna, on the narrow ridge at the southwest of the high central area of Cerro Tacarcuna. It is probable that the race has a distribution through the high forests along this section of the Serranía del Darién. This is indicated by earlier specimens secured in 1915 by H. E. Anthony at the head of the Río Cutí, Chocó, on the high slopes of Tacarcuna on the Colombian side of the boundary.

Automolus rubiginosus nigricauda, found from southwestern Colombia through western Ecuador is browner (less sooty) above, with the crown the same color as the back. The tail is dusky, less definitely black. It is also lighter colored on breast, abdomen, and

under tail coverts. *A. r. saturatus* is darker above, with the crown darker than the back. The tail is definitely black, with only a faint tinge of brown, and the under surface is decidedly darker, especially on the sides and flanks.

**AUTOMOLUS OCHROLAEMUS (Tschudi) : Buff-throated
Leaf-gleaner, Hojarasquero Garganticlaro**

Anabates ochrolaemus Tschudi, Arch. Naturg., vol. 10, Bd. 1, 1844, p. 295.
(Perú.)

Medium size; throat and upper foreneck prominently white or buff; rest of lower surface brown to grayish brown without definite streaks.

Description.—Length 170–185 mm. Rather heavy-bodied birds with noticeably large, strong feet. Adult (sexes alike), crown and hindneck grayish to blackish brown, with narrow shaft lines of dull buff; back and scapulars olive-brown, the wings more rufescent with the tips and inner webs dusky; lower rump, upper tail coverts, and tail chestnut; a poorly marked superciliary streak dull buff; side of head like crown, indistinctly lined with buff; throat and upper foreneck white or buff; center line of breast and abdomen dull grayish buff, or light wood-brown, with the sides olive-brown or tawny-olive; upper breast with edges of the feathers slightly darker than the centers, producing a faintly irregular mottling (not clearly defined streaks); under wing coverts and edgings of inner webs of wing feathers ochraceous-buff.

Immature, somewhat darker, more olive above; feathers of lower foreneck and upper breast more or less edged with olive, especially at the sides, to produce a mottled appearance; sides and flanks also more olive.

This forest species has an extensive range from Veracruz and Oaxaca in México south through Central America and South America to Perú, Bolivia, and Brazil. Three quite distinct geographic races are found in Panamá.

AUTOMOLUS OCHROLAEMUS EXSERTUS Bangs

Automolus exsertus Bangs, Auk, vol. 18, October 1901, p. 367. (Divalá, Chiriquí.)

Characters.—Throat and upper foreneck pale buff; somewhat more olivaceous above and below than *pallidigularis*, with the breast, abdomen, and sides more nearly uniform in color.

Measurements.—Males (10 from Chiriquí and southwestern Costa

Rica), wing 87.7–90.9 (89.1), tail 71.3–74.8 (72.9), culmen from base 22.6–25.2 (23.9), tarsus 23.4–23.9 (23.6) mm.

Females (10 from Chiriquí and southwestern Costa Rica), wing 80.2–88.0 (84.0), tail 63.9–71.1 (67.9), culmen from base 22.5–25.1 (23.7, average of 9), tarsus 22.3–23.3 (22.8) mm.

Resident. Found in small numbers in western Chiriquí from the lowlands at the south base of the volcano (Divalá, Bugaba, Buena Vista, El Banco) to 1280 meters in the lower Subtropical Zone (Santa Clara, El Volcán), east on the Pacific slope to Veraguas (Soná, Santa Fé).

The race extends into southwestern Costa Rica on the Pacific slope. In Panamá, near the Río Chiriquí Viejo, west of El Volcán, and at Santa Clara farther west I found these birds in heavy undergrowth, where they remained carefully concealed, their presence indicated by rattling calls. Others were encountered lower down near Buena Vista, moving actively through branches laden with vines, keeping fairly well under cover. On the Río Tribique, near Soná, Veraguas, one was taken in a small tract of forest on June 12, 1953, the most eastern record in my personal field work. I have examined older specimens collected by Arcé near Santa Fé, at the eastern limit of the range.

Skutch (Pac. Coast Avif., no. 35, 1969, pp. 305–313), in studies of this race in southwestern Costa Rica, examined five nests located in burrows in banks of small streams, and in other similar locations offering an earthen face. The shallow tunnels dug by the birds may be begun as much as 5 months before the active nesting date. Finally they bring in leaf material from a single species of shrub (in the locality concerned of a *Mimosa*) to form a broad, shallow cup for the nest. The eggs, pure white in color, two or three in number, were laid from March to May. One set of two measured 27.0×19.8 and 26.2×19.8 mm. Both sexes share in incubation, which lasts for 20 to 21 days.

The young hatch with a scanty covering of gray down. At the end of 10 days they were not brooded further by the parents at night. They were fed large insects, caterpillars, spiders, and small lizards. Droppings were removed so that the nest remained clean. They left the burrow at the age of 18 days.

AUTOMOLUS OCHROLAEMUS HYPOPHAEUS Ridgway

Automolus cervinigularis hypophaeus Ridgway, Proc. Biol. Soc. Washington, vol. 22, April 17, 1909, p. 72. (Río Reventazón, Guayabo, Costa Rica.)

Characters.—Darker than *A. o. exsertus*, much darker than *A. o. pallidigularis*; throat and upper foreneck deep buff; rest of

under surface olive-brown, becoming olive on the sides and flanks; crown feathers blacker, so that the paler central streaks are more prominent; back darker olive-brown; wings darker.

Measurements.—Males (10 from Costa Rica, Bocas del Toro, and Veraguas), wing 85.2–93.1 (88.6), tail 70.2–77.5 (72.3), culmen from base 23.9–25.5 (24.7), tarsus 23.6–25.1 (24.3) mm.

Females (10 from Costa Rica and Bocas del Toro), wing 81.5–86.7 (84.4), tail 66.0–73.7 (69.5), culmen from base 23.0–25.0 (24.2), tarsus 23.3–24.5 (24.0) mm.

Resident. On the Caribbean slope in Bocas del Toro (recorded to 730 meters on the Río Changuena) and western Veraguas (east to Calovévora).

Two in the Salvin-Godman collection in the British Museum (Natural History) collected by Arcé, labeled “Veragua” and “Santa Fe,” probably are from Calovévora, as the bird has not been recorded from the Pacific slope. The race ranges north in Central America through eastern Costa Rica and eastern Nicaragua.

Near Almirante, Bocas del Toro, I found these birds in forested areas bordering Bahía Almirante, in low undergrowth, in such heavy shadow that they were seen with difficulty. In Costa Rica, Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, pp. 206–207) found them in areas of humid forest from sea level to 1200 meters, but absent in regions of tropical dry forest. Usually they were seen alone or in pairs, less often in larger number, perhaps a family party.

The nest described by M. A. Carriker, Jr., (Ann. Carnegie Mus., vol. 6, 1910, p. 640) on the Río Sixaola, the boundary between Panamá and Costa Rica, from its location “in the hollowed top of a broken tree-top” was probably that of some other species, as is indicated also by the large size listed for the egg (31×24 mm).

AUTOMOLUS OCHROLAEMUS PALLIDIGULARIS Lawrence

Automolus pallidigularis Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 7, 1862, p. 465. (Atlantic slope, Panama Railroad, Canal Zone, Panamá.)

Characters.—Definitely paler throughout; lighter brown above, with lower rump and upper tail coverts more cinnamon-russet; chin and upper foreneck mainly white—pale buff only on the sides; superciliary streak paler, less prominent; under surface centrally light brownish gray.

In two males taken March 5, 1961, near the Candelaria Hydrographic Station, Panamá, the iris was wood brown; the maxilla varied from dull grayish brown in one to fuscous in the other; mandible greenish neutral gray, shading to dull honey yellow on the mandib-

ular rami; tarsus and toes light greenish gray; claws light fuscous-brown. A male from the Río Tacarcuna, Darién, at 575 meters elevation, had the iris light brown; the bare skin of the eyelid pale green; maxilla fuscous, paler on the sides toward the tip; mandible pale dull yellowish green; tarsus dull greenish brown; toes pale dull green; claws neutral gray.

A female collected January 17, 1961, at Juan Mina, Canal Zone, had the iris dark brown; bare skin around eye light greenish buff; culmen from tip to level of nostrils fuscous-black; rest, including the sides at the base and the mandible mouse brown; mandibular rami dull honey yellow; tarsus and toes greenish gray; pads on under side of toes tinged with yellow; claws brownish gray.

Measurements.—Males (10 from Colón to Darién), wing 86.8–93.2 (89.9), tail 69.8–78.4 (74.0), culmen from base 23.7–25.5 (24.3), tarsus 23.2–24.7 (23.7) mm.

Females (10 from northern Coclé to San Blas and Darién), wing 82.0–89.0 (86.3), tail 68.4–79.9 (72.0), culmen from base 22.3–25.0 (23.8), tarsus 22.4–23.5 (22.7) mm.

Resident. Fairly common in forested areas on the Pacific slope in eastern Veraguas (Calobre, Chitra) and from the Cerro Azul east through Darién; on the Caribbean side from northern Coclé (head of Río Coclé del Norte, El Uracillo) and western Colón, northern Canal Zone, and eastern San Blas to the Colombian boundary (Puerto Obaldía).

Beyond Panamá this race is found widely through northern and western Colombia to northwestern Ecuador.

This is the most widely distributed form of this species in the Republic, found wherever there is suitable forest. On the Pacific side there are records for the foothill area of eastern Veraguas, and then it appears on the slopes of Cerro Azul, reaches the lowlands on the lower Río Bayano (San Antonio) and ranges eastward from the lower Río Chimán through Darién, mainly in the hill region inland. On the Caribbean side it is recorded from western Colón and northern Coclé eastward through the Chagres Valley and the San Blas.

They are mainly birds of the heavier undergrowth, that move about behind cover of leaves, though in feeding they may range upward into the lower tree crown. They move actively, but usually secretively through the leaves or searching the larger limbs, clinging often suspended sidewise or head down, supported by the strong, long toes. Clusters of dead leaves and other plant materials hanging in

place or lodged in the angle of limbs, or among epiphytes, are pulled apart and examined carefully for food. Stomachs that I have examined have held animal material. One collected on Cerro Pirre contained one large spider and parts of a smaller one, an earwig with jaws of two others, and other insect remains.

The song, a loud repetition of a single phrase, resembles that of the Buff-throated Woodcreeper *Xiphorhynchus guttatus*, but is given somewhat more slowly and less vociferously. The birds also utter low chattering calls. Males were singing and in breeding condition in February and March. Van Tyne (Auk, 1926, p. 546) described a nest found on Barro Colorado Island, Canal Zone, as located in a horizontal tunnel about 60 centimeters deep dug in a cut bank of a small stream, about 120 centimeters above the water. The actual nest "was composed almost entirely of a single kind of slender leaf stalk about ten cm. in length. The nest was quite bulky with a shallow cavity some ten cm. across and a thickened rim or approach on the side toward the entrance hole." The nest held two half-grown young which the parents were feeding on small lizards (identified in modern terminology as *Anolis limifrons limifrons*). Van Tyne noted that a nest reported by L. L. Jewel, found at Gatun in 1911 (see Stone, Proc. Acad. Nat. Sci. Philadelphia, vol. 70, 1918, p. 262) made of twigs and dead leaves, lined with grass, and placed in the fork of a tree, was evidently wrongly identified. All available records describe nests of this species as concealed in earthen tunnels. The egg measurements of ".83 x .62 in." (about 21 x 15.7 mm) are too small for this species.

**THRIPADECTES RUFOBRUNNEUS (Lawrence): Streak-breasted
Leaf-gleaner, Trepapalo Rayado**

Philydor rufobrunneus Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, 1865, p. 127. (San José, Costa Rica.)

Medium size, with strong, heavy body; breast strongly streaked with cinnamon-buff; bill large.

Description.—Tip of bill strongly uncinat. Adult (sexes alike), crown and hindneck brownish gray, with the feathers edged and tipped with dull black; back, scapulars, and wings somewhat reddish brown, with the wing coverts more rufescent; rump, upper tail coverts, and tail chestnut; side of head dusky, streaked with dull buff; lores grayish; malar region, chin, throat, and adjacent sides of neck ochraceous, basally dark, edged lightly with this color producing a squamate appearance; rest of underparts tawny-olive, with

the breast streaked and the upper abdomen narrowly lined with ochraceous; under tail coverts rufescent; under wing coverts and inner edges of primaries and secondaries cinnamon-buff.

A male collected on the lower slope of Cerro Pando, beyond the Río Chiriquí Viejo, Chiriquí, had the iris dark brown; base of mandible dull, slightly greenish, slate; rest of bill black; tarsus and toes greenish gray; claws brownish gray.

Measurements.—Males (10 from Chiriquí), wing 89.1–94.7 (91.6), tail 84.9–91.8 (89.3), culmen from base 24.2–26.8 (25.9), tarsus 27.0–29.4 (28.1) mm.

Females (11 from Costa Rica, Chiriquí, and Veraguas), wing 87.5–92.1 (90.0), tail 84.5–91.3 (87.6), culmen from base 23.9–26.8 (25.4, average of 10), tarsus 27.0–29.3 (28.2) mm.

Resident. Local and uncommon in the Subtropical Zone of the mountains from western Chiriquí to eastern Veraguas, and on the Caribbean slope of western Bocas del Toro, from 1375 to 2350 meters.

While this attractive species, described originally from Costa Rica more than a hundred years ago, has been fairly well known in that country, it was not recorded in Panamá until 1901 when W. W. Brown, Jr., collected seven near and above Boquete, Chiriquí, including in this record the Caribbean slope, across the divide in Bocas del Toro (Bangs, Proc. New England Zoöl. Club, vol. 3, 1902, p. 44). Kennard also secured a male in Bocas del Toro at 1375 meters on the trail leading from Chiriquí Grande on the Laguna de Chiriquí across the mountain slopes to Boquete (Kennard and Peters, Proc. Boston Soc. Nat. Hist., vol. 38, 1928, p. 455). Two females, in the California Academy of Sciences, were collected by Mrs. M. E. M. Davidson above Boquete on January 26, 1933, and February 12, 1934. Mönniche found them fairly regularly on his Finca Lérica, and on the slopes above.

Griscom secured a female on Cerro Flores, eastern Chiriquí, on March 14, 1924, and received two females from Benson taken at Chitra, eastern Veraguas, February 24 and March 8, 1924. (Griscom overlooked inclusion of these in his list of 1935.)

At Lérica, C. B. Worth on August 4, 1937, made the first observations on the nest (Auk, 1939, pp. 306–307). At an elevation of about 1650 meters a trail leading down from a higher level had cut into the side of a bed of volcanic ash where this faced a deep valley. As the naturalist passed, an ovenbird came from one of the many burrows in the face of the cut bank, a tunnel that "led upward at a

gentle grade for eighteen inches . . . turned sharply to the right and slightly downward . . . into a chamber about eight inches in all of its diameters. Here was a nest containing two warm eggs. . . . One expects to find a flimsy nest at the end of a burrow, but in this case I was able to pull the structure through a passageway of smaller diameter than itself, to have it spring back firmly into shape. . . . It was made entirely of medium-sized rootlets of wiry texture, woven very compactly together. It was about . . . one and one-half inches thick and almost flat. The eggs were dull white with little gloss. . . . They each measured 33.5×23 mm. . . . Incubation was almost complete." The bird that was incubating, collected about noon, was a male.

Another nest found by Dr. Frank A. Hartman (Condor, 1957, pp. 269–271) at an elevation of 1375 meters near El Volcán, western Chiriquí, was in a hole in a cut bank along a logging road on the slope of a forested hill. The tunnel, 10 centimeters wide by 9 high, was about 65 centimeters long. A chamber 15 centimeters in diameter at the end held a thick nest of rootlets. The two eggs, heavily incubated, were white with measurements each of 31.3×20.3 mm. The male, taken as a specimen, was incubating when the nest was found. Eisenmann and N. G. Smith recorded a nest in a cut bank along a road above Quiel, in this region, on July 12–18, 1964. Both parents were carrying food to the young.

Three eggs in a set in the British Museum (Natural History), labeled Irazú, Costa Rica, March 25, 1898 (collector not listed) are subelliptical in form, white without gloss, and measure as follows: 29.3×22.1 , 29.5×22.2 and 30.0×21.8 mm.

A pair taken on Cerro Pando beyond El Volcán, Chiriquí, February 13, 1960, were in breeding condition with a nearly complete egg in the female.

Skutch (Pac. Coast Avif. No. 35, 1969, pp. 314–316) recorded a nest found May 24, 1938, in the Cordillera Central of Costa Rica, at about 1700 meters elevation, placed in a tunnel near the top of a cut bank along a mountain roadway. The nest proper, a cup of fibrous rootlets, held two well-grown nestlings. As the burrow was examined the two parents arrived, each carrying a small green frog in the bill. In due course, first one and then the other adult flew to the nest entrance with the food to be greeted with loud notes somewhat like the calls of young woodpeckers. On the following morning in the course of 4 hours the parents, in 11 visits, brought four small lizards,

one salamander, one frog, one beetle, and other items not clearly recognized.

This species ranges regularly in the undergrowth in heavy forest where it searches along branches and examines carefully dead leaves and other accumulations in moss and airplants in search of food. The birds are found singly or, in the breeding season, in pairs. One of their notes is a rattling call like that of some of the woodpeckers. Other notes are short and more explosive in sound.

XENOPS RUTILANS Temminck: Streaked *Xenops*, Pico Lezna
Rayado

Xenops rutilans Temminck, Nouv. Rec. Planch. Col. Ois. livr. 12, 1821, pl. 72, fig. 2. (Brazil.)

A small, brown, climbing bird, with the under surface and crown streaked prominently with white; an elongated white patch on the side of the head below and behind the eye.

Description.—Length 120–130 mm. Bill sharply pointed, with the line of the culmen straight, mandible strongly recurved, but also sharply pointed. Adult (sexes alike), crown and hindneck blackish brown, streaked narrowly, but definitely, with dull buff; back and scapulars dull cinnamon-brown, the back streaked with cinnamon-buff; rump, upper tail coverts, and tail cinnamon-rufous, the latter with the inner webs of the second to fourth rectrices largely black; wing coverts in general like back, but with more or less concealed basal portions dull black; secondaries and primaries dull black, with an extensive central area and external edgings of cinnamon-buff; superciliary line white to buffy white; lores gray; postocular streak brownish black; auricular region dusky streaked with white to grayish white and dull buff, with a broad pure white stripe below (of slightly elongated feathers); chin and throat white; rest of under surface light grayish brown, with a rufescent wash on the abdomen; under tail coverts cinnamon; under surface striped with white, the stripes broader on the breast; axillars white; under wing coverts white to cinnamon-buff; cinnamon-buff markings on middle of wing showing broadly on lower surface.

The streaked breast identifies this species from the other *Xenops* found in the Republic. It ranges from Costa Rica and Panamá across northern South America to Trinidad, and south to Bolivia, northwestern Argentina, and Brazil. Two subspecies are recognized in Panamá.

Belcher and Smooker (Ibis, 1936, pp. 802–803) described two sets

of two eggs each of the race *Xenops rutilans heterurus* collected at Mount Hope, Trinidad, May 4, 1923, and May 8, 1924. The first "was in a natural cavity of a tree at about 10 feet and was composed of a few leaf-stems and root-fibres." The second was from a nest of "a few root-fibres placed in a hole in a dead stump at 8 feet. . . . The eggs are white and smooth-shelled, one set regular ovals and the second rather rounder. They measure 20.6×15.3 , and 20.6×15.2 ; 21.2×17.5 and 21×17 mm."

XENOPS RUTILANS SEPTENTRIONALIS Zimmer

Xenops rutilus septentrionalis Zimmer, Proc. Biol. Soc. Washington, vol. 42, March 25, 1929, p. 82. (Guayabo, Costa Rica.)

Characters.—Slightly smaller; faintly darker brown on back; rump and upper tail coverts darker rufous-brown; black markings on rectrices slightly less in amount; white of throat less extensive; white streaks on lower surface averaging narrower, with total amount of white reduced.

A female taken on the lower slopes of Cerro Pando, beyond El Volcán, Chiriquí, February 26, 1965, had the iris mouse brown; maxilla, tip, and cutting edge of mandible blackish neutral gray; rest of mandible dull brownish white; tarsus and toes dark neutral gray; claws blackish neutral gray.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 65.0–68.0 (66.6), tail 44.0–50.3 (47.5), culmen from base 12.3–14.0 (13.2), tarsus 13.7–14.8 (14.2) mm.

Females (5 from Chiriquí and Costa Rica), wing 61.5–64.7 (63.2), tail 45.1–49.4 (47.1), culmen from base 12.9–13.9 (13.4), tarsus 14.0–14.7 (14.3) mm.

Resident. Rare. Recorded from Subtropical Zone of the mountains of western Chiriquí.

This is a little-known bird in Panamá, recorded first by one specimen collected by Arcé, and sent to Salvin (Proc. Zool. Soc. London, 1870, p. 192). W. W. Brown, Jr., collected two males, now in the Museum of Comparative Zoology, near Boquete, Chiriquí, in March and April 1901. Mrs. M. E. M. Davidson secured a female at Barriles near the Río Chiriquí Viejo, January 12, 1931. Blake (Fieldiana: Zool., vol. 36, 1958, p. 531) recorded male and female in the Mönniche collection taken on Horqueta, above Boquete, in 1933. In recent work Dr. Frank A. Hartman secured a male on Cerro Pando, west of El Volcán, February 22, 1958. In this latter area I have taken

two males and a female February 15 and 20, 1960. These are the specimen records that have been reported to the present.

In my own few encounters with the species in life on Cerro Pando I have noted it as similar in general to the related Plain Xenops, but easily recognized from the clear white throat and heavily streaked under surface. The female collected in 1960 was one of a pair that climbed actively over the lower section of a large stub standing in dense undergrowth. Occasionally they shifted to large swinging vines. The call, heard briefly, was a sharp metallic chipping note.

This race is found in the highlands of central and southern Costa Rica, in addition to western Chiriquí.

XENOPS RUTILANS INCOMPTUS Wetmore

Xenops rutilans incomptus Wetmore, Proc. Biol. Soc. Washington, vol. 82, no. 59, Feb. 5, 1970, p. 772. (Cana, Cerro Pirre, Darién, Panamá.)

Characters.—Small, with bill smaller; pale streaks above and below reduced, decidedly narrower; less buffy wash on lower abdomen and flanks; rump and upper tail coverts slightly darker.

Measurements.—Male (type, from Cerro Pirre, Darién), wing 62.0, tail 41.2, culmen from base 12.9, tarsus 14.7 mm.

Female (1 from Cerro Pirre, Darién), wing 62.7, tail 41.9, culmen from base 13.0, tarsus 15.0 mm.

Resident. Rare; Cerro Pirre, Darién.

This form is known to date from the two specimens (listed in the measurements above), collected at Cana, on Cerro Pirre, Darién, by R. R. Benson, the female on April 20 and the male on July 31, 1928. Griscom (Bull. Mus. Comp. Zool., vol. 69, 1929, pp. 171–172) recognized that these two differed in size, but with the few specimens then available for comparison, listed them tentatively under the subspecific name *heterurus* Cabanis and Heine, the form of adjacent Colombia. With the series of the Colombian form collected by M. A. Carriker, Jr., now available, and additional specimens of *septentrionalis* from Chiriquí and Costa Rica, it is obvious that the birds from Cana are without question a distinct race. It seems probable that this may range also in the Serranía del Darién.

Measurements of the race *septentrionalis* of Chiriquí and Costa Rica are given above. Those of *heterurus*, from the series collected in Colombia by Carriker, are as follows:

Males (7 from the departments of Antioquia, Cauca, and Huila), wing 70.7–74.0 (72.1), tail 46.1–52.4 (49.9), culmen from base 13.0–13.7 (13.3), tarsus 14.3–15.2 (14.9) mm.

Females (9 from the departments of Antioquia, Cauca, and Santander), wing 66.3–69.8 (68.2), tail 46.2–50.6 (48.1), culmen from base 12.3–13.8 (13.4), tarsus 14.2–14.9 (14.6) mm.

XENOPS MINUTUS (Sparrman): Plain Xenops, Pico Lezna Pechirrayado

FIGURE 9

Turdus minutus Sparrman, Mus. Carlson., fasc. 3, 1788, no. 68, pl. 68. Rio de Janeiro, Brazil.)



FIGURE 9.—Plain xenops, pico lezna pechirrayado, *Xenops minutus*.

Small, brown climbing bird, like the Streaked Xenops but with light lines reduced and on upper breast only.

Description.—Length 115–122 mm. Bill as in *Xenops rutilans*. Adult (sexes alike), crown and hindneck dull blackish brown, with very narrow, indistinct shaft lines of dull buff and edgings of dull brownish gray; back and scapulars dull cinnamon-brown; rump and upper tail coverts cinnamon-rufous; wing coverts basally black, edged with dull cinnamon-brown like back; secondaries and primaries black, with a broad band of cinnamon-rufous across the middle;

secondaries tipped broadly, and primaries edged at end, with cinnamon-rufous; central and three outer tail feathers cinnamon-rufous, the others partly or wholly black; a narrow streak from above the eye along side of crown dull white or buff; lores grayish mixed with dull black; side of head like crown, with narrow shaft lines of buffy white, bordered below by a narrow band of clear white, slightly elongated feathers; chin and throat dull buffy white; rest of under surface dull grayish brown, with edgings of dull buffy white on fore-neck and upper breast producing faint lines; under tail coverts and flanks faintly reddish brown; edge of wing and under wing coverts ochraceous-buff. This species, plainer in markings than the Streaked Xenops, ranges from southern México through Central America and in South America from Colombia and Venezuela to Bolivia, Paraguay, and southeastern Brazil. Two slightly different forms are found in Panamá.

These interesting small birds are true climbers that move actively about, clinging with their strong feet, and often hanging back down. The long ropelike strands of pendant creepers are favored hunting ground, and on these the birds work up and down in a manner strongly suggestive of the nuthatches of the north. Often they climb along the under side of branches, always with the tail swinging free. Loose bits of bark are pried off with the bill, and they hammer twigs and creepers exactly like the piculets of similar size of the woodpecker family.

Two often range in company, sometimes a pair, sometimes an adult with one grown young. Though often alone, they also join company with bands of other small species as these forage through the leaves. The usual call is a soft chipping note that may be uttered rapidly so that it becomes a low trilling sound.

In Panamá birds are in breeding condition from January through March. One male fully grown but in immature dress was taken in company with an adult male near El Volcán, Chiriquí, March 4, 1954.

Those that I have examined have eaten only animal food—small insects and spiders. A more or less typical stomach of one taken by E. A. Goldman at Portobelo, in May 1911, was filled mainly with fragments of earwigs and ants.

XENOPS MINUTUS RIDGWAYI Hartert and Goodson

Xenops genibarbis ridgwayi Hartert and Goodson, Nov. Zool., vol. 24, August 31, 1917, p. 417. ("Tocoumé" = Tocumen, eastern Province of Panamá, Panamá.)

Characters.—Definitely reddish brown above; under surface more grayish brown.

A male, taken at Puerto Armuelles, Chiriquí, February 1, 1966, had the iris wood brown; maxilla and tip of mandible dusky neutral gray; base of mandibular rami pale wood brown; rest of mandible pale grayish white; tarsus and toes bluish neutral gray; claws dusky neutral gray.

A female, from La Jagua, eastern Province of Panamá, January 13, 1962, had the iris dark brown; maxilla dull black; tip and cutting edge of mandible dark neutral gray; rest of mandible dull grayish white; tarsus and toes dark neutral gray; claws dusky neutral gray.

Measurements.—Males (10 from Chiriquí, Veraguas, Canal Zone, and eastern Province of Panamá), wing 62.7–65.2 (63.8), tail 47.0–51.0 (48.9), culmen from base 14.0–14.8 (14.2), tarsus 14.3–14.9 (14.6) mm.

Females (10 from Chiriquí, Bocas del Toro, Veraguas, Canal Zone, and eastern Province of Panamá), wing 59.4–62.6 (60.8), tail 45.3–46.9 (45.9), culmen from base 13.1–14.5 (14.0), tarsus 13.8–14.6 (14.2) mm.

Weight, ♀, 10 grams, Fort Sherman, Canal Zone (G. V. N. Powell).

Resident. Common in lowland forests, often also in trees bordering streams in the savannas, from the Costa Rican boundary east to the Río Chimán on the Pacific slope, and to western San Blas (Mandinga) on the Caribbean side; to 1380 meters on the slopes of the mountains in Chiriquí.

Skutch (Pac. Coast Avif. no. 35, 1969, pp. 317–326) in southwestern Costa Rica found birds of this race feeding on insects and their larvae, including ants, which by vigorous hammering they peck out of bits of sticks or vines. They sleep singly in holes in dead tree trunks, which they enter quickly at dusk and leave as hastily at dawn. The nest hole is excavated by the pair, working singly, in the soft wood of slender decaying trunks or branches. The finished cavity, lined with soft vegetable fibers, holds two white eggs. Additional nest material is added as the two share in incubation. Since the eggs found were not easily accessible, no measurements were taken. The young at hatching are sparsely covered with gray down.

XENOPS MINUTUS LITTORALIS Sclater

Xenops littoralis P. L. Sclater, Proc. Zool. Soc. London, 1861 (February 1, 1862), p. 379. (Esmeraldas, Ecuador.)

Characters.—Slightly duller, darker above; lighter, more olive-gray on lower surface; tail faintly paler rufous.

Measurements.—Males (10 from extreme eastern Province of Panamá and Darién), wing 61.8–64.5 (63.4), tail 45.6–50.2 (47.9), culmen from base 13.8–15.2 (14.2), tarsus 14.6–15.0 (14.7) mm.

Females (10 from extreme eastern Province of Panamá and Darién), wing 59.9–62.5 (60.7), tail 43.9–46.8 (45.3), culmen from base 13.1–14.8 (13.6), tarsus 14.0–14.8 (14.4) mm.

Resident. Common in the tropical forests, on the Pacific slope from the Río Chimán, eastern section of eastern Province of Panamá, and Darién; on the Caribbean slope in eastern San Blas; to 900 meters on Cerro Sapo, 550 meters on Cerro Pirre, and 1430 meters on Cerro Malí.

This form is common in Colombia, where it ranges east to the lower Magdalena Valley and from the Panamanian boundary south along the Pacific slope to northwestern Ecuador. A series from Colombia averages darker above and slightly more olivaceous below than those of Panamá, and therefore are not wholly typical of this race.

SCLERURUS ALBIGULARIS CANIGULARIS Ridgway:
Gray-throated Leaf-scraper, Raspahoja Gargantigris

Sclerurus canigularis Ridgway, Proc. U.S. Nat. Mus., vol. 18, September 20, 1889, p. 542. (Turrialba, Costa Rica.)

An active ground-feeder; brown, short tailed, with gray throat and reddish brown breast.

Description.—Length 155–170 mm. Adult (sexes alike), crown sepia, in some more grayish brown especially on the forehead; hind-neck, back, scapulars, and wing coverts dull reddish brown; rump and upper tail coverts chestnut; wings dark grayish brown; primary coverts dull black; tail very dark blackish brown, darker toward the end; side of head dark, somewhat brownish gray; upper breast and adjacent sides cinnamon-rufous; lower breast and abdomen dark grayish brown; flanks and under tail coverts dull chestnut-brown; edge of wing cinnamon-rufous like breast; under wing coverts slightly brownish slate-gray.

Immature, above brown; upper breast duller brown.

Measurements.—Males (9 from Costa Rica), wing 86.1–92.3 (89.4), tail 54.0–62.5 (59.7), culmen from base 23.3–24.3 (23.7, average of 7), tarsus 21.7–23.0 (22.4) mm.

Females (6 from Chiriquí and Costa Rica), wing 83.8–89.6 (87.2),

tail 55.0–60.0 (57.9), culmen from base 21.9–24.4 (23.4), tarsus 21.5–23.2 (22.3) mm.

Resident. Rare, known in Panamá from a few records in the higher forests in the Subtropical Zone on the great volcano in western Chiriquí. The only record is of two specimens, a male and a female, collected by W. W. Brown, Jr., at an elevation of about 1700 meters above Boquete, Chiriquí, on March 19, 1901 (Bangs, Proc. New England Zool. Club, 1902, p. 45). In Costa Rica also the bird has been little known. Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, pp. 208–209) reported it “only from the northern half of the country, its recorded localities . . . restricted to the subtropical belt along the Caribbean slope of the Cordillera Central and the Pacific face of the Guanacaste Cordillera.” My only personal encounter with it in the field came in the latter area on the forested summit of Cerro Santa María. A male collected here appeared at a call in dense undergrowth a few centimeters from the ground.

Belcher and Smooker (Ibis, 1936, p. 803) describe the nest of *Sclerurus albigularis albigularis* in Trinidad as a tunnel “made in the tough clayey soil of a roadside bank, often of not more than a couple of feet in height from the ground-level; the tunnel is quite short, a foot to 18 inches, and is considerably wider than high at the entrance, which is in form a lateral oval. . . . Usually it curves considerably to right or left, and terminates in a chamber floored with a few stripped midribs of leaves placed side by side . . . these are loose and independent of each other, not interwoven. The eggs are two, broad blunted ovals, white and smooth-shelled. A pair taken 30 October, 1924, at the Heights of Guanapo, measure 25.2×20.3 and 25×20 mm.”

SCLERURUS MEXICANUS Sclater: Tawny-throated leaf-scraper,
Raspahoja Garganticaña

Sclerurus mexicanus P. L. Sclater, Proc. Zool. Soc. London, pt. 24, 1856 (January 26, 1857), p. 290. (Córdoba, Veracruz, México.)

A ground-feeder like others of the genus; throat, foreneck, and breast uniform cinnamon-rufous.

Description.—Length 150–165 mm. Adult (sexes alike), head, back, scapulars, and greater to lesser wing coverts dark brown; crown in some faintly darker, but with forehead paler; rump and upper tail coverts chestnut; wings, including the primary coverts, dusky, with the outer webs of primaries, secondaries, and primary coverts dark brown; tail dark brown basally, black or nearly black distally; chin

and throat rufous-tawny, the chin occasionally grayish white, changing on the lower foreneck and across the upper breast to rufous-chestnut; rest of under surface plain brown, somewhat rufescent on flanks and under tail coverts; under wing coverts grayish brown, edged in part with tawny.

Immature, with colors duller; foreneck and breast feathers with paler shaft streaks, and indefinite edgings of dusky or dusky-brown.

The species as a whole is found from southern México through Central America to Colombia and Venezuela, south to central Brazil, with seven geographic races currently recognized. The bird is rare to uncommon locally in Panamá where, from the specimens examined, three of the races may be identified. The nominate form *Sclerurus mexicanus mexicanus*, with a range from Veracruz and Puebla, southern México, through Guatemala and Honduras, compared to those of Costa Rica and Panamá, is marked by longer, more slender bill, and by the greater extension and brighter hue of rufous over the entire foreneck and breast.

SCLERURUS MEXICANUS PULLUS Bangs

Sclerurus mexicanus pullus Bangs, Proc. New England Zoöl. Club, vol. 3, January 30, 1902, p. 45. (Boquete, elevation 1525 meters, Chiriquí.)

Characters.—Dark above and below, and slightly more reddish brown, with the rump and upper tail coverts chestnut.

A female, taken at the head of Río Guabal, Caribbean slope of northern Coclé, March 1, 1962, had the iris dark brown; maxilla, and sides and tip of mandible, black; gonys, except at distal end, dull brownish white; tarsus and toes fuscous with the narrow posterior line of the tarsus paler; claws dull black.

Measurements.—Males (10 from Chiriquí, Veraguas, and Costa Rica), wing 73.8–80.0 (78.0), tail 50.7–58.8 (53.9), culmen from base 21.5–25.0 (23.0), tarsus 21.5–22.8 (22.0) mm.

Females (9 from Chiriquí, Veraguas, Coclé, and Costa Rica), wing 74.5–79.5 (76.8), tail 48.8–54.8 (52.3), culmen from base 22.2–23.5 (22.8), tarsus 21.2–22.5 (21.9) mm.

Resident. Rare; recorded on the Pacific slope in Chiriquí on the western base of the volcano at Barriles near the Río Chiriquí Viejo, on the eastern face above Boquete, eastward in the Cordillera de Tolé, and in Veraguas near Santiago; on the Caribbean side in Bocas del Toro at Almirante, in northern Veraguas (Calovévora), and in northern Coclé at 475 meters on the head of the Río Guabal.

The record for Santiago is from one of the early collections of

Arcé (Salvin, Proc. Zool. Soc. London, 1867, pp. 142-143) when labeling was often uncertain. The specimen, now in the British Museum, is marked "Santiago de Veragua, 1864, male." It seems probable that it was from one of the mountain localities near Santa Fé where Arcé had made collections in that early period. In the heavy forests of northern Coclé, at 475 meters, I caught one female March 1, 1962; in a mist net near our camp on the headwaters of the Río Guabal, in the upper watershed of the Río Coclé del Norte. The muscular stomach was crammed with insect fragments, including those of some larval form, all of kinds to be expected in food found under leaves.

SCLERURUS MEXICANUS ANDINUS Chapman

Sclerurus mexicanus andinus Chapman, Bull. Amer. Mus. Nat. Hist., vol. 33, November 21, 1914, p. 622. (Buenavista, 1370 meters elevation, Meta, Colombia.)

Sclerurus mexicanus anomalus Bangs and Barbour, Bull. Mus. Comp. Zool., vol. 65, September 1922, p. 209. (Cerro Sapo, Darién, Panamá.)

Characters.—Lighter brown throughout; rump and upper tail coverts brighter reddish brown.

Measurements.—Males (10 from Canal Zone, eastern Province of Panamá, and San Blas), wing 76.3-83.8 (79.6), tail 48.4-54.4 (52.4), culmen from base 22.8-26.2 (24.6, average of 9), tarsus 21.5-22.5 (22.0) mm.

Females (8 from Darién and northern Colombia), wing 75.9-81.1 (78.1), tail 47.0-59.0 (52.4), culmen from base 21.1-25.7 (22.7), tarsus 21.5-22.6 (21.9) mm.

Resident. Uncommon, in Tropical Zone forests on both Pacific and Caribbean slopes from the Canal Zone east through Darién and San Blas (to Puerto Obaldía).

The first specimens of this race known from Panamá were collected about 1862 by James McLeannan near Lion Hill on the railroad, in what later became the Canal Zone. Later two males were secured here by W. W. Brown, Jr., in March 1900 (Bangs, Proc. New England Zoöl. Club, vol. 2, 1900, p. 26), and another by E. A. Goldman on January 13, 1911. Eisenmann has identified one netted near Gamboa, July 3, 1969, by J. R. Karr. Thomas Barbour and W. S. Brooks collected male and female on Cerro Sapo, Darién, in April 1922, and the Fifth George Vanderbilt Expedition secured another there in 1941. The first two mentioned were described as a distinct race *anomalus*, which in later study proved to be invalid.

Several were taken by Hasso von Wedel at Permé, Ranchón, and Puerto Obaldía, eastern San Blas, in 1931.

In my own field studies we found these strange birds in the far eastern Province of Panamá in the dense coverts along the Quebrada Cauchero, on the lower slopes of Cerro Chucantí. Here they skulked about, wrenlike, on or near the ground, seen only in brief glimpses in the dark shadows. E. A. Goldman noted that his specimen taken near Lion Hill had a peculiar, rather high pitched note.

Dr. Eisenmann notes that in sight records care is necessary not to confuse them with the Song Wren, a species similar in its skulking mannerisms.

Beyond Panamá this race ranges through northern Colombia east of the western Andes (except in the Santa Marta region) and Venezuela to the highlands of western Guyana (Kurupung River).

SCLERURUS MEXICANUS OBSCURIOR Hartert

Sclerurus mexicanus obscurior Hartert, Nov. Zool., vol. 8, October 5, 1901, p. 370. (Lita, Esmeralda, Ecuador.)

Characters.—Darker, more dusky; duller, less reddish brown above and below than *S. m. pullus*, with rump and upper tail coverts duller, averaging less chestnut, more dusky.

A female, taken on Cerro Malí, Darién, February 24, 1964, had the iris dark brown; maxilla and tip of mandible fuscous-black; base of mandible very pale dull brownish white; front of tarsus and toes fuscous-black; back of tarsus very pale dull brownish white; claws fuscous.

Measurements.—Males (7 from Darién and Chocó, Colombia), wing 73.5–80.0 (76.7), tail 51.5–59.3 (54.7), culmen from base 20.8–23.7 (22.7), tarsus 21.5–22.3 (21.9) mm.

Females (10 from Darién, western Colombia, and western Ecuador), wing 73.2–77.3 (75.6), tail 49.5–52.2 (52.1, average of 8), culmen from base 21.0–25.7 (23.7), tarsus 20.3–23.8 (21.8) mm.

Resident. Uncommon, found in the upper Tropical and Subtropical zones on Cerro Pirre and Cerro Tacarcuna, mainly in cloud forest in the subtropical levels.

On Cerro Pirre these birds ranged from 1000 to 1580 meters; in the Tacarcuna area they were recorded at La Laguna at 900 meters, and on Cerro Malí and Cerro Tacarcuna from 1350 to 1460 meters. The specimens available from the two mountain areas agree with those from western Colombia and western Ecuador.

When the first specimens from the Darién mountains came to hand their dull hues immediately suggested the darker birds of the

race *pullus* from Chiriquí, but on closer examination it was evident that they are more dusky, duller, less reddish brown. Both are distinct from the paler *andinus* of the broad central lowland areas of the Republic. Our specimens were collected in mist nets set in the undergrowth of the forest.

Goldman's notes from Cerro Pirre record that one of his birds "was making rapid, erratic movements. It alighted first on a tree trunk a meter or so above the ground, then flew down to a log, hopped along, and suddenly faced about toward me, advanced a few hops, and at the same time gave the sharp screeching note peculiar to these birds."

**SCLERURUS GUATEMALENSIS (Hartlaub) : Scaly-throated
Leaf-scraper, Raspahoja Garganta Escamosa.**

FIGURE 10

A ground-feeder, dark brown with white throat, spotted with dusky.

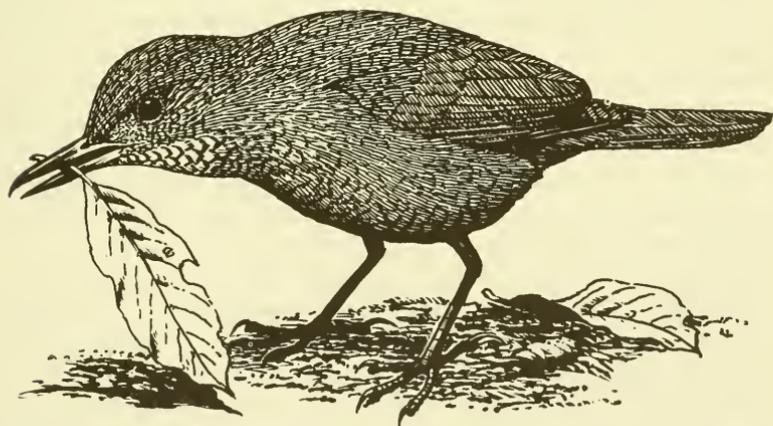


FIGURE 10.—Scaly-throated leaf-scraper, raspahoja garganta escamosa, *Sclerurus guatemalensis*.

Description.—Length 160–175 mm. Adult (sexes alike), crown and hindneck dark Vandyke brown, paler on the forehead, with the feathers margined indistinctly with dusky; back, scapulars, and wing coverts Vandyke brown; rump and upper tail coverts slightly more reddish; tail darker brown changing distally to blackish brown; wings and tips of the primary coverts dusky, with the outer webs of the remiges Vandyke brown; loreal area grayish brown to dusky with the feathers mixed with dark buff centrally; side of head dull dusky-

brown; chin and throat white margined with dusky; sides of foreneck and upper breast tawny-brown with feathers broadly margined with dusky, producing a squamate effect, with shaft lines tawny-buff; rest of under surface bister to sepia-brown, often with tawny shaft lines faintly indicated on the lower breast and occasionally on the upper abdomen; under tail coverts in some faintly chestnut-brown; edge of wing, under wing coverts, and axillars dull cinnamon-brown, varied to grayish brown, in some edged lightly with dusky.

These are forest birds found from the lowlands up to the lower subtropical mountain slopes from southern México through Central America and western Colombia to western Ecuador. Two races are recognized in Panamá.

SCLERURUS GUATEMALENSIS GUATEMALENSIS (Hartlaub)

Tinactor guatemalensis Hartlaub, Rev. Zool., vol. 7, October 1844, p. 370. (Guatemala.)

Characters.—Browner (somewhat more reddish) above and below.

Jewel recorded that in a male the iris was dark brown, maxilla black, mandible pale brownish yellow with dusky tip and tarsi blackish brown.

Measurements.—Males (10 from Costa Rica and Panamá), wing 85.6–91.8 (87.0), tail 56.5–63.2 (59.5), culmen from base 22.4–26.7 (24.1), tarsus 21.6–22.9 (22.3) mm.

Females (10 from Costa Rica and Panamá), wing 82.5–89.2 (86.4), tail 57.1–62.9 (59.1), culmen from base 23.0–25.3 (24.3, average of 8), tarsus 22.0–23.3 (22.6) mm.

Weight, ♀ 30 grams, Cerro Campana (G. V. N. Powell).

Resident. Uncommon locally in forested areas; on the Pacific slope at 1250 meters in western Chiriquí near El Volcán, at 840 meters on Cerro Hoya, Los Santos, and in lowlands from the Río Pacora to the Río Chimán, in eastern Province of Panamá; on the Caribbean side at 725 meters on the upper Río Changuena, Bocas del Toro, and in the Canal Zone (Barro Colorado Island, Gamboa, Lion Hill, Gatun).

Probably this leaf-scraper will be found in small number along the Atlantic Slope between Bocas del Toro and the Canal Zone, when that area becomes better known.

While Jewel collected two males near Gatun, Canal Zone, the nest and eggs that he secured (Stone, Proc. Acad. Nat. Sci. Philadelphia, 1918, p. 262) were those of some other species as the eggs are described as spotted, instead of plain white.

Near Juan Mina, Canal Zone, when I flushed one in a deeply

shaded quebrada in heavy forest it flew with a complaining call to cling briefly on the vertical surface of the base of a tree. In open gallery forest near the Río Chimán one flew past low near the ground and alighted a few meters away. Immediately it began turning and throwing large damp leaves by tossing them with its bill to search beneath them, working with such rapidity and energy that the disturbance resembled that made by a small whirlwind.

Habits and life history of the nominate subspecies described in detail by Skutch (Pac. Coast Avif., no. 35, 1969, pp. 296-304) from observations on Barro Colorado Island, Canal Zone, and in southwestern Costa Rica, correct various errors in literature dealing with these birds. As he has noted, in feeding they do not move leaves by picking them up in the bill, but push and overturn them with the bill closed, in movements so rapid that at times the action suggests that of a minor whirlwind. The song, given by both sexes, is a "clear trill, delivered in two ascending movements, the sound of which ends in a little silvery tinkle."

The birds nest in tunnels, one found on Barro Colorado on March 28, 1935, being dug in the earthen face of a small stream bank that ran through heavy forest. At the end of the passage, less than a meter in length, he found a cup-shaped nest made of loosely matted leaf fibers in which there was a single nestling. Another site, near El General in Costa Rica, was in a mass of earth adhering to the vertical bank of the root mass of a large tree thrown prostrate by heavy wind. Four successive nestings were in shallow tunnels dug in this mass of limited thickness. Male and female worked at the excavation carrying loosened earth in their bills to drop outside the entrance. The cups of leaf fragments for the eggs were shallow at first but had steady addition throughout incubation. This labor was shared by the pair. Each set had two white unmarked eggs, which became stained with mud as incubation progressed. One set measured 27.4×21.0 , and 27.4×20.6 mm. The nestlings at hatching had a sparse covering of gray down. These nestings came in October 1945; May, October, and December 1946 (Skutch, *Naturalist in Costa Rica*, 1971, p. 212).

SCLERURUS GUATEMALENSIS SALVINI Salvadori and Festa

Sclerurus salvini Salvadori and Festa, *Boll. Mus. Zool. Anat. Comp. Torino*, vol. 15, No. 362, November 17, 1899, p. 23. (Río Peripa, northwestern Ecuador.)

Characters.—Darker, more sooty brown, above and below.

A male taken near the Río Pequení, at the Peluca Hydrographic

Station, eastern Province of Panamá, February 20, 1961, had the iris dark wood brown; maxilla black, tip of mandible dusky neutral gray, base brownish white; tarsus and toes fuscous, claws black.

Measurements.—Males (10 from Darién, San Blas, and Ecuador), wing 84.0–89.1 (86.8), tail 56.2–62.4 (59.8), culmen from base 22.6–24.8 (23.7), tarsus 21.3–22.9 (22.4) mm.

Females (10 from eastern Province of Panamá, Darién, and Ecuador), wing 82.7–90.2 (85.6), tail 53.0–64.2 (58.2), culmen from base 22.0–24.8 (23.6), tarsus 21.8–23.0 (22.6) mm.

Resident. Uncommon in heavy forest; on Pacific slope in Darién, to 550 meters on Cerro Pirre and 575 meters on the Río Tacarcuna; on the Caribbean slope from the upper Chagres Valley to eastern San Blas (Puerto Obaldía).

This darker race is slightly more common than the nominate subspecies. On Cerro Pirre I saw them occasionally in the forest and several were taken in the mist nets. At Boca de Paya I found two feeding together on the ground, throwing leaves in the usual active manner. Occasionally they uttered a low, rather plaintive call. The single bird that I secured on the Río Pequení, above Madden Lake, is especially dark colored. In the undergrowth in tall forest they range on or near the ground in such dark shadow that often they were seen with difficulty.

Beyond Darién this race ranges south in western Colombia to northwestern Ecuador.

LOCHMIAS NEMATURA NELSONI Aldrich: Sharp-tailed Creeper,
Macuquiño

Lochmias nematura nelsoni Aldrich, Auk, vol. 62, no. 1, January 29, 1945, p. 113.
(Cerro Pirre, 1220 meters, Head of Río Limón, Darién, Panamá.)

In form like a short-tailed wren; deep blackish brown, with the under surface spotted with white.

Description.—Adult (sexes alike), crown dull blackish brown; back, rump, scapulars and outer webs of secondaries blackish chestnut-brown; upper tail coverts dusky-black; tail blackish slate; primaries and wing coverts dusky with the outer webs blackish chestnut-brown; side of head dusky-black, with faint shaft lines of dull white; under surface dusky-brown with guttate spots of dull white that almost coalesce on the chin, and on lower flanks and under tail coverts change to dull buffy brown; under wing coverts dusky, spotted faintly with dull white.

Measurements.—Males (4 specimens), wing 66.5–70.2 (67.9),

tail 39.7–45.0 (42.2), culmen from base 22.7–23.2 (22.8), tarsus 23.1–23.8 (23.4) mm.

Female (1 specimen), wing 64.7, tail 41.1, culmen from base 22.4, tarsus 23.2 mm.

Resident. Rare, on the higher levels of Cerro Pirre, Cerro Malí, and Cerro Quia, Darién.

This species, ranging in small numbers in the Andes of South America from Colombia to Bolivia, in the mountains of northern Venezuela, and in lowland areas from Brazil to Paraguay, Uruguay, and northern Argentina, was first found in Panamá by E. A. Goldman. He collected three males at elevations ranging from 1375 to 1525 meters on Cerro Pirre, near the head of Río Limón, two of them on April 27 and May 1, and one on June 7, 1912. Goldman's notes record only that the one on May 1 was found "near the ground along the stream in the canyon. . . . It was giving some sharp notes, and seemed to have the same jerky erratic flight as *Sclerurus mexicanus*." In the stomach of the one collected June 7 (preserved by the collector in alcohol) I have identified fragments of beetles, including a carabid, and beetle larva, jaws of an orthopteran with four eggs of this group, caterpillar remains, and bits of a millipede.

Another specimen record is of a female caught by Charles O. Handley, Jr., in a mist net set over a small stream at 1250 meters on the slope of Cerro Malí, a spur of Cerro Tacarcuna. This bird was preserved in alcohol, and later was made into a study skin by Mrs. Roxie Laybourne. On March 2, 1971, Dr. Pedro Galindo collected a male at 725 meters on Cerro Quia.

Dr. John Aldrich named this race for Dr. Edward W. Nelson, former Chief of the Bureau of Biological Survey, in recognition of his studies of the Goldman collections from Panamá.

The race of Panamá differs from *L. n. sororia* of northern South America in being darker, less rufescent above, more grayish brown on the under surface, with the white spots reduced, and the entire size somewhat smaller. *Lochmias n. obscurata* of the southern mountains is darker and more heavily spotted with white. The nominate subspecies is lighter colored and more heavily spotted below, the chin and upper throat being almost wholly white.

The nominate form (*Lochmias n. nematura*), according to Goeldi (Ibis, 1894, pp. 492–494) nests in tunnels in earthen banks where it builds a rounded structure of small roots and twigs lined with leaves. In this two white eggs are laid. One egg, collected by Goeldi, that I have examined in the British Museum, is dull white, without mark-

ings, and subelliptical in form. As one end had been damaged, accurate measurements could not be made. Schönwetter (Handb. Oöl., pt. 14, 1967, p. 32) gives the size in 12 eggs of this race as 24.0–26.0 × 17.8–19.3 mm.

The systematic position of the genus *Lochmias* has not been certain. Peters followed Hellmayr (Cat. Birds Amer., part 4, 1925, p. 236), who placed it at the end of the family, following *Sclerurus* (but without statement as to close affinity).

Vaurie (Classification of Ovenbirds, 1971, pp. 13, 30–34) allies *Lochmias* to *Margarornis squamiger*, a species of South America, as the two have a “remarkable and conspicuous color pattern” where in both the undersurface has “large white or whitish spots on the under parts which are narrowly edged with black and are tear-like.” The similarity in color pattern is the only resemblance, however, as the two groups differ distinctly in body form and in manner of life. The *Margarornis* group are arboreal forest birds, active in trees, and with a slighter, less powerful body form that includes weaker skeletal development. *Lochmias* may be found low down in shrubbery but is more terrestrial, with strong legs and heavier wing elements. The two appear to differ too definitely to warrant the suggested association. It is preferable to continue listing it at the close of the generic sequence for the family until there may be definite reason for its shift elsewhere.

Family FORMICARIIDAE: Ant-thrushes, Ant-shrikes;
Hormigueros

The assemblage of species in this family, found only in the New World, is one typically South American, with extension north through Panamá in diminishing number. Peters (Check-list Birds of the World, vol. 7, 1951, pp. 153–273) listed 223 species. While of these only 38 are recorded in Panamá, where, widely distributed in the Tropical and Subtropical zones, they form a varied and highly interesting assemblage of birds. They diminish steadily in number northward until only 10 reach México, with the Barred Ant-shrike alone recorded north as far as southern Tamaulipas.

In Panamá these birds are found throughout the mainland, but only two species appear to have ventured to off-lying islands. *Thamnophilus doliatus* is resident on Isla Coiba, off western Veraguas, and on Isla Pedro González in the Archipiélago de las Perlas. Both populations are darker than the mainland race *Thamnophilus d.*

6. Crown and under surface from throat to abdomen streaked prominently with white 7
 Under surface and crown without streaks, or if streaked, these markings indistinct, dull-colored, not white..... 8
7. Wings and tail rufous, wing coverts spotted indistinctly with rufous.
 Black ant-shrike, *Thamnophilus nigriceps nigriceps*, female, p. 142
 Wing coverts black spotted with white, tail black tipped with white.
 Bridges' ant-shrike, *Thamnophilus bridgesi*, female, p. 140
8. Dull black, wing coverts and tips of rectrices plain, or spotted with white 9
 Slate, gray, or dull buff, not black; plain or indistinctly streaked..... 10
9. Wing coverts and tail plain black; bill smaller, exposed culmen shorter than skull.
 Black ant-shrike, *Thamnophilus nigriceps nigriceps*, male, p. 142
 Wing coverts and tail tipped with white.
 Bridges' ant-shrike, *Thamnophilus bridgesi*, male, p. 140
10. Back with a large concealed central spot of white; crown dull black or brown without streaks; under surface not streaked.
 Slaty ant-shrike, *Thamnophilus punctatus atrinucha*, p. 144
 Back with no concealed white, crown and back lined indistinctly with buffy brown and dull black; base of bill with definite bristles.
 Spiny-faced ant-shrike, *Xenornis setifrons*, p. 149
11. Smaller, wing less than 55 mm..... 12
 Larger, wing more than 55 mm..... 22
12. Outer webs of primaries rufous; outer webs of two outermost rectrices white.
 Rufous-winged ant-wren, *Herpsilochmus rufomarginatus exiguus*, p. 178
 Outer webs of primaries not rufous; outer webs of outermost rectrices not white 13
13. Feet stronger, toes larger, tarsus 20 mm or more; crown and back plain with a prominent white superciliary line extending from lores to side of nape... Black-breasted ant-wren, *Formicivora grisea alticincta*, p. 183
 Feet weaker, toes smaller, tarsus 17 mm or less; superciliary, if present, not prominent 14
14. Tail longer, 40 mm or more..... 15
 Tail shorter, not more than 36 mm..... 16
15. Upper surface black, a large concealed white area in center of back.
 Dotted-winged ant-wren, *Microrhopias quixensis*, p. 179
 Center of back rufous.
 Rufous-backed ant-wren, *Terenura callinota callinota*, p. 185
16. Upper surface heavily streaked with black and white..... 17
 Upper surface plain except for spots on the wings and tip of tail..... 18
17. Throat plain white; breast and abdomen yellow; tail less than 20 mm.
 Pygmy ant-wren, *Myrmotherula brachyura ignota*, p. 161
 Throat and breast heavily streaked with white.
 Streaked ant-wren, *Myrmotherula surinamensis pacifica*, p. 163
18. Wing coverts spotted definitely with white..... 19
 Wing coverts plain, or spotted with cinnamon-buff..... 20

19. Elongated flank feathers white.
 Black ant-wren, *Myrmotherula axillaris albigula*, adult male, p. 171
 Elongated flank feathers slate-gray.
 Slaty ant-wren, *Myrmotherula schisticolor schisticolor*, adult male, p. 175
20. Wing coverts plain, without spots.
 Slaty ant-wren, *Myrmotherula schisticolor schisticolor*,
 female and immature male, p. 175
 Wing coverts spotted with cinnamon-buff. 21
21. Under surface paler, buffy white to buff.
 Black ant-wren, *Myrmotherula axillaris albigula*, female, p. 172
 Under surface darker, dull cinnamon to cinnamon-buff.
 Fulvous ant-wren, *Myrmotherula fulviventris*, p. 167
22. Foreneck and breast clear white.
 Bicolored ant-bird, *Gymnophrys bicolor*, p. 224
 Foreneck and breast if white spotted or streaked with another color. 23
23. Back and breast heavily marked with rounded black spots.
 Ocellated ant-bird, *Phaenostictus mcllannani*, p. 234
 Back not heavily spotted with black. 24
24. Wing coverts widely banded with cinnamon-brown. 25
 Wing coverts lined or bordered with buff or white, or plain. 26
25. Small; tail more than one-half length of wing; under surface white or
 pale buff, breast spotted. Spotted ant-bird, *Hylophylax naevoides*, p. 229
 Larger; tail short, decidedly less than one-half length of wing; breast, sides,
 and abdomen plain gray, without markings.
 Wing-banded ant-bird, *Myrmornis torquata stictoptera*, p. 211
26. A cinnamon-brown area, concealed by overlying feathers, in center of back
 Russet ant-shrike, *Thamnistes anabatinus*, p. 151
 Back with concealed patch white, or without such marking. 27
27. With prominent white tips on tail feathers.
 Jet ant-bird, *Cercomacra nigricans*, p. 190
 Tail not prominently tipped with white. 28
28. Breast and foreneck with narrow shaft lines of black or slate; crown
 heavily spotted; small.
 Spotted-crowned ant-vireo, *Dysithamnus puncticeps puncticeps*, p. 158
 Breast and foreneck not lined narrowly with black or slate, crown not
 spotted 29
29. Abdomen light yellow; small. Plain ant-vireo, *Dysithamnus mentalis*, p. 154
 Abdomen not light yellow; larger. 30
30. Abdomen white; back and upper tail coverts rufous-brown.
 White-bellied ant-bird, *Myrmeciza longipes panamensis*, p. 197
 Abdomen black, slate, or rufous. 31
31. Wing coverts rather finely spotted with white; throat black in male, spotted
 with white in female.
 Salvin's ant-bird, *Myrmeciza lacmosticta lacmosticta*, p. 206
 Wing coverts edged with white, or cinnamon, or without markings. 32
32. With an area of white concealed in the back. 33
 With no concealed white in the back. 34

33. Wing more than 75 mm; wing coverts edged with white in male, with chestnut in female (concealed white absent in some); forecrown bare in male, bright blue in life.
 Bare-crowned ant-bird *Gymnocichla nudiceps*, p. 192
 Wing less than 70 mm; head feathering normal.
 Tyrannine ant-bird, *Cercomacra tyrannina*, p. 186
34. Form normal, body slender, legs proportionately shorter, tail normal... 35
 Form more rounded, body heavy, legs relatively longer, tail short.... 36
35. Larger, wing 75 mm or more; male black, female dull brown with side of head black.....Immaculate ant-bird, *Myrmeciza immaculata*, p. 209
 Smaller, wing 70 mm or less; male with black or blackish slate head and under surface, and brown back; female with slate-colored head and brown lower surface.....Chestnut-backed ant-bird, *Myrmeciza exsul*, p. 200
36. Small, wing less than 65 mm, tail less than 25 mm, with prominent rictal bristles.....Ochraceous pygmy ant-pitta, *Grallaricula flavirostris*, p. 241
 Larger, wing more than 75 mm, without prominent rictal bristles.... 37
37. Breast plain, without streaks or spots..... 40
 Breast streaked, or heavily spotted..... 38
38. Breast heavily spotted; larger, wing more than 90 mm, bill heavy.
 Black-crowned ant-pitta, *Pittasoma michleri*, p. 237
 Breast streaked; smaller, wing less than 85 mm, bill slender..... 39
39. Breast narrowly streaked; wing coverts plain.
 Fulvous-bellied ant-pitta, *Hylopezus fulviventris*, p. 248
 Breast heavily and broadly streaked; wing coverts strongly spotted with buff.....Spectacled ant-pitta, *Hylopezus perspicillatus*, p. 250
40. Dorsal surface with feathers edged with dusky.
 Scaled ant-pitta, *Grallaria guatemalensis*, p. 243
 Dorsal surface plain, without streaks or markings..... 41
41. Breast chestnut or rufous.
 Rufous-breasted ant-thrush, *Formicarius rufpectus*, p. 222
 Breast grayish brown to nearly black..... 42
42. Crown and side of neck black.
 Black-headed ant-thrush, *Formicarius nigricapillus nigricapillus*, p. 220
 Crown brown, like back, side of neck rufous.
 Black-faced ant-thrush, *Formicarius analis*, p. 213

**CYMBILAIMUS LINEATUS FASCIATUS (Ridgway): Fasciated
 Ant-shrike, Hormiguerote Rayado**

FIGURE 11

Cymbilanius lineatus fasciatus Ridgway, Proc. U.S. Nat. Mus., vol. 6, April 26, 1884, p. 404. (Hacienda Los Sábalo, Chontales, Nicaragua.)

Bill large and strong; male narrowly barred black and white, with black more prominent on upper surface; female buffy white barred with black, narrowly on lower surface, more heavily above.

Description.—Length 165–180 mm. Bill large, swollen, depth and width at nostril about equal; maxilla deeply notched and strongly hooked at the tip; mandible sharply toothed at distal end; a bushy decumbent crest. Adult male, crown black, with the forehead and fore crown finely barred with white (barred narrowly with white over entire crown in first adult dress); rest of upper surface,



FIGURE 11.—Fasciated ant-shrike, hormiguerote rayado, *Cymbilaimus lineatus fasciatus*, male.

including side of head, wings, and tail black barred narrowly with white; under surface, including under wing coverts and axillars white, barred narrowly with black; inner webs of secondaries and inner primaries white.

Adult female, forehead white (or buff in first adult dress) barred narrowly with black; rest of crown, including crest, cinnamon-rufous

(the feathers tipped irregularly with black in first adult dress); rest of upper surface, including wings and tail black, barred very narrowly with cinnamon-buff to pale buff; side of head and entire under surface pale buff to nearly white, barred narrowly with black, in some the dark markings much reduced on foreneck, center of the breast, and abdomen; inner under wing coverts pinkish buff; outer series mixed white and buff, barred narrowly with black; inner webs of primaries and secondaries white to buffy white, mottled with dusky.

Juvenile, both sexes, entire crown chestnut, barred narrowly with black; rest of upper surface black barred with cinnamon-buff; outer primaries dotted, and tail barred narrowly, with white.

A male collected on Cerro Galera, Canal Zone, January 8, 1961, had the iris dark red; maxilla black; mandible neutral gray; tarsus, toes, and claws neutral gray.

A female, taken at Juan Mina, Canal Zone, January 17, 1961, had the iris bright red; a small area surrounding the nostril light mouse brown; rest of maxilla fuscous-black, cutting edge at base neutral gray; mandible, with distal half of cutting edge and tip grayish white, otherwise neutral gray; tarsus, toes, and claws neutral gray. Another of this sex, collected at Cañita, Province of Panamá, February 6, 1962, was similar.

Measurements.—Males (10 from northern Coclé, Colón, Canal Zone, Province of Panamá and Darién), wing 70.5–74.6 (72.8), tail 61.0–69.0 (64.0), culmen from base 24.0–27.3 (25.7), tarsus 24.6–25.7 (25.1) mm.

Females (10 from Bocas del Toro, northern Coclé, Canal Zone, San Blas, Province of Panamá and Darién), wing 71.0–73.2 (71.9), tail 63.0–68.5 (65.2), culmen from base 23.7–27.7 (25.7), tarsus 24.6–25.7 (25.1) mm.

Resident. Fairly common in forests in the Tropical Zone; on the Pacific slope from central Chiriquí and Veraguas to the Canal Zone (Cerro Galera, Chiva Chiva, Forest Reserve), eastern Province of Panamá (Pacora, Cerro Azul eastward), and Darién to the Colombian boundary; on the Caribbean side from western Bocas del Toro east to eastern San Blas (Puerto Obaldía); to 730 meters on the head of the Río Changuena, in Bocas del Toro, 600 meters on Cerro Pirre, and 575 meters on Cerro Tacarcuna in Darién.

The reports for Chiriquí and southern Veraguas are those of Salvin based on collections made by Enrique Arcé. Salvin (Proc. Zool. Soc. London, 1867, p. 144) recorded the bird in his first

report from Santa Fé and Santiago in Veraguas. In a later account (idem, 1870, p. 194) he added Calovévora and Calobre, Veraguas, and Mina de Chorchá (east of David) in central Chiriquí. These localities are repeated in the summary account by Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 2, 1892, p. 195), and, with the exception of Santiago, are found on specimens in the British Museum (Natural History) received from Salvin and Godman. In modern times the bird has not been recorded on the Pacific slope west of the western border of the Canal Zone, where it occurs on Cerro Galera, and from that point eastward, in forested areas. It has not been reported from the Azuero Peninsula.

These are birds of thickets and the lower branches in forest trees, ranging regularly to higher levels than is customary with related ant-shrikes. While not abundant they are widely distributed, so that they are encountered regularly in pairs in forested areas. Rarely I have seen one on the forest floor. Their coloration and pattern of markings serve to make them inconspicuous.

A usual call is a low, high-pitched *tsee-ee* that has little carrying power. The song is a single repetition of a single note, given rather rapidly: *whew whew whew*. Occasionally I have heard them utter a low rattling call, rather metallic in sound.

At Almirante, Bocas del Toro, this species was called "dominick" from the barred pattern of its plumage, like that of the dominique variety of the domestic fowl.

The notes of Major-General G. Ralph Meyer describe a nest found July 20, 1941, in the Forest Reserve, on the Madden Road, Canal Zone. This was a cup placed "in fork of small sapling" about two and one-third meters from the ground. The two eggs, cream-white, spotted irregularly with chocolate brown and dull lilac, measured 23.9×17.8 and 24.3×18.3 mm. Eisenmann recorded a fully grown fledgling with its parents on the Navy Pipeline Road, near Gamboa, October 12, 1965.

In the U.S. National Museum there are eggs of the allied *Cymbilaimus lineatus intermedius*, collected by M. A. Carriker, Jr., in northern Colombia as follows: A set of two comes from Santa Rosa, southern Department of Bolívar, on the eastern base of the Serranía de San Lucas, a spur of the Central Andes that forms the divide between the lower Cauca and middle Magdalena valleys. In form one is subelliptical, the other near short subelliptical. In color they are white, dotted and spotted rather finely with olive-brown to fuscous,

varied to vinaceous drab, partly in very fine, short hairlines, but mainly in an indefinite wreath around the cap of the upper end, the lower more pointed end being mainly clear. They measure 24.7×17.6 and 23.6×18.1 mm. A single egg taken fully formed from the oviduct of a female, collected March 24, 1948, on the Hacienda Belén in eastern Antioquia, is marked with vinaceous-drab, mainly in a distinct wreath around the cap, with dots and hairlines elsewhere, and scattered spots of blackish brown. This egg measures 24.2×17.8 mm.

Skutch (Publ. Nuttall Orn. Club no. 10, 1972, p. 132) reported that male and female shared incubation during the day, with the female alone at night.

In the field occasionally I saw these birds eating caterpillars. The stomach of a male collected by Goldman on Cerro Pirre was filled with fragments of several species of beetles, nymphs, and adult pentatomids, a few bits of a locustid, and ants.

The race *fasciatus* is found from Honduras south through Central America and western Colombia.

**TARABA MAJOR MELANOCRISUS (Sclater): Great Ant-shrike,
Hormiguero Grande**

FIGURE 12

Thamnophilus melanocrissus P. L. Sclater, Proc. Zool. Soc. London, pt. 28, August 1860, p. 252. (Choctum, Alta Verapaz, Guatemala.)

Medium size; male, black above; female, warm brown above; both white below.

Description.—Length 175–200 mm. Adult male, upper surface, including side of head, wings, and tail, black; feathers of center of back with concealed bases broadly white; wing coverts tipped with white; alula edged with white; under surface clear white; flanks gray; under tail coverts black, in some plain, in others narrowly tipped with white, occasionally the white tipping extensive; under wing coverts, edge of wing, and inner margins of flight feathers white.

Adult female, upper surface brown, darker on head, chestnut on back, paling to cinnamon-brown on the upper tail coverts; lores, space below eye, and orbital region more or less dusky; under surface white, in some tinged with buff; lower sides changing to grayish, and on the flanks to buffy brown or cinnamon; under tail coverts cinnamon; axillars, under wing coverts, and inner margins of flight feathers white.

Immature male, like adult, but concealed white on back less extensive; wing coverts with white edgings reduced, occasionally varied by scattered tips of cinnamon-buff; sides of breast barred narrowly with blackish slate.

Immature female, concealed white on back much reduced; wing coverts faintly barred with dull black; primary coverts with a narrow subterminal bar of blackish slate and tip of cinnamon-buff; white of sides, breast, and ramal area of mandible barred narrowly, and in part indistinctly, with slate.

Juvenile male, dorsal surface dull black, barred narrowly and somewhat indefinitely with cinnamon-buff; tips of primary coverts paler; under surface, including the flanks and under tail coverts, buffy white, barred narrowly with slate; under tail coverts dull black, barred faintly with buff and dull white; tibia black, barred with dull cinnamon-buff.

Juvenile female, back, rump, and under tail coverts barred narrowly with blackish slate; under surface buff, barred narrowly and indistinctly on foreneck, breast, and sides with slate.

Male (several specimens), iris reddish orange to bright red; bill black; tarsus and toes bluish neutral gray; claws black.

Female (several specimens), iris reddish orange to bright red; base of mandibular rami dark neutral gray; rest of bill black; tarsus and toes neutral gray to bluish neutral gray; claws dark neutral gray to black.

Measurements.—Males (14 specimens from throughout the range in Panamá), wing 88.1–93.5 (89.8), tail 67.5–71.8 (69.0), culmen from base 27.0–32.3 (29.4), tarsus 34.2–37.0 (35.5) mm.

Females (14 specimens from throughout the range in Panamá), wing 87.4–91.1 (89.3), tail 66.0–71.4 (69.0), culmen from base 27.7–30.5 (29.0, average of 13), tarsus 34.8–38.2 (35.9) mm.

Resident. Fairly common in the tropical lowlands; to 1280 meters in western Chiriquí. Found locally on the Pacific slope from western Chiriquí east to Veraguas, commonly from the Canal Zone and eastern Province of Panamá through Darién; none recorded from the Azuero Peninsula. On the Caribbean side, recorded throughout from western Bocas del Toro to eastern San Blas.

These are shy, retiring birds, found in the undergrowth in forest edge, along stream borders, in low stands of second growth, and in thickets in pastures and other clearings, usually remote from houses

and other human activities. Where not disturbed, they may range out in dense stands of weeds. At any alarm they remain quiet, or may slip away hidden by the dense cover of their haunts. In the humid air preceding or following rain, especially in early morning, males often become active and sing, a quick repetition of a single note that begins slowly, becomes rapid, and ends abruptly in a snarling sound of higher pitch, the whole audible for several hundred meters. The song as a whole resembles somewhat the calls of some of the smaller trogons.



FIGURE 12.—Great ant-shrike, hormiguero grande, *Taraba major melanocrissus*, male.

Two nests of this subspecies examined by Skutch (Pac. Coast Avif. no. 35, 1969, pp. 165–170) in southwestern Costa Rica were built in thickets, one elevated a meter and a half, the other a little higher above the ground. Both had outer portions woven of slender vines, attached to supporting arms, with an inner mass of dry leaves. The deep, open cup that held the eggs was lined with a mat of slender fibers. The two eggs in each set were dull creamy white, marked heavily with dark chocolate, blackish and purplish brown, varied by pale lilac. Measurements were 29.4×23.0 and 30.2×22.2 ; 28.2×23.0

and 29.4×22.2 mm. Both male and female incubated by day, with the female alone at night. The young at hatching were dark colored, and without down.

Two eggs in the National Museum collection identified as of this race, collected July 22, 1922, by Austin Smith at Puerto Jiménez, Puntarenas, Costa Rica, are subelliptical, very faintly buffy white, with fine scattered spots of cinnamon over most of the surface, more abundant and broader as a cap on the larger end. They are somewhat larger, as they measure 31.3×23.2 and 30.5×22.3 mm.

The nest of the race *Taraba major semifasciatus* in Trinidad differs somewhat as it is described by Belcher and Smooker (Ibis, 1936, p. 804) as "a deep pensile cup, suspended below a horizontal fork or crossed vines; it is strongly woven of black horsehair-like fibres, but . . . the eggs can be seen through the nest from below. . . . In the few nests seen the male has always been incubating." Three sets of eggs of this race, collected by these authors, in the British Museum (Natural History), each have two eggs. In two sets one egg is elliptical and the other subelliptical in form. In the third both are subelliptical. In all, the ground color is faintly buffy white. These eggs have somewhat heavier markings than those of *melanocrissus* described above. Two sets are marked rather broadly with irregular blotches, spots, and lines of chocolate, light to dark gray, and dull brown, mainly on the larger end where in part the markings form an irregular wreath. Markings on the opposite end are less in amount and extent. In the third set the spots and blotches are smaller, and there are fewer lines. Measurements differ somewhat also. Those of the three sets are as follows: 26.5×21.2 , 27.3×22.2 ; 27.6×21.0 , 27.7×21.5 ; and 28.8×21.5 , 29.0×21.5 mm.

The food seems to be mainly insects, as in those I have examined I have found ants, roaches, and caterpillars. They also take small lizards.

Two birds that I collected on the Río Jaqué in Darién were recognized by Chocó Indian friends in their language as the *jorojóro*.

As a species these birds range from northern Oaxaca and Veracruz in southern México, through Central and South America to northern Argentina. In this vast area there are two main population types, one from Trinidad and eastern Venezuela southward, in which the tail is strongly barred with black and white (typical *T. m. major*, with the allied races *stagurus* and *semifasciatus*), and all others in which the tail is black, with white markings restricted to occasional narrow tips on the outer rectrices. Females do not have these mark-

ings. The northern group, the race *melanocrissus*, is remarkably uniform. With the considerable series now available, the birds from México south to northwestern Colombia in Antioquia, and south through western Chocó and Valle, in males have the black of the side of the head extended down below the gape on the side of the mandibular ramus. In most the tail is plain black; some have faint white tips on the shorter, external rectrices. In typical form, from México through Guatemala, the under tail coverts are black. From Costa Rica through Panamá, northwestern Antioquia in Colombia, and southward along the Pacific Coast west of the Andes, the feathers in this area are lightly tipped with white. The flanks in all are slightly darker. Females average slightly darker above and on the under tail coverts.

The race *granadensis*, found across Colombia from the Gulf of Urabá to northwestern Venezuela, in the male has the black on the side of the head not extended below the gape, the flanks slightly paler, white on the wings more extensive, and the under tail coverts more extensively white. The female is faintly paler above, and is paler brown on upper and under tail coverts.

Brodkorb (Univ. Michigan Mus. Zool., Misc. Publ. no. 55, 1943, pp. 55–56) has shown that the type locality of *melanocrissus* is not in Veracruz as long listed, but is Choctum, Alta Verapaz, Guatemala. Sclater (Cat. Coll. Amer. Birds, 1862, p. 172) lists male and female from that locality as his type specimens. These from the locality indicated, collected by Salvin, are now in the British Museum.

**THAMNOPHILUS DOLIATUS (Linnaeus): Barred Ant-shrike,
Pavita Hormiguera Rayada**

FIGURE 13

Lanius doliatus Linnaeus, Mus. Adolphi Friderici Regis, vol. 2, 1764, p. 2. (Surinam.)

Small; male, above black, barred on back and wings with white; below barred black and white. Female, cinnamon-brown to rufous-brown above, with crown darker; buff to cinnamon, below.

Description.—Length 140–155 mm. Feathers of back of crown somewhat elongated to form a bushy crest. Adult male, crown black, in some mixed heavily with white; forehead lined narrowly with white; rest of upper surface, including wings and tail, barred with white; side of head, chin and throat white, streaked with black; rest of under surface white, barred narrowly with black; in some the abdomen paler, with bars reduced or absent; under wing coverts white, barred or spotted with slate.

Adult female, crown chestnut; back cinnamon to rufous-brown, rump and upper tail coverts paler, cinnamon-buff to cinnamon; hindneck, auricular area, and sides of neck ochraceous-buff to buffy white, streaked with black; narrow ring around eye buff or buffy white; chin and throat buff to cinnamon-buff, in some lightly streaked with dusky or black, usually on sides; rest of under surface ochraceous to ochraceous-buff, paler on abdomen, darker on sides and flanks; under wing coverts paler; inner webs of wing feathers edged with cinnamon.



FIGURE 13.—Barred ant-shrike, pavita hormiguera rayada, *Thaunophilus doliatus*, male right, female left.

Immature male, under surface barred narrowly with black, the abdomen with bars restricted or absent; white on under surface, especially on breast, sides, flanks, and under tail coverts, washed with buff; wing with paler markings of buff to cinnamon-buff.

Immature female, duller rufous on upper surface, with crown, back, scapulars, and rump barred with dusky; underparts paler, barred irregularly with dusky, except the abdomen; throat barred and spotted with dusky.

This is the ant-shrike seen commonly in the central area of the Republic, where it is widely distributed throughout the lowlands wherever there are thickets, forest edge, or stream borders of low growth that afford suitable cover. In these mainland areas, and in the Archipiélago de las Perlas, it does not venture far into the true forest. It lives in pairs that range in company, often secretive, less frequently rather tame. When seen, the raised crest, with the barred pattern of the male, and the buffy brown hues of the female, leave no doubt as to identification. Both sexes sing regularly throughout the year, especially in early morning, a single note repeated rapidly so that toward the end it becomes a rattle, and then terminates abruptly in a nasal sound with rising inflection. The call note is a low croaking sound. As they sing, they stand erect with body and tail quivering with the force of the effort. When the two are performing near one another the voice of the male is louder than that of his mate.

In settled areas they come regularly into ornamental shrubbery planted about driveways and the bases of buildings. There, while remaining usually under cover, they may become more confident and tame. While the barred pattern of the back of the male is easily diagnostic under usual conditions, it is interesting to note that on dark, overcast days, when the light is dim, the bird may appear wholly dark. When not disturbed they may show curiosity at some unusual circumstance. I have had one fly down to the ground to inspect a small bird that after a shot had fallen in an open spot near a bush. The food is mainly small insects and spiders. Occasionally I have found them over ant swarms, usually when these pass through the edge of thickets at the border of forest. The flight, across small openings, is straight, direct, and rather slow, accomplished with wings beating rather slowly.

Distribution of the species *T. doliatus* through the offshore islands along the Pacific coast is irregular. I did not note them on islas Parida and Bolaños in Golfo de Chiriquí in February 1963, nor on Brincanco in the Islas Contreras, or on Afuera and Afuerita in the area between Isla Coiba and the mainland in March 1962. In January 1965 none were seen on Isla Gobernadora, nor in March 1962 and January 1965 on Isla Cébaco in Golfo de Montijo. They were not recorded on Isla Taboga and the adjacent islets during visits in several years. In the Archipiélago de las Perlas they have been reported to date only on islas Pedro González, Viveros, Rey, and Cañas. Absence on the large Isla San José is especially interesting.

THAMNOPHILUS DOLIATUS PACIFICUS Ridgway

Thamnophilus doliatus pacificus Ridgway, Proc. Biol. Soc. Washington, vol. 21, October 20, 1908, p. 193. (Chinandega, Nicaragua.)

Characters.—Male, with the crown feathers extensively whiter; black bars on under surface slightly wider, so that the under surface appears somewhat darker. Female, averaging slightly darker above and below.

In a male taken near Puerto Armuelles, Chiriquí, March 9, 1966, the iris was yellowish white; cutting edge of maxilla and all of mandible bluish neutral gray; rest of maxilla black; tarsus, toes, and claws rather dull neutral gray.

Measurements.—Males (10 from Chiriquí, Costa Rica, Nicaragua, and El Salvador), wing 67.6–71.7 (69.9), tail 52.7–59.3 (56.2), culmen from base 20.8–23.4 (21.5), tarsus 25.8–28.8 (27.3, average of 9) mm.

Females (10 from Chiriquí, Costa Rica, and Guatemala), wing 66.1–69.5 (67.8), tail 51.3–59.5 (55.8), culmen from base 19.3–21.9 (20.7), tarsus 25.6–27.5 (26.7) mm.

Resident. Locally, tolerably common in the Tropical Zone of western Chiriquí from the Costa Rican boundary eastward, intergrading with *T. d. nigricristatus* in the valley of the Río San Félix, above San Félix. Found in small number in the mangrove swamps on the coast northeast of Puerto Armuelles, more common inland to the north above Concepción, Alanje, and near David.

From published records these birds appear less numerous now than 70 to 100 years ago. Early collectors reported them common near Divalá, Bugaba, and David. In my own studies there in 1960 I found them in fair number only on the coastal area below Alanje, mainly near the Río Chico and westward. Elsewhere, clearing for pastures and farms has destroyed the thickets that are their normal haunt. To the westward in this area there were a few in the borders of the mangrove swamps near the mouth of the Río Palo Blanco. Inland and to the south down the Burica Peninsula where the darker ant-shrike, *Thamnophilus bridgesi*, was common, I did not encounter them. If any are present they must be rare and local. To the north and west *T. d. pacificus* ranges from southern El Salvador and western Honduras through western Nicaragua and western Costa Rica.

While this subspecies, in the extensive white in the crown of the head in the male and in its average darker coloration, is readily separated from the race *nigricristatus* of eastern Panamá, it should

be noted that in general *T. d. pacificus* is closer to *T. d. YUCATANENSIS*?
Yucatanicus? found in the Yucatán Peninsula in Campeche, Yucatán, and Quintana Roo, ranging south to Petén in northeastern Guatemala and in intermediate form in northern British Honduras. This population in the male has somewhat less white in the crown, and is slightly darker above and below. The female is slightly darker. These two paler populations are separated completely from one another by the decidedly darker *T. d. intermedius* which ranges through eastern and southern México, west of the Yucatán Peninsula and eastern Petén, from eastern Guatemala and Honduras south through eastern Nicaragua and eastern Costa Rica.

Near El General, Costa Rica, Skutch (Pac. Coast Avif., no. 35, 1969, pp. 192–196) has recorded five nests in or adjacent to thickets where they were placed at varying elevations from a little less than a meter to slightly more than 3 meters above the ground. "Each was a deep, thin-walled, but well made cup attached by its rim to the arms of a horizontal fork." They were constructed of various fibers, usually with bits of green moss on the outside. The eggs were white, marked with spots and lines of chocolate, and purplish brown, often concentrated in a wreath on the larger end and present only sparingly elsewhere. There is much variation in amount and form of markings in this species. The usual set is of two eggs. Skutch recorded measurements in four as 23.8×17.1, 23.8×17.5, 23.0×17.5, and 22.6×16.7 mm. Both parents shared in incubation, with the female alone during the night, and both fed the young. When hatched the young are without down.

THAMNOPHILUS DOLIATUS NIGRICRISTATUS Lawrence

Thamnophilus nigricristatus Lawrence, Proc. Acad. Nat. Sci. Philadelphia, 1865, p. 107. (Lion Hill Station, Panama Railroad, Atlantic slope, Canal Zone, Panamá.)

Characters.—Male, with crown mainly black (white markings much restricted and in some specimens absent); otherwise like *pacificus* on the upper surface; under surface decidedly paler, with the central abdomen in many much lighter or even white without bars. Female averaging paler.

A male, collected January 21, 1962, at Las Palmitas, Los Santos, had the iris yellowish white; maxilla black; mandible neutral gray; tarsus, toes, and claws neutral gray. Another, apparently younger, on January 20, 1963, at Gago, Coclé, had the iris pale dull yellow; culmen and distal end of maxilla black; side of maxilla from base,

cutting edge to near tip, and all of mandible except tip, neutral gray; tip of mandible dusky neutral gray; tarsus, toes, and claws slightly bluish neutral gray. Another, at the same place and date had the gape whitish.

Measurements.—Males (15 from Panamá), wing 67.9–72.4 (70.1), tail 53.2–59.0 (56.0), culmen from base 20.2–23.3 (21.4), tarsus 26.2–27.8 (26.9) mm.

Females (15 from Panamá), wing 67.0–69.6 (68.2), tail 53.0–58.9 (55.9), culmen from base 20.2–22.5 (21.3), tarsus 26.2–27.8 (27.0) mm.

Weights, ♂ 27 grams, ♀ 22 grams (Fort Sherman, G. V. N. Powell).

Resident. Common on the Pacific slope from eastern Chiriquí (San Félix, intermediate toward *pacificus*, Las Lajas) east through Veraguas and Coclé, including the Azuero Peninsula from the north-western end at the western side of Bahía Montijo (one record inland at Altos Cacao, elevation 450 meters) to the entire eastern side, and the southern end to the base of the mountains; the western Province of Panamá, Canal Zone, and eastern Province of Panamá to Chepo and the lower Río Bayano (El Llano, Cañita); on the Caribbean side from northern Coclé (El Uracillo) to the Canal Zone and the lower Chagres Valley. (I did not find them on Isla Gobernadora and Isla Cébaco, in the lower Golfo de Montijo.)

This is the better known race of this species through its distribution in the central area of the Republic, where it has been a familiar bird to the many who have had interest in these matters. While the usual common name is *parvita*, near El Copé, Coclé, the country boys called them *moña del suelo*.

In the field notes of Major-General G. Ralph Meyer there is record of two nests in the Canal Zone, on March 20, 1941, at Quarry Heights. The first was suspended vireolike from a small branch of a low tree, about 2½ meters above the ground. It was so loosely woven of dried grasses that the eggs were visible from beneath. The two eggs measured 23.3×16.1 and 23.1×16.3 mm. The second nest, found near the Gamboa Road junction on May 11, 1941, resembled the first. The single egg measured 23.6×16.6 mm. The eggs are dull white to creamy white marked with dark brown or gray, in part in small spots, and in part in fine irregular lines. Both male and female incubate.

The breeding period seems to continue through the early half of the rainy season as Eisenmann (Smithsonian Misc. Coll., vol. 117, no. 5,

1952, p. 34) reported fresh eggs in the Canal Zone on July 17 and August 12.

The stomachs of two collected by E. A. Goldman near Corozal, Canal Zone, June 15, 1911, were filled with finely broken bits of small insects in which I identified beetles of several families— weevils, flea-beetles, a bruchid, and an elaterid—ants, and a pentatomid. One held eight small seeds, the other three, that I was not able to identify, probably from some berry.

THAMNOPHILUS DOLIATUS EREMNUM Wetmore

Thamnophilus doliatus eremnus Wetmore, Smithsonian Misc. Coll., vol. 134, no. 9, July 8, 1957, p. 58. (Isla Coiba, Panamá.)

Characters.—Definitely darker in both sexes than *T. d. nigricristatus*; male with black bars on the under surface broader, throat heavily streaked with black, and the white bars reduced on the dorsal surface; female decidedly darker brown above and below, the darker coloration especially prominent on the lower surface, where it extends to the throat and the under wing coverts.

Measurements.—Males (7 specimens), wing 69.9–72.3 (71.0), tail 54.2–57.7 (56.0), culmen from base 20.3–22.7 (21.1), tarsus 26.4–27.8 (27.1) mm.

Females (9 specimens), wing 66.9–71.0 (68.7), tail 52.0–58.5 (54.5), culmen from base 20.9–22.4 (21.5), tarsus 25.7–27.8 (26.6) mm.

This, the only representative of the family on Isla Coiba, was common so that as I began my work there I encountered them immediately, in the usual pairs, in thickets back of the beaches, and in tangles bordering the vegetable gardens near the buildings of the convict quarters. As I became more familiar with the island I found, to my surprise, that they ranged also in tangles of vines in the tree crown of the tall upland forest, often so far above the ground that they were beyond the range of the heaviest loads in my shotguns. In fact, at times as we searched the trees high overhead for pepper shrikes and other rarer game, with birds seen only in silhouette, we were continually deceived by these more common ant-shrikes.

The darker coloration of this race is suggestive of *Thamnophilus doliatus intermedius*, found in a distant range from eastern Costa Rica north through the Caribbean lowlands of Nicaragua, Honduras, and Guatemala to eastern México. This form however differs in the male in the extensive white markings in the crown, and in average

larger size with slightly heavier bill. The female *intermedius* is much paler than the same sex of the bird of Coiba.

In addition to the series that I collected, there is one female in the British Museum (Natural History) taken by Lieutenant-Colonel H. J. Kelsall, on September 1, 1924, while on the St. George Expedition.

THAMNOPHILUS DOLIATUS NESIOTES Wetmore

Thamnophilus doliatus nesiotes Wetmore, Proc. Biol. Soc. Washington, vol. 82, February 5, 1970, p. 773. (Río Cacique, Isla del Rey, Archipiélago de las Perlas, Panamá.)

Characters.—Male, intermediate in color between *nigricristatus* and *eremnus*; under surface with black bars heavier than in *nigricristatus*, and white interspaces correspondingly reduced.

Female, also intermediate in depth of color on dorsal surface, but variable, the paler examples resembling the darker individuals of *nigricristatus*, the darker ones the paler *eremnus*. On average, slightly larger than the other races found in Panamá.

Measurements.—Males (12 from islas del Rey, Cañas, and Pedro González), wing 70.3–75.6 (73.0), tail 53.8–58.8 (56.1), culmen from base 20.2–22.4 (21.4), tarsus 26.2–27.9 (27.2) mm.

Females (7 from islas del Rey and Pedro González), wing 69.4–73.6 (71.4), tail 53.4–57.7 (56.3), culmen from base 20.6–22.5 (21.3), tarsus 27.0–27.9 (27.2) mm.

Resident. Fairly common on part of the larger islands of the Archipiélago de las Perlas, Golfo de Panamá; recorded from islas Pedro González, Víveros, Rey, and Cañas (absent from Isla San José).

The Barred Ant-shrike was reported first from this group of islands by C. Bovallius, who collected two males on Isla Víveros April 5 and 10, 1882 (Rendahl, Ark. Zool., 1920, pp. 40–41). This report was followed by Bangs (Auk, 1901, p. 30) who recorded six taken on Isla del Rey in April and May 1901, by W. W. Brown, Jr. In a second visit to this island in February and March 1904, this collector secured eight more of the birds (Thayer and Bangs, Bull. Mus. Comp. Zool., 1905, p. 150). One in the British Museum collection was taken on Isla del Rey on June 26, 1924, by naturalists of the St. George Expedition. In March 1944, I found it on Isla Pedro González, and in January 1960 on Isla Cañas, and also on Isla del Rey. Both Víveros and Cañas are separated from Rey only

by narrow channels. In a thorough survey in February and March 1944 of the large Isla San José, distant at the southwest from others in the group, it was not present. Nor did I find it in 1960 in visits to islas Contadora, Saboga, Chaperá, Santelmo, and Bayoneta.

The characters that mark these birds of the islands are slight, but are such that the population is evidently different from that of mainland Panamá. As these are birds of weak flight, it may be supposed that they reached the Pearl Islands at low sea level after the close of Pleistocene time when these lands were part of the mainland.

THAMNOPHILUS BRIDGESI Sclater: Bridges' Ant-shrike, Pavita Hormiguera de Bridges

Thamnophilus bridgesi P. L. Sclater, Proc. Zool. Soc. London, pt. 24, August 15, 1856, p. 141. (David, Chiriquí, Panamá.)

Thamnophilus punctatus Cabanis, Journ. f. Orn., vol. 9, July 1861, p. 241. (Costa Rica.)

Small; in form like the Barred Ant-shrike, but male black, with scattered white dots on the wing coverts; female head black, breast gray, both streaked with white.

Description.—Length 150–165 mm. Adult male, upper surface, including the tail, head, foreneck, upper breast, and under tail coverts deep black; most of wing coverts tipped with small white spots; four outermost rectrices in fresh state with a small white spot at tip, part or all lost as the feathers wear; lower breast, abdomen, and sides slate color; inner webs of under side of rectrices, and under wing coverts white, the inner under coverts spotted lightly with slate; upper back with a concealed median white spot on each feather.

Adult female, crown, hindneck, sides of head and of neck black, streaked narrowly with white; back and scapulars slaty brown, becoming paler on the rump and upper tail coverts; wings and tail brownish black; wing coverts black, spotted with white; chin and throat white, edged broadly with black to produce prominent streaks; rest of under surface gray to olive-gray lined with white, heavily on breast, partly concealed and less evident on abdomen; under tail coverts spotted and barred faintly with white; inner borders of wing feathers, under wing coverts and axillars white; upper back with a concealed white line near the middle of each feather.

Immature male, black of forepart of body duller with foreneck and breast streaked narrowly with white.

Immature female, breast, sides, and abdomen duller, browner.

Juvenile, dull grayish brown on upper surface and wings, the

latter with two narrow white bars; crown brownish black with narrow shaft lines of white; chin and upper throat white with small basal spots of slaty black; foreneck dull grayish brown, breast darker dull brown, both with narrow shaft lines of dull white; lower breast, abdomen, and sides dull grayish brown, spotted indistinctly with dull white; under tail coverts dull brown, barred indistinctly with buff; wings and tail as in adult.

A male collected at Puerto Armuelles, Chiriquí, January 31, 1966, had the iris dark mouse brown; bill black; tarsus, toes, and claws dark neutral gray. Other males have had the bill black, except for the base of the gonyes which was neutral gray.

A female from Puerto Armuelles taken February 2, 1966, had the iris dark mouse brown; maxilla and tip of mandible black, rest of mandible dark neutral gray; tarsus, toes, and claws bluish neutral gray. The under surfaces of the toes in both sexes are dull yellowish.

Measurements.—Males (10 from Chiriquí, Veraguas, and Los Santos), wing 72.4–74.9 (73.8), tail 65.1–68.5 (66.2), culmen from base 22.0–24.1 (23.0), tarsus 22.5–23.3 (22.7) mm.

Females (10 from Chiriquí, Veraguas, and Los Santos), wing 69.2–72.6 (71.1), tail 62.9–65.8 (64.2), culmen from base 21.6–24.0 (22.5), tarsus 22.4–23.6 (23.2) mm.

Resident. Common in forested areas in the tropical lowlands from western Chiriquí (including the Burica Peninsula) east through southern Veraguas to the western side and southern end of the Azuero Peninsula, continuing on the eastern side north of Punta Mala to the valley of the Río Pedasí, in the Province of Los Santos.

These are birds of the undergrowth in gallery forest, found near the coast also in the higher stands of mangroves where there are tangled lower shrubs at ground level, in areas that may be dry during part of the year.

Like related species of the genus they range in pairs that, where the forest has been undisturbed, may be tame. The song, given by both male and female, is generally similar to that of the Barred Ant-shrike, but is louder in its utterance, somewhat more emphatic. It ends abruptly as in the other species, but without the nasal cadence heard from that bird. They also have a single call repeated regularly, unlike other sounds that I have heard from their congeners.

According to Skutch (*Pac. Coast Avif.*, no. 35, 1969, pp. 181–190) the nest of this species is a “roomy, open cup suspended by its rim from a horizontal fork at the end of a slender branch.” It is woven by male and female of dark-colored rootlets and other filaments,

bound with cobweb to its supports, with a few bits of green moss on the outside. Six nests ranged from about half a meter to over $3\frac{1}{2}$ meters above the ground. The two eggs in the normal set "are dull white, with a wreath of bright brown and pale lilac blotches and spots around the large end and a few speckles scattered elsewhere." Two eggs in one set measured 23.8×16.7 and 22.2×16.7 mm. Both parents incubate, but only the female through the night. The incubation period ranged from 14 to 15 days. Young at hatching were without down. The male continues to aid in feeding the young.

In the Burica Peninsula, where the Barred Ant-shrike was rare, I believed that it might be competitive with the present species, but in the coastal area below Las Lajas, near Playa Jobo, the two seemed to be compatible, where their habitats met. The Black Ant-shrike, however, ranged in the forest undergrowth, while the other was mainly in the more open thickets and forest edge outside.

Cabanis (Journ. f. Orn., 1861, pp. 241–242) who received a male from Hoffmann, taken in Costa Rica, described it as *Thamnophilus punctatus*, for apparently he was not aware of Sclater's earlier name. He also proposed to place it in a separate genus *Abalius*, because of its slightly less prominent crest. This separation was used also by Ridgway (U.S. Nat. Mus. Bull. 50, pt. 5, 1911, pp. 24–25) but on more detailed study is not justified. Beyond Chiriquí, Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 212) found *Thamnophilus bridgesi* common in the Pacific lowlands of southwestern Costa Rica, ranging north to the head of the Gulf of Nicoya. He reports it "at lower subtropical elevations along the humid continental divide in the vicinity of Lake Arenal and Tenorio Volcano, where its known range terminates abruptly."

**THAMNOPHILUS NIGRICEPS NIGRICEPS Sclater: Black
Ant-shrike, Pavita Hormiguera Negra Menor**

Thamnophilus nigriceps P. L. Sclater, Proc. Zool. Soc. London 1868, pt. 4 (April 1869, p. 571. ("Bogotá" = northern Colombia.)

A typical ant-shrike but male entirely black, female and immature male with back chestnut; head and under surface heavily streaked with white to buffy white.

Description.—Length 140–155 mm. Adult male, plumage deep black, with the flank feathers, mainly concealed, very dark slate, the under wing coverts and hidden inner webs of the wing feathers white and the under wing coverts spotted and barred lightly with black.

Adult female, back, wings, and tail cinnamon-brown; crown, hind-

neck, and sides of head black, each feather with longitudinal white to dull buffy streaks along the shaft; throat and foreneck dull black, shading to slate on the breast, where streaked broadly with white to buffy white; slate of the breast shading to buffy brown on the abdomen, with the light streaking reduced or absent; under tail coverts cinnamon; under wing coverts and edging on inner webs of wing feathers cinnamon-buff.

Immature female (male in this stage not seen), with the wing coverts and the inner primaries and secondaries tipped narrowly with blackish slate, and terminally with cinnamon-buff; lower breast and abdomen barred indistinctly with dull slate and pale buff.

A female taken February 8, 1962, at Cañita on the lower Río Bayano, eastern Province of Panamá, had the iris dark wood brown; cutting edge of maxilla and base of mandible brownish white; rest of maxilla fuscous; rest of mandible neutral gray; tarsus, toes, and claws neutral gray, tinged on tarsus with greenish.

Measurements.—Males (17 from Darién), wing 71.5–75.0 (72.5), tail 53.4–61.0 (57.2), culmen from base 18.5–22.6 (19.8), tarsus 22.3–23.9 (23.0 average of 16) mm.

Females (16 from Darién), wing 67.3–72.7 (70.2), tail 53.9–61.5 (57.3), culmen from base 18.0–21.0 (19.4), tarsus 22.4–24.0 (23.2) mm.

Resident. Fairly common at Cabo Garachiné and in the Tuira-Chucunaque Valley; probably also the valley of the Río Bayano (one record, Cañita).

The species was first recorded from Panamá by Chapman (*Amer. Mus. Nat. Hist.*, vol. 36, 1917, p. 366) from specimens collected by W. B. Richardson with the Harold Anthony Expedition in 1915, at El Real and Tapaliza. Ludlow Griscom (*Amer. Mus. Nov.*, no. 282, 1927, p. 6) "found it abundant in the thorny thickets at Cape Garachine." His visit there was on February 27, 1927. The Fifth George Vanderbilt Expedition of 1941 also recorded it at this locality (see Bond and de Schauensee, *Acad. Nat. Sci. Philadelphia*, mem. 6, 1944, p. 32). In February and March 1959, I collected several along the Río Tuira, near the point where it is joined by the Río Paya. Others were found toward the end of the month in the Río Chucunaque Valley, near the mouth of the Río Tuquesa (Quebrada San Félix). They lived in undergrowth in the forest, where they were not timid so that they were easily seen, in contrast to the elusiveness of the two more widely distributed species, the Barred and the Slaty Ant-shrikes. The calls were louder than those of the other two

mentioned. Males often rested on open perches where their black coloration was conspicuous, though females were more secretive. They were local in distribution and so were not frequently seen.

On February 8, 1962, above Cañita on the lower Río Bayano beyond El Llano, I collected one in undergrowth in forest at the mouth of a small quebrada near a gravel playón called Canchigua. This was especially interesting as indication that the species ranges also in the valley of that great river. At the point in question the Barred Ant-shrike was also present, and within 300 meters the Slaty Ant-shrike lived, but within the forest.

I have seen no account of its nesting.

Sclater in his original description named this species from a single specimen "obtained out of a collection of Bogotá skins" so that the type locality has been listed as "Bogotá." Hellmayr (in Cory and Hellmayr, *Cat. Birds Amer.*, pt. 3, 1924, p. 76) remarked that the type, now in the British Museum, was not a Bogotá skin, "being more like the skins sent from n. Colombia (Baranquilla)." Sclater's description and plate (*Cat. Birds Brit. Mus.*, vol. 15, 1890, p. 194, pl. 12) indicate that the type probably was an immature male. Todd (*Proc. Biol. Soc. Washington*, 1927, p. 152) in the description of a race *magdalenae* from the upper Magdalena Valley in Colombia records that Hellmayr, in further comparison of the type with a series from the Carnegie Museum, found it like one from the lower Atrato. Thus *Thamnophilus virgatus* Lawrence (*Proc. Acad. Nat. Sci. Philadelphia*, vol. 22, April 27, 1869, p. 361) named from Turbo is a synonym.

THAMNOPHILUS PUNCTATUS ATRINUCHA Salvin and Godman:
Slaty Ant-shrike, Pavita Hormiguera Ceniza

Thamnophilus atrinucha Salvin and Godman, *Biol. Centr.-Amer.*, Aves, vol. 2, February 1892, p. 200. (Panamá.)

With the heavy head and body, short tail, and large bill of other species of this genus; distinguished by plain breast, gray in the male, and dull buffy brown in the female.

Description.—Length 140–150 mm. Adult male, crown and hind neck black, with forehead partly or wholly gray; side of head gray, with ear coverts streaked narrowly with white; center of back with concealed base of feathers white, tipped broadly with black; upper tail coverts black, tipped with white; rest of upper surface gray; wings black, with wing coverts tipped, and tertials and secondaries edged, with white; primaries edged narrowly with gray; tail black with a

white spot at the end of each feather; under surface, including edge of wing, slaty gray; under wing coverts, and line on inner webs of remiges, white.

Female, brown to buffy brown above, brighter on the crown; wing coverts fuscous-black, tipped with buff to buffy white; wings fuscous-black, edged with brown; rectrices fuscous-black, edged with brown, and tipped with white or buff; concealed white in bases of feathers of center of back as in the male; under surface buffy brown to grayish brown, paler on throat; under wing coverts and inner edge of remiges buff.

Juvenile, dull cinnamon-brown above; duller on throat and sides, with the breast and abdomen grayish white. The male in this plumage is somewhat grayer than the female.

A male, collected at Juan Mina, Canal Zone, January 10, 1961, had the iris dark brown; maxilla, except cutting edge, dusky neutral gray; cutting edge of maxilla, mandible, tarsus, toes, and claws neutral gray.

A female, taken on Cerro Galera, Canal Zone, January 8, 1961, had the iris brown; maxilla fuscous; mandible, tarsus, toes, and claws neutral gray. Another, at Cañita, Panamá, February 6, 1962, had the iris wood brown; cutting edge of bill pale neutral gray; rest of maxilla black, and of mandible, tarsus, toes, and claws neutral gray.

Measurements.—Males (18 from Panamá Province, Canal Zone, Colón, San Blas), wing 66.7–71.6 (68.2), tail 50.3–56.0 (53.8), culmen from base 20.2–22.5 (21.1), tarsus 19.3–22.5 (21.1) mm.

Females (14 from Panamá Province, Canal Zone), wing 66.1–70.0 (68.3), tail 51.0–57.7 (54.3), culmen from base 19.7–21.5 (20.7), tarsus 20.5–22.1 (21.2) mm.

Resident. Common, usually in pairs, in forested areas in the Tropical Zone; on the Pacific slope from the western sector of the Province of Panamá (Cerro Campana, and 5 kilometers west of La Campana on Río Camarón) eastward to the Colombian boundary; on the Caribbean slope throughout from western Bocas del Toro to eastern San Blas; to 850 meters on Cerro Campana; 900 meters on Cerro Tacarcuna (La Laguna).

Salvin (P.Z.S., 1867, p. 144) listed specimens forwarded by Arcé from "Santiago de Veragua" but this I believe to be in error like a number of other records in the same collection from this locality, as this ant-shrike is not known on the Pacific side west of eastern Coclé. I found it near El Valle, Coclé, but only on the low divide at the headwaters of the Río Indio which drains to the Caribbean.

In mountain areas I have recorded it at 850 meters on Cerro Campana, at 600 meters on the Cerro Azul, and at 500 meters in the Serranía de Majé. Goldman found it at 550 meters on Cerro Pirre, and to 600 meters on Cerro Bruja. Galindo secured one at 900 meters at La Laguna on the slopes of Cerro Tacarcuna. There is definite decrease in their number at these elevations.

The Slaty Ant-shrike is particularly common from the Canal Zone eastward, and through its curiosity is one of the forest species that comes most frequently to attention. Individuals are found from the low undergrowth of the forest floor to the shadows beneath the crown of the taller trees. They move about slowly, often in such dim light that they are seen with difficulty. Though they seek concealment, at the same time their curiosity usually serves to draw them near at hand. The song is a repetition of a single note, increasing in rapidity and rising in pitch as it is repeated a dozen or more times, until it terminates suddenly in a nasal *wank*, that is completely different in sound. In general it is similar to that of the other species of the genus found in Panamá but is less loud, though it carries well through the forest. A nasal sound sometimes similar to that terminating the song, and sometimes varied, is used as a call, with other chattering notes. The male rests quietly while singing, but with wings and tail quivering from the effort of his rapid utterance. Males, and occasionally females, puff out the back feathers to display the white bases, a marking that attracts attention in the dark shadows of their haunts.

Though the pairs usually range alone, invariably they are attracted by any excitement among their feathered neighbors. I have recorded them regularly in the companies of birds over moving ant swarms, though some observers have reported that they do not have this habit. Their food is insects and other small animal forms. Two birds taken by Goldman at Portobelo, Colón, May 25 and 30, 1911, that I examined held fragments of insects, including the head of a mantis, fragments of large cicadas, a grasshopper, fragments of camponotid ants, and beetles, including cerambycids, weevils, and others.

At our camp near Armila, San Blas, on March 11, 1963, a male came into a dead tree, and presently a female joined him. I noticed then that the male held a small insect in his bill. When the female hopped up beside him he fed her, after which the two flew away together. On Barro Colorado Island at dawn on the morning of January 16, 1964, a male came to the insects around a light set to attract them. He seized a large moth and then rested quietly. In a moment a female flew over to him, took the insect and left quickly.

Male and female work at nest construction. A nest seen on Barro Colorado Island, on the date mentioned above, placed $2\frac{1}{2}$ meters above the ground, was suspended by the rim from a fork near the end of a leafy branch. Its resemblance to the nest of a vireo was only in form of suspension as it was woven so loosely of fine rootlets and other vegetable fibers that I could see the outline of the two eggs from below. Externally it had long green mosslike tendrils draped over it. Both male and female were observed in incubation. Another nest, with a female in attendance but without eggs at the time, was seen near Pucro, Darién, on February 3, 1964. This was only a meter above the ground in open undergrowth at the side of a forest trail. The open basket was suspended by the rim in the fork formed by two twigs that crossed one another. It was rather wide and shallow, woven of rootlets so loosely that in looking down into it I could see through it to the leaves and twigs beneath. Externally it was decorated with streamers of green moss.

Skutch (Auk, 1934, p. 10; 1945, p. 18, Pac. Coast Avif., 1969, no. 35, pp. 172-179) described the two eggs that constitute a set as white, heavily spotted with chocolate and umber, with the markings forming a wreath around the larger end. He recorded the extremes in size in six eggs as 22.6×16.7 , 24.2×16.3 and 25.4×16.7 mm. Two eggs collected by Carriker (Ann. Carnegie Mus. vol. 6, 1910, p. 603) on the Costa Rican side of the Río Sixaola, were described as creamy white in color, heavily marked with reddish brown and lilac, with measurements of 24.0×16.5 , and 24.5×17 mm. R. A. Johnson (Auk, 1953, p. 495) reported the incubation period as 14 days. Both Skutch and Johnson describe the young at hatching as blind, without down, and dark skinned. In the Canal Zone nesting is recorded to extend from December to July or August.

Though through much of its range this species and *Thamnophilus doliatus* are found in the same general areas, there appears to be no active competition between them since the Slaty Ant-shrike is a true forest inhabitant, while the Barred Ant-shrike is found along the borders, in open thickets, or on the high open summit of the tree crown, all habitats not attractive to the other species. A similar division of habitat occurs in Darién where the Slaty Ant-shrike is found with *Thamnophilus nigriceps*. It is interesting therefore to note that the present bird does not penetrate the range of Bridges' Ant-shrike, *Thamnophilus bridgesi*, which also extends into heavy forest.

On the Caribbean slope the subspecies *atrinucha* ranges north

through eastern Honduras. To the south it continues beyond the Panamanian border through western Colombia to western Ecuador, and to the east across the Caribbean slope from the lower Río Atrato, through the departments of northern Antioquia and Córdoba. It shows considerable individual variation in Panamá, which in the male is found mainly in the amount of gray on the forehead, and in the extent of the black area on the back. On the Pacific slope, from Cerro Azul to the Colombian border, most males are slightly paler gray above. Females throughout show much variation from light to dark, particularly on the lower surface.

Salvin and Godman received specimens from McLeannan at Lion Hill, and from Arcé taken at Chepo, and it is on these that they based their name, as they state in the original description, "Descr. maris et feminae ex Panama. Mus. nostr." The action of Hellmayr (Proc. Zool. Soc. London, 1911, p. 1158) in designating Panamá as the type locality actually was not required.

In Colombia from extreme eastern Córdoba and the lower Magdalena Valley through most of the Provinces of Magdalena and western Guajira, there is a paler race, *T. p. subcinereus* Todd, in which the male is lighter gray on the lower surface and on the side of the head, and the female is lighter brown, both above and below.

[*Thamnophilus multistriatus* Lafresnaye: Bar-crested Ant-shrike. *Thamnophilus multistriatus* Lafresnaye, Rev. Zool., vol. VII, March 1844. (Colombia.)

P. L. Sclater (Cat. Birds Brit. Mus., vol. 15, 1890, p. 211) lists the range of this species as "*Hab.* Panama, Colombia and Ecuador" with no indication as to why Panamá was included. As the three subspecies now recognized are known only from the upper Tropical and Subtropical zones of Colombia, the inclusion of Panamá evidently came through a *lapsus calami*. The same distribution found in R. B. Sharpe (Handl. Gen. Spec. Birds, vol. 3, 1901, p. 16), apparently came from the statement made by Sclater. There is no present record for *multistriatus* nearer Panamá than the northern end of the central Andes near Valdivia, Antioquia.]

[*Thamnophilus leucopygus* Lawrence Ann. Lyc. Nat. Hist. New York, vol. 8, December 1866, p. 401. "Habitat.—New Granada, line of the Panama R.R., Lion Hill Station. Collected by Mr. J. McLeannan.

"*Remarks.*—The white rump appears to distinguish it from all its allies."

Salvin (*Ibis*, 1874, p. 316) following a visit to New York wrote "on examining the type of this species in Mr. Lawrence's collection, I

felt that an error had been made. . . . I now find that the bird really belongs to the common African species, *Dryoscopus cubla* (Lath.). . . . In some exchanges I made with McLeannan, I sent him a number of African skins; doubtless this one was included by mistake in a collection forwarded to Mr. Lawrence from Panama, and thus misled the latter gentleman as to the origin of the specimen.

"*Thamnophilus leucopygus* must therefore be removed from the list of American birds."

The Puffback Shrike, *Dryoscopus cubla* (Shaw), Family Laniidae, is found from eastern Republic of Congo and Kenya south to eastern and southeastern South Africa.]

XENORNIS SETIFRONS Chapman: Spiny-faced Ant-shrike,
Hormiguero Frentispinoso

FRONTISPIECE

Xenornis setifrons Chapman, Amer. Mus. Nov., no. 123, July 2, 1924, p. 1.
(Tacarcuna = Old village site, Río Tacarcuna, 580 meters elevation, Darién, Panamá).

Small; crown and back brown, lined irregularly with black; lower surface in male bluish slate, in female light brown, indistinctly streaked.

Description.—Length 150–160 mm. Feathers of the forepart of the body rather broad, rounded, with the web loosely formed at the distal end; well-developed but short black bristles in the loreal area, below the eye, around the gape, and on the chin; tail feathers with web loose and often worn at tips, 12 in number, but usually with one or more lost through accident. Adult male, forehead, purplish gray; crown, hindneck, back, and scapulars between olive-brown and buffy brown, with each feather bordered on sides and tip with black, producing a pattern that in part falls in dark lines; rump and upper tail coverts neutral gray, washed lightly with olive-brown; wings dusky brown, with coverts spotted, the scapulars and inner secondaries tipped, and the primaries edged narrowly with wood brown; tail blackish slate; side of head and entire under surface, including under wing coverts, neutral gray to dark neutral gray.

Adult female, like the male on the upper surface; chin dull white; throat washed lightly with dull pinkish buff and with whitish shaft lines producing indefinite streaks; lower foreneck, breast, sides, and under wing coverts wood brown, with dull slate bases showing irregularly to produce a slight mottled pattern; flanks and under tail coverts dull olive-brown.

A male, taken March 3, 1963, at Armila, eastern San Blas, had the iris light gray; cutting edge of maxilla and entire anterior half of mandible neutral gray; rest of maxilla and cutting edge of distal half of mandible black; tarsus, toes, and claws dark neutral gray.

Females, taken at the same locality, like male.

Measurements.—Males (4 from Darién and San Blas), wing 69.8–72.5 (71.1), tail 59.1–69.2 (63.8), culmen from base 18.8–19.5 (19.2), 22.2–22.3 (22.2) mm.

Females (7 from Darién, San Blas, and Chocó), wing 69.1–72.9 (71.0), tail 61.0–64.6 (62.7), culmen from base 19.3–21.0 (20.2), tarsus 22.0–22.9 (22.3) mm.

Resident. Known from a few individuals taken in the tropical forests on the lower slopes of Cerro Tacarcuna in eastern Darién, and in the foothill region of eastern San Blas.

This interesting bird was described by Dr. Frank M. Chapman from a male in the American Museum of Natural History, collected by D. S. Ball, with the Harold Anthony Expedition on March 27, 1915, on the upper Río Tacarcuna in eastern Darién. In early March 1963, I secured a pair in heavy undergrowth in forest covering the foothills inland from the Cuna Indian village of Armila in eastern San Blas. The birds did not range near the main small stream draining this area, but instead lived along the narrow, steeply sloping side valleys leading down into it. We had worked here intensively for 10 days until chance brought the two mentioned. With this information, by careful search in similar terrain, we secured two additional pairs.

On June 14, 1963, Dr. Pedro Galindo secured a female in a mist net at La Laguna, the crater lake at 575 meters on a ridge leading to Cerro Tacarcuna, and the year following, on March 8, I collected another at the type locality on the Río Tacarcuna, also in a mist net.

The birds range in pairs in undergrowth in forest like some of the common ant-shrikes, but more secretively. We had only momentary glimpses of them in such cover, and I heard no calls that I could attribute to them.

Beyond the above, there are two females in the Academy of Natural Sciences collected July 26, 1940, on the low mountain range of the Serranía de Baudó in central Chocó, inland from the Pacific coast of northwestern Colombia.

Though in general appearance these birds suggest species of the genus *Thamnophilus*, their characters are such as to indicate their

separation in a distinct genus. The bird is peculiar, possibly a relict of an older group from which some of the more widespread ant-shrikes may have had their origin. The loose external webbing of the feathers may be seen on close examination. The rectrices appear loosely attached so that one or more usually are missing in museum specimens, a circumstance that deceived Dr. Chapman into citing 10 instead of 12 as the number in the single specimen from which he described the species.

THAMNISTES ANABATINUS Sclater and Salvin: Russet
Ant-shrike, Hormiguero Bermejón

Thamnistes anabatinus Sclater and Salvin, Proc. Zool. Soc. London, pt. 28, August 1860, p. 299. (Verapaz, Guatemala.)

Small, with strong, heavy bill; above reddish brown; foreneck and breast buff; rest of under surface gray.

Description.—Bill large, stout; maxilla strongly hooked; nostril very small, round, exposed. Adult male, upper surface and line through eye tawny brown, slightly darker on the crown, with forehead paler; wings, upper tail coverts, and tail cinnamon-rufous; concealed bases of feathers of middle of back ochraceous-buff with a subterminal bar black, the bright color wholly concealed; superciliary and auricular region dull buff; foreneck and breast, and in some the upper abdomen buff to cinnamon-buff; lower abdomen and flanks grayish buff to olive-buff; under tail coverts basally cinnamon-buff, grayish externally, tipped indistinctly with grayish white; under wing coverts and inner margins of primaries and secondaries cinnamon-buff.

Adult female, without concealed cinnamon-buff patch on middle of back; otherwise like male.

These ant-shrikes often range with mixed flocks of smaller forest birds that move in loose company in the treecrown of open forest, descending at times to the tops of undergrowth and tangles of vines. Sometimes one was seen, sometimes a pair, male and female together. Their low calls were hardly distinguishable from those of some of their companions.

The species ranges from southern México through Central America, and in South America from Colombia and western Venezuela to Ecuador, Perú, and northern Bolivia. Two races distinguished by slight differences in color are recorded in Panamá.

THAMNISTES ANABATINUS SATURATUS Ridgway

Thamnistes anabatinus saturatus Ridgway, Proc. Biol. Soc. Washington, vol. 21, October 20, 1908, p. 193. (Bonilla, Costa Rica.)

Characters.—Olivaceous brown above, with crown closely similar to back.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 64.5–70.8 (67.2), tail 48.0–53.9 (51.1), culmen from base 19.0–21.3 (20.1), tarsus 19.5–20.8 (20.2) mm.

Females (10 from Costa Rica and Nicaragua), wing 64.9–69.0 (66.7), tail 47.0–51.8 (49.2), culmen from base 19.1–21.4 (20.3), tarsus 20.0–20.7 (20.2) mm.

Resident. Rare, in the mountains of western Chiriquí and western Bocas del Toro.

The earliest record is that of Salvin (Proc. Zool. Soc. London, 1870, p. 194) who listed one taken by Arcé at Bugaba, western Chiriquí. Another report for Chiriquí is that of Dr. Frank A. Hartman who secured two near El Volcán, a male, now in the U.S. National Museum, taken March 2, 1956, and a female collected March 9 in the same year. There are two reports from Bocas del Toro, near the trail from Boquete to Chiriquí Grande. These include two males collected in June 1901 by W. W. Brown, Jr., at 600 and 900 meters (Bangs, Proc. New England Zoöl. Club, vol. 3, 1902, p. 41) and one taken by H. von Wedel at 1060 meters March 27, 1928 (Peters, Bull. Mus. Comp. Zool., vol. 71, 1931, p. 320). This race is better known to the north in Costa Rica, and has been recorded in small number through Nicaragua to Central Honduras. Beyond that point intergradation comes with typical *T. a. anabatinus* which ranges north to southern México.

In early April near El General in southwestern Costa Rica, Skutch (Pac. Coast Avif., no. 35, 1969, pp. 198–200) found a pair building a nest about 15 meters from the ground in a tree within the forest edge bordering a pasture. "The completed structure was a vireo-like cup . . . attached by its rim to the supporting twigs, and composed largely of pieces of brown dead leaves, bound together and to the support by cobweb." Because of the location the nest was inaccessible so that the eggs were not seen. It was recorded that both parents shared in incubation and in the care of the young.

THAMNISTES ANABATINUS CORONATUS Nelson

Thamnistes anabatinus coronatus Nelson, Smithsonian Misc. Coll., vol. 60, no. 3, September 24 (September 27), 1912, p. 9. (Cana, elevation 1060 meters, Cerro Pirre, Darién, Panamá.)

Characters.—Darker above than *saturatus*; crown more rufous than back; under surface averaging darker, with foreneck and upper breast dull ochraceous-buff.

In both sexes, the iris is auburn; cutting edge of maxilla and mandible light neutral gray; rest of maxilla fuscous-black; tarsus and toes dull light green to greenish neutral gray; claws neutral gray.

Measurements.—Males (10 from Province of Panamá and Darién), wing 66.5–69.2 (67.6), tail 47.2–53.7 (51.4), culmen from base 19.3–21.0 (20.1, average of 9), tarsus 20.0–21.2 (20.2) mm.

Females (10 from Veraguas, Canal Zone, Province of Panamá, and Darién), wing 63.6–69.3 (65.8), tail 48.4–52.5 (50.3), culmen from base 18.5–21.6 (20.5), tarsus 20.0–21.2 (20.3) mm.

Resident. Found locally in small number in the Tropical and lower Subtropical zones; on the Pacific slope recorded at Santa Fé, Calobre, Veraguas; Cerro Campana, Cerro Azul, and Cerro Chucantí, Province of Panamá; and on Cerro Pirre and Cerro Tacarcuna, Darién; on the Caribbean side, on the Río Calovévora, Veraguas; the Canal Zone; the Chagres Valley, eastern Province of Panamá; and eastern San Blas.

In the U.S. National Museum there is a specimen received from Salvin collected by Arcé at Calobre, and in the American Museum of Natural History a pair taken by Benson at Santa Fé, Veraguas, and others from Río Calovévora on the Caribbean side.

On the southern face of Cerro Campana, at 850 meters elevation, I shot a female March 13, 1951, from a tall tree top in heavy forest, when it was in company with a little group of tanagers and warblers. E. A. Goldman secured a female on the Río Indio near Gatun, Canal Zone, February 10, and a male March 23 at 300 meters in Cerro Azul, Panamá, both in 1911. In March 1950, we collected two pairs along the base of Cerro Chucantí, where they ranged to above 500 meters. Here also they were in company with traveling flocks of other small birds. On the Río Pequení near the Candelaria Hydrographic Station on March 6, 1961, I found a group of half a dozen of this species in tangled vines in a small, thick-leaved tree beside a quebrada in heavy forest. Here one would move quickly and then pause motionless, so that they were seen at rest only with difficulty. They were in company with a few other small forest birds that were somewhat more active. I secured one also near Armila, in eastern San Blas, and Wedel also collected a pair from this area near Permé. The race was described from a pair taken by Goldman near Cana on Cerro Pirre in June 1912. Benson collected others here in 1928, and Barbour and Brooks secured a pair on Cerro Sapo, Darién, April 20 and

22, 1922 (Bangs and Barbour, Bull. Mus. Comp. Zool., vol. 65, 1922, p. 206).

G. V. N. Powell recorded one feeding a nearly grown fledgling on Cerro Campana, November 11, 1966.

In the stomachs of two taken by Goldman near Cana I found fragments of spiders, with remains of their eggs, and a variety of small insects, including a cicada, a cricket, another orthopteran, small bees, a caterpillar skin, pentatomids, and beetles—a chrysomelid, two carabids, a cerambycid, and several weevils.

**DYSITHAMNUS MENTALIS (Temminck): Plain Ant-vireo,
Hormiguero Liso**

Myothera mentalis Temminck, Planch. col. livr. 30, 1823, pl. 179, fig. 3.
(Curytiba, Paraná, Brazil.)

Small, heavy-bodied; male gray, paler on throat, abdomen yellowish; female, back dull greenish gray; crown and hindneck plain dull rufous, breast and abdomen yellowish.

Description.—Length 100–112 mm. Adult male, crown, side of head, and hindneck slate color; forehead and lores slightly paler; rest of upper surface olivaceous slate with the outermost scapulars edged with white; tail darker, tipped very narrowly with white (the white tipping often worn away); lesser and middle wing coverts black, edged and tipped with white; greater wing coverts slate, tipped narrowly with white; wing feathers dull fuscous-black, the inner feathers edged externally with olivaceous slate, the outermost with the distal half edged with dull brown; chin and throat white to grayish white; feathers of upper breast and side of neck slate-gray with the hidden bases white; breast and abdomen white to pale yellow centrally; under tail coverts white or pale yellow; flanks light olive; under wing coverts and inner webs of primaries white; inner webs of secondaries pale yellow.

Adult female, crown and hindneck rather dull chestnut-brown to russet, brighter anteriorly; feathers of crown with lighter shaft lines; back, scapulars and rump varying from grayish to brownish olive; outermost scapulars edged with buff; upper tail coverts and tail sepia brown; wings olive, with middle and greater coverts tipped with buff to brownish buff; primaries edged with dull brown; lores dull gray; an indistinct, narrow eye-ring white; side of head dusky-olive, lined narrowly with white; malar region, chin and throat white; breast dull white, tinged more or less with dull yellow to yellowish olive; lower breast and abdomen pale yellow; under tail coverts dull buff;

sides and flanks buffy olive; under wing as in male, except that the inner webs of the secondaries are pale buff.

These are forest birds, found usually in pairs. When first seen, in form their heavy body and short tail suggest a wren, but their quick action as they move rather quietly among the cover of leaves is more that of a warbler. They range from undergrowth up through the lower tree crown. While they may move about alone, also regularly they join the flocks of other small forest birds that travel in mixed company. Often they are timid but again appear a little curious, so that they may come near a human intruder in their haunts with low, chattering calls.

As a species these small ant-birds range widely from southern México and Guatemala through Central America and South America to northern Argentina, eastern Paraguay, and Brazil. While a number of geographic races have been described these in general differ only slightly in color. Two that are closely similar have been recognized in the Republic, one in the east and one in the west.

DYSITHAMNUS MENTALIS SEPTENTRIONALIS Ridgway

Dysithamnus mentalis septentrionalis Ridgway, Proc. Biol. Soc. Washington, vol. 21, October 20, 1908, p. 193. (Choctum, Alta Verapaz, Guatemala.)

Characters.—Male slightly darker, more grayish, above; brighter yellow on lower breast and abdomen; gray on foreneck and upper breast extending less far posteriorly. Female, averaging somewhat darker above; brown of crown darker.

In male and female the iris is very dark brown; maxilla blackish slate; mandible neutral gray.

Measurements.—Males (10 from western Chiriquí), wing 60.2–63.0 (61.5), tail 38.4–43.0 (40.6), culmen from base 16.0–16.8 (16.3), tarsus 18.6–19.8 (19.3) mm.

Females (10 from western Chiriquí), wing 58.3–63.0 (60.5), tail 38.0–41.4 (39.9), culmen from base 15.7–16.9 (16.3), tarsus 18.7–19.9 (19.3) mm.

Weight, ♂ 11 grams, Cerro Campana (G. V. N. Powell).

Resident. Locally common in more heavily forested areas, mainly in hill country in the upper Tropical Zone. Recorded in western Chiriquí from 750 meters (above Buena Vista) to 1350, less commonly to 1750 meters, in the area between El Volcán and the Costa Rican boundary, and (by Eisenmann) to 1850 meters above Cerro Punta; western Bocas del Toro (Río Changuena, 750 meters); east through Calobre, Santa Fé, and Chitra, on the Pacific, and from the

Río Calovévora on the Caribbean slope of Veraguas; common in the higher forests of Cerro Campana, western Province of Panamá.

Above Boquete, Chiriquí, Bangs (Proc. New England Zoöl. Club, 1902, p. 41) reported male and female taken in February and April 1901, by W. W. Brown, Jr. Blake (Fieldiana: Zool., vol. 36, 1958, p. 531) received only one male in the Mönniche collection from Horqueta near 1600 meters, collected June 18, 1933. Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 2, 1892, p. 207) list "Volcán de Chiriquí" as one of the localities from which they received this bird from Arcé, which should mean the area on the south and southeast base of the volcano. We have an immature male, received from the Gorgas Memorial Laboratory, collected by R. Hinds, September 11, 1961, at 750 meters on the upper Río Changuena, in the mountains of western Bocas del Toro. Farther east, in Veraguas, Salvin (Proc. Zool. Soc. London, 1867, p. 144) listed it from Arcé specimens at Santa Fé, and later (loc. cit., 1870, p. 194) cited others from Calovévora, Calobre, and Chitra. Sclater (Cat. Birds Brit. Mus., vol. 15, 1890, p. 222) lists a male from Santa Fé, and male and female from Calovévora received in the Salvin-Godman collection. The U.S. National Museum has a male (without date) from Calovévora taken by Arcé that came from Salvin.

In March 1951 I was interested to find these birds common in the higher forests on the southern face of Cerro Campana, mainly around 850 meters elevation. This is the most eastern point for this race. Beyond Panamá it is found to the north to Campeche, México (with no record from El Salvador or, as yet, from Nicaragua).

In Costa Rica, Skutch (Pac. Coast Avif., no. 35, 1969, pp. 202-208) found these birds nesting from February to July. The nest, like that of a vireo, is suspended from a fork at the end of a branch or from two adjacent thin branches or twigs, elevated a little more than half a meter to 2 meters from the ground in the undergrowth in forest. It is built of dark filamentous materials, adorned externally with green moss. Both sexes build, incubate (only the female at night) and feed the young. The two eggs (recorded in 11 nests) were "dull white, flecked and blotched all over, but most heavily on the thick end, with purplish brown." In 12 eggs the range of measurements was 19.1-21.4 × 14.3-14.7 mm. When nests were approached the incubating parent (male or female) dropped to the ground and fluttered away with spread, beating wings and a prominent display of the light colored bands (white in the male, buff in the female) on the outer webs of the scapulars. The young, as usual in this family, are

without down when hatched. They develop rapidly as they are feathered in 8 days, and leave the nest the day following.

The birds have soft calls that may join in brief repetition to form a song.

DYSITHAMNUS MENTALIS SUFFUSUS Nelson

Dysithamnus mentalis suffusus Nelson, Smithsonian Misc. Coll., vol. 60, no. 3, September 24 (September 27), 1912, p. 10. (Cerro Pirre, 1220 meters, Darién, Panamá.)

Characters.—Male slightly more greenish gray above; somewhat less yellow, also slightly duller on lower breast and abdomen; gray on breast area extending farther posteriorly. Female, averaging faintly lighter, greener above; brown of crown lighter, especially on the forehead; flanks somewhat paler.

Male and female taken on Cerro Malí, Darién, in February 1964, had the iris dark brown; base of mandible dark neutral gray; rest of bill black; tarsus, toes, and claws neutral gray.

Measurements.—Males (10 from Cerro Azul, Cerro Pirre, and Cerro Malí, Darién), wing 60.3–64.2 (62.0), tail 37.5–42.5 (40.5), culmen from base 16.1–17.3 (16.7), tarsus 20.0–21.0 (20.4) mm.

Females (10 from Cerro Pirre and Cerro Malí, Darién), wing 59.9–62.5 (60.9), tail 37.2–40.8 (39.5), culmen from base 16.6–17.3 (16.9), tarsus 20.0–20.9 (20.3) mm.

Resident. Recorded in small number, in the higher elevations on Cerro Azul, eastern Province of Panamá; fairly common in Darién on Cerro Pirre, and from 600 to 1200 meters on Cerro Tacarcuna.

E. A. Goldman collected a male at 750 meters on Cerro Azul on March 22, 1911. According to his notes it was ranging in undergrowth near ground level. One that we shot March 2, 1957, near the trail on the high slope beyond Cerro Pilón at about 850 meters elevation was in such poor condition that it was not preserved as a specimen. To date these are the only specimen records known to me from this mountain. Bond and de Schauensee (Acad. Nat. Sci. Philadelphia, Mon. 6, 1944, p. 33) recorded it at 900 meters on Cerro Sapo, above Garachiné, Darién, taken in 1941. In April and May 1912, Goldman found them fairly common on Cerro Pirre from 900 to 1580 meters, where he took the series from which E. W. Nelson described the race *suffusus*. On February 4, 1961, I collected one on this mountain at 900 meters. On Cerro Tacarcuna, two females were taken by Dr. Galindo at La Laguna on May 31 and June 29, 1963. In February 1964, these birds were common on the ridge of Cerro

Mali at 1425 meters, and also a little lower at 1280 meters toward Tacarcuna proper. Here they ranged singly or in pairs that moved actively through the undergrowth, often adjacent to our camp.

The stomach of one collected near Cana on Cerro Pirre by Goldman was filled with finely ground material in which I identified bits of spiders, and several insects, including small Cerambycids, Curculionids, and Scarabaeids, with moth remains and fragments of ants. Others that I examined from other localities held similar insect and spider material, all finely ground.

This race continues beyond the Atrato Basin in the mountains of northwestern Colombia, an area from which we have specimens taken near Valdivia, Antioquia, above the eastern side of upper middle Río Cauca.

DYSITHAMNUS PUNCTICEPS PUNCTICEPS Salvin:
Spotted-crowned Ant-vireo, Hormiguero Coronipunteado

Dysithamnus puncticeps Salvin, Proc. Zool. Soc. London, May 1866, p. 72. ("Veragua"; type locality designated as Calovévora, Caribbean slope of northern Veraguas.)

Dysithamnus puncticeps intensus Griscom, Bull. Mus. Comp. Zool., vol. 72, January 1932, p. 343. (Cerro Sapo, Darién, Panamá.)

Small; size and form of *Dysithamnus mentalis*, but with breast and foreneck narrowly streaked with black; male with crown black, spotted with white; female with crown marked with black, and under surface partly buff.

Description.—Length 110–120 mm. Adult male, crown and hind-neck black, dotted with white, the feathers slate-gray on the sides, and on the partly concealed bases; upper surface slate or slate-gray; rump and upper tail coverts, in some, with a slight wash of olive; tail slate, tinged with olive; wings basally dusky, edged externally with slate-gray; wing coverts tipped with white, with ends and bases of spots narrowly black; alula edged with white; primaries and secondaries tipped indistinctly with grayish brown; side of head slate-gray, with the area beneath the eye barred narrowly with grayish white; under surface white; foreneck and breast with dusky shaft lines; sides gray; flanks light brownish gray; under tail coverts pale buff.

Adult female, crown tawny-ochraceous to tawny-brown, streaked with black; back, scapulars and rump grayish olive to brownish gray; upper tail coverts browner; tail olive-brown, tipped narrowly with dull buff (this mark often lost through wear); middle and greater wing coverts darker than back, spotted terminally with buff;

wings olive-brown, the feathers edged with buffy brown; a narrow white line around edge of eyelids; side of head gray to brownish gray, lined and spotted with black and buff; central under surface white to buff with foreneck and breast streaked narrowly with black; sides grayish to grayish brown; under wing coverts and inner edging of wing feathers pale buff to cinnamon-buff.

A male, collected March 3, 1963, at Armila, San Blas, had the iris light gray; maxilla black; mandible neutral gray; tarsus, toes, and claws neutral gray.

Measurements.—Males (8 from Bocas del Toro, Darién, and San Blas), wing 55.6–60.7 (58.6), tail 33.8–40.0 (36.2, average of 7), culmen from base 16.0–19.7 (18.0, average of 6), tarsus 19.6–20.6 (20.0, average of 7) mm.

Females (8 from Bocas del Toro, Coclé, and Darién), wing 54.3–59.2 (57.0), tail 33.4–36.0 (34.5), culmen from base 16.5–18.9 (17.7, average of 7), tarsus 19.0–20.6 (19.7) mm.

Resident. Found locally in areas of humid forest in the Tropical Zone; on the Pacific slope, in Darién, from the base of Cerro Sapo to Jaqué; on the Caribbean side from Bocas del Toro east through the northern Canal Zone to eastern San Blas; to 600 to 725 meters elevation in Bocas del Toro.

In the summer of 1926 (Griscom, Amer. Mus. Nov., no. 280, 1927, p. 2) R. R. Benson, with Dale V. Gaffney, crossed from Santa Fé to the Río Calovévora, where they found this bird common and collected a series. Peters (Bull. Mus. Comp. Zool., vol. 71, 1931, p. 320) recorded it at Almirante, Bocas del Toro, and at 600 meters on the trail from Chiriquí Grande to Boquete.

Male and female were taken by R. Hinds at 725 meters on the upper Río Changuena, in September 1961. In 1952, I collected females on the Río Indio at El Uracillo, northern Coclé, March 4, and at Chilar, western Colón, March 8.

In Darién, Bangs and Barbour (Bull. Mus. Comp. Zool., vol. 65, 1922, p. 206) recorded it on the base of Cerro Sapo. Griscom (idem, vol. 72, 1932, p. 344) noted male and female from Cituro and the Río Cupe, taken by Richardson. In 1946, I secured one at Jaqué on the coast near the Colombian border, and in 1947 another inland on the Río Jaqué. In eastern San Blas it is known from Armila and Puerto Obaldía.

It is fairly common on Barro Colorado Island, Canal Zone, where several nests have been recorded. A. O. Gross (Smithsonian Ann. Rep. for 1926, 1927, pp. 338–339, pl. 8) found one July 6, 1925,

placed about 2 meters from the ground in a small tree, where it was suspended from a forked limb. Male and female shared incubation. "The birds approached the nesting tree walking on the ground rather than flying from the branches above. . . . I could hear the approaching bird singing a sweet warbling song. When it reached the base of the tree it hopped to the lowest branch and then came up limb by limb, singing as it came. . . . Both birds sang and approached the nest in the same manner." Another nest was recorded on July 11. No description of the eggs was given.

The supposed darker race that Griscom named *intensus* from Darién is not justified in the specimens that I have examined. In eastern Darién and eastern San Blas, part of the females tend to be darker colored, as an approach to those of the subspecies *D. p. flemmingi* that is found from central Chocó in western Colombia south into Ecuador. One collected at Jaqué March 30, 1946, is especially dark. Others, from Cerro Sapo and eastern Comarca de San Blas show this tendency but to a lesser degree. Griscom observed this and made it the basis for his subspecies *D. p. intensus*. Recognition of this difference does not seem warranted as it is variable and passes finally to the subspecies mentioned.

In the original description, cited at the head of the present account, Salvin gave the locality for his specimens, received from Arcé, as "Veragua." The following year (Proc. Zool. Soc. London, 1867, p. 144) he cited them as from "Santiago de Veragua." This was repeated, with a slight change in spelling, as "Santiago de Veraguas" by Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 2, 1892, p. 207). Santiago, far down in the Pacific lowlands, is obviously wrong, as in western Panamá this bird is present only on the Caribbean slope. This was pointed out by Griscom (Bull. Mus. Comp. Zool., vol. 72, 1932, pp. 342-343) where he stated that Arcé's specimens must have been collected "at the terminus of the old Calovevora trail" across the divide from Santa Fé. Calovévora, thus, is to be cited as the type locality.

An early report by M. A. Carriker, Jr., of the related species *Dysithamnus striaticeps* on the Panamanian side of the Río Sixaola (see Eisenmann, Species Middle American Birds, Trans. Linn. Soc. New York, vol. 7, 1955, p. 61) proves to be invalid. The single specimen collected by Carriker in the area of the "Rio Sicsola" (now called the Sixaola) is a female, Carnegie Museum no. 24176, taken October 10, 1904 (collector's number 1269). In his account of the birds of Costa Rica (Ann. Carnegie Mus., vol. 6, 1910, p. 607) Carriker listed this bird (among other specimens) as *Dysithamnus striaticeps*.

As there was uncertainty regarding the record, on enquiry Dr. Kenneth C. Parkes informed me that this specimen had been identified by him (and earlier by Mr. Todd) as *Dysithamnus puncticeps*. It may be noted that Ridgway (U.S. Nat. Mus. Bull. 50, vol. 5, 1911, pp. 59, 60) on basis of this Carriker specimen gave "Rio Sicsola" as a locality under both *striaticeps* and *puncticeps*. On consulting Ridgway's manuscript notes I find that while he had queried the record on the sheet for *striaticeps*, through an oversight he had failed to delete it in his final manuscript.

Slud (Amer. Mus. Nat. Hist., Bull. 128, 1964, p. 214) in Costa Rica found *striaticeps* "common in the tropical belt, except toward the end of its geographical range in the southeast." It is possible that *striaticeps*, though not recorded, may be present also in Panamá, where search should be made for it in the forested hills near the Río Sixaola in the vicinity of Sibube.

MYRMOTHERULA BRACHYURA IGNOTA Griscom: Pygmy
Ant-wren, Hormiguerito Pigmeo

FIGURE 14

Myrmotherula brachyura ignota Griscom, Bull. Mus. Comp. Zool., vol. 69, April 1929, p. 167. (Jesucito, Darién, Panamá.)

Very small; tail so short that it may appear missing; upper surface streaked black and white; under surface white to yellow.

Description.—Length 65–75 mm. Tail definitely less than half as long as wing; 10 rectrices. Adult male, crown and hindneck black, narrowly streaked with white; back and wings black, the back streaked narrowly and scapulars bordered broadly with yellowish white; middle and greater coverts broadly tipped with yellowish white, to form two prominent wing bars; outer webs of primaries and secondaries edged narrowly with white; rump light gray; tail black, tipped narrowly with white (the white often reduced or absent through wear); side of head below and behind eye white; a broad black streak behind eye, and another on malar region; chin and throat white; rest of lower surface pale yellow; edge of wing light yellow; under wing coverts and edgings on base of primaries white.

Female, like male, except that in some the crown and hindneck are streaked with pale buff, with the side of the head below the eye also buff.

A male, taken in the Chucunaque Valley at the mouth of Río Tuquesa, March 27, 1959, had the iris dark brown; maxilla black; tip of mandible dark neutral gray, base neutral gray; lower half of

tarsus, toes, and claws dull grayish green, shading into neutral gray with a greenish cast toward the tibiotarsal joint. Another male, shot at Pucro, Darién, February 3, 1964, differed in having the toes dull yellowish green, and the claws dusky neutral gray.

Measurements.—Males (10 from San Blas, Darién and northwestern Colombia), wing 38.9–41.5 (40.0), tail 12.5–13.8 (13.0), culmen from base 12.5–14.0 (13.1, average of 9), tarsus 14.2–15.7 (15.0) mm.

Females (10 from Darién and northwestern Colombia), wing 39.0–41.5 (40.3), tail 13.0–14.8 (13.7), culmen from base 12.5–14.1 (13.3), tarsus 14.6–15.3 (15.0) mm.

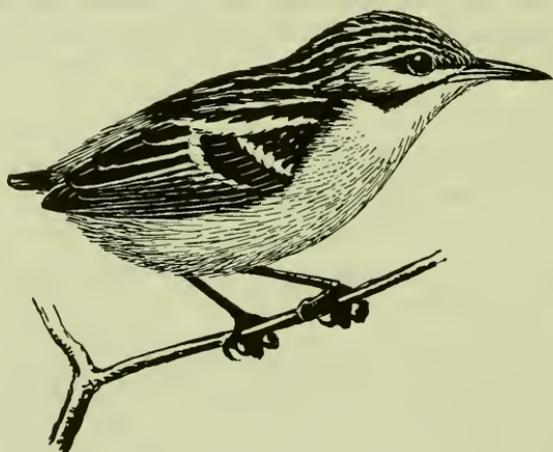


FIGURE 14.—Pygmy ant-wren, hormiguerito pigmeo, *Myrmotherula brachyura ignota*, male.

Resident. Local and uncommon in heavy forest. Recorded in the Canal Zone (Gamboa, Lion Hill), San Blas (Mandinga), and Darién (Garachiné, Jesucito, Tigre, on the Río Cupe, Boca de Paya, mouth of Río Tuquesa, Cana, and Jaqué).

This bird has been known in Panamá only from scattered records. The first report is that of Lawrence (Ann. Lyc. Nat. Hist. New York, vol. 7, 1862, p. 325) of a male forwarded by McLeannan from Lion Hill on the Panama Railroad. Through some misunderstanding Salvin and Godman (Biol. Centr.-Amer. Aves, vol. 2, 1892, p. 209) cite this record as "*Myrmotherula pygmaea*" (= *M. brachyura ignota*) in the synonymy of *Myrmotherula surinamensis*. Other reports from this area are one seen on Barro Colorado Island, July 28, 1943, by R. S. Arbib, Jr. (Eisenmann, Smithsonian Misc. Coll., vol.

117, 1952, p. 34), and others reported on the Pipeline Road near Gamboa and near Achiote. Griscom's type specimen, a male, was collected by Thomas Barbour and W. S. Brooks at Jesucito, Darién, on the Río Jesucito, a small stream east of the base of Cerro Sapo. He mentioned also a female from El Tigre, on the Río Cupe, taken by Benson. One in the Philadelphia Academy was taken at Garachiné in 1941. E. A. Goldman collected two females at Cana on Cerro Pirre, February 28, 1912.

I saw this interesting species first at Jaqué, Darién, on March 19, 1946, when I found one moving actively through the lower branches in gallery forest. It was encountered next in dark, swampy woods near the sea at Mandinga, western San Blas, on January 26, 1957, a single bird seen indistinctly as it fluttered among twigs in the higher branches. Later, in work in the great valley of the Tuira and Chucunaque, locally they were fairly common. In March 1959, they were in pairs that moved about rather freely through the smaller trees in forest growth along streams, without the nervous regard for hiding behind cover found in their larger relatives. Their small size seemed protective as any leaf served to hide them. They were found again near Pucro on the Río Pucro on February 3, 1964.

The song is a repetition of a single note that increases in rapidity of utterance to end in a trill, *tree-tree-tree-tree-ee-ee-ee*. In voice and mannerism they suggest a miniature of *Myrmotherula surinamensis*.

I have found no report of their nesting.

MYRMOTHERULA SURINAMENSIS PACIFICA Hellmayr:
Streaked Ant-wren, Hormiguerito Rayado

FIGURE 15

Myrmotherula surinamensis pacifica Hellmayr, Proc. Zool. Soc. London, December 5, 1911, p. 1159. (Buenaventura, Valle, Colombia.)

Small; male, black above, streaked with white; white below streaked with black. Female, crown rufous streaked with black, otherwise like male on upper surface; under surface white, washed with buff.

Description.—Length 88–98 mm. Rectrices 12. Adult male, upper surface, crown to back, including scapulars, black streaked narrowly with white; wings black; middle and greater coverts tipped with white; outer margins of primaries with margins of inner secondaries edged with white; tail black, tipped narrowly and edged basally with white; rump feathers and upper tail coverts long and lax, gray, the tail coverts tipped indistinctly with white; a concealed white area in center of back; side of head and under surface white, with throat,

abdomen, and under tail coverts immaculate; elsewhere streaked with black; axillars, under wing coverts, and inner margins of under side of wing feathers white; in some a few faint slate spots on inner side of carpal edge of wing.

Adult female, crown, hindneck, and upper back tawny to cinnamon-brown, streaked with black (amount of streaking and depth of brown variable); rest of back and scapulars streaked with white; wings as in male; middle of back in some washed with cinnamon-buff; rump lighter gray than in male; long, lax upper tail coverts tipped faintly with buff; tail black, edged and tipped with white; foreneck, abdomen, and under tail coverts white; side of head, side of neck, upper breast, and sides cinnamon-buff, varying individually in depth of color; under wing coverts and inner wing lining white.

Immature, male and female, under surface lightly streaked with black or slate; crown and hindneck as in adult female.

A male, taken on the Río Pequení near the Candelaria Station, March 4, 1961, had the iris mouse brown; maxilla black; mandible neutral gray; tarsus, toes, and claws bluish slate.

In a female, collected with the male described above, the cutting edge of both upper and lower halves of the bill and the tip of the mandible were dull white; otherwise like the male.

Measurements.—Males (10 from Panamá), wing 49.8–52.5 (50.8), tail 24.1–28.8 (26.2), culmen from base 14.8–16.9 (16.2), tarsus 17.1–18.2 (17.7) mm.

Females (10 from Panamá), wing 47.0–51.0 (48.9), tail 23.3–27.3 (25.2), culmen from base 15.1–17.0 (16.1), tarsus 17.4–18.2 (17.8) mm.

Resident. Found locally in the Tropical Zone; on the Pacific slope through the eastern sector of the Province of Panamá and Darién, to 550 meters near Cana on Cerro Pirre; on the Caribbean slope from western Bocas del Toro (Almirante) east through Colón and the lower Chagres Valley, including this part of the Canal Zone, and San Blas (east to Puerto Obaldía).

This is a species of thickets, undergrowth at forest edge, often along streams, and lower second growth (rastrojo). In swampy woodland it may live in tangles of vines in the upper level of the tree crown. They associate normally in pairs, male and female together, that move about under cover usually concealed as is the custom of related species of the genus of similar size found in Panamá.

Males sing regularly in early morning, and often during the day, a brief trill formed by the repetition of a single note, *chee chee chee chee-ce-ee*. The birds themselves search steadily for insect food

among the leaves, moving quietly, usually with the members of each pair not separated far from one another. In their short flights the black-and-white pattern of the male shows clearly, the duller colors of the female less evidently. The tail in such movement appears noticeably short. In Darién, the country men living with me in camp called them *Don Pelotita* (little Mr. Ball), from their fluffy rounded appearance.



FIGURE 15.—Streaked ant-wren, hormiguerito rayado, *Myrmotherula surinamensis pacifica*.

A nest under construction in early January, near Gamboa, Canal Zone, was located 6 meters or so from ground level in a small stand of low trees on an open playón along the Río Frijoles. The external outline was formed of slender bits of green vines with tiny leaves along the stem. These were molded to form a rounded basket attached

to several twigs in a fork in the branch so that the cup appeared partly suspended. Three days later the nest walls were thicker but still the structure was not complete. Time available at the locality did not allow further examination.

A nest with a set of two eggs (U.S. National Museum no. 41393) of this subspecies was collected by M. A. Carriker, Jr., at Nuquí, Chocó, on the northwestern coast of Colombia, March 5, 1951. The nest is a thin-walled cup, of elongated, mosslike fibers strengthened by a thin inner lining of slender filaments that resemble aerial rootlets of some of the epiphytes. The upper margins of these materials are wrapped securely around two sides of a thin-branched fork so that the nest is suspended. The walls, while firm and strong, are so thin that details of form of anything inside would be visible from below. The nest is approximately 70 mm in diameter by 45 mm in depth. The two eggs are white, with a very faint tint of buff, spotted heavily on the larger end with dark brown, that in places shows as lilac-gray where the darker color was overlaid with shell during its formation. Tiny dots and occasional slightly larger marks are thinly scattered over the rest of the surface. In form one of the eggs is oval, the other is broader, almost subelliptical. They measure 16.9×12.7 and 17.3×12.7 mm. Stone (Proc. Acad. Nat. Sci. Philadelphia, vol. 70, 1918, p. 260) gives a description of a nest with eggs found by Jewel on the Río Siri, Canal Zone, March 31, 1912. "Nest pensile at end of a slender branch . . . made of fine grasses with curtain of green moss. . . . Eggs two . . . grayish white, heavily speckled, mottled and washed with shades of cinnamon-brown, with a heavier wreath around the larger end." The egg measurements given, transposed to the metric system, are 17.2×12.7 and 17.5×13.4 mm.

The account by Sclater and Salvin (Proc. Zool. Soc. London, 1879, p. 525) of an egg attributed to *M. surinamensis*, collected by Salmon at Remedios in Antioquia, which is described as "white" with measurements of 20.3×16.5 mm, must refer to some other species. The inclusion by Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 2, 1892, p. 209) of "Veraguas (Arcé)" in the range also is uncertain and may be based on a specimen from the Salvin-Godman collection in the British Museum labeled "Veragua (Arcé)." Arcé collected in the range of this bird at Chepo; or possibly at Calovévora on the Caribbean slope of northern Veraguas.

The subspecies *pacifica* ranges beyond Panamá in South America to the Sinú and lower Magdalena Valleys in Colombia, and south along the Pacific Coast to western Ecuador.

**MYRMOTHERULA FULVIVENTRIS (Lawrence): Fulvous
Ant-wren, Hormiguerito Leonado**

Myrmotherula fulviventris Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 7, 1862, p. 468. (Line of Panama Railroad, Atlantic Slope, Canal Zone, Panamá.)

Small; brown, grayer above; wing coverts dull black with three rows of spots producing wing bars; male, foreneck white with black bases of feathers showing to produce a spotted appearance.

Description.—Length 93–103 mm. Bill relatively stronger, heavier than others of the genus in Panamá. Adult male, above olive; feathers of crown from the eyes forward faintly edged with dusky, and obscurely spotted with dull gray, often lighter, grayer on forehead adjacent to the nostrils; primaries and secondaries edged with dull reddish brown; distal area of lesser coverts and all of middle and greater coverts dull black, tipped with cinnamon-buff to form three narrow wing bars; upper tail coverts cinnamon; tail dull cinnamon-brown; side of head dull grayish white; throat basally black, each feather tipped with a broad spot of white, to produce a mottled pattern; chin white; rest of under surface buffy olive, duller on the breast, lighter on the abdomen; under tail coverts dull cinnamon-brown; sides and flanks more olive-brown; under wing coverts and edging of inner webs of primaries and secondaries brownish buff.

Adult female, usually lighter brown above; wing coverts blackish brown, tipped with cinnamon-buff as in the male; chin white; throat, foreneck, and sides of neck buff; otherwise like the male.

Juvenile, male and female, chin and upper throat white to buffy white; rest of under surface dull buff; foreneck and upper breast with indefinite center lines of white; sides and flanks grayish brown.

The Fulvous Ant-wren is a forest bird with wide distribution in the Republic wherever forest cover remains, from the tropical lowlands of both slopes to the lower border of the Subtropical Zone. It is found singly or in pairs, less often half a dozen or so in loose company, in undergrowth, also regularly higher in the trees. In addition it is a regular member of the mixed flocks of small birds that are encountered moving quietly through the leaves. In this they associate regularly with *Myrmotherula axillaris* and *Microrhopias quixensis*. Groups of these three species often have small tanagers and honey-creepers added as well as a miscellany of other birds of this size. Among the three ant-wrens thus grouped it is interesting to note that the eye in the present species is light in color, while in the other two it is dark brown.

The species is found widely from eastern Honduras south through

Central America, and in Colombia south along the Pacific Coast to western Ecuador, and east to the Magdalena Valley. The population of the coastal area from north-central Chocó (Nuquí) in western Colombia south to Ecuador is easily distinct in darker, more olive hue in the male, and darker brown in the female. The others when viewed in series may be separated into two groups on only slight average difference in depth of color. The following summary is based on the series of 71 males and 50 females now available in the U.S. National Museum, with additional material seen in other museums. In making comparisons it should be remembered that older specimens, even when stored carefully in museum cases, may have changed in color to become appreciably darker when compared with recently collected material.

Myrmotherula fulviventris fulviventris (Lawrence).

Myrmotherula [sic] *fulviventris* Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 7, 1862, p. 468. (Line of Panama Railroad, Atlantic Slope, Canal Zone, Panamá.)

Myrmotherula fulviventris costaricensis Todd, Proc. Biol. Soc. Washington, vol. 40, December 2, 1947, p. 156 (El Hogar, Costa Rica.)

Averaging slightly darker above and below in both sexes.

Caribbean slope from eastern Honduras through eastern Nicaragua, eastern Costa Rica and northern Panamá to the Canal Zone, Panamá.

The birds of Panamá from the Canal Zone westward are not separable from those of Costa Rica.

Myrmotherula fulviventris salmoni (Chubb)

Rhopias fulviventris salmoni Chubb, Ann. Mag. Nat. Hist., ser. 9, vol. 2, July 1918, p. 124. (Remedios, Antioquia, Colombia.)

Slightly paler above and below in both male and female.

Eastern Panamá from the eastern sector of the Province of Panamá through Darién, and through San Blas; continuing in Colombia from the western side of the lower Río Atrato in extreme northern Chocó (Ungía, Acandí) through northern Antioquia (Villa Artiaga, Botero) and Department of Córdoba, east in the upper Río Cauca Valley, and through Bolívar and northern Santander in the Magdalena Valley.

Birds from extreme western San Blas and Chepo in Panamá are somewhat intermediate toward the subspecies *fulviventris*.

Myrmotherula fulviventris viduata Hartert

Myrmotherula viduata Hartert, Nov. Zool., vol. 5, December 31, 1898, p. 492. (Cachaví, northwestern Ecuador.)

Male, more olive on upper and lower surface; female definitely darker brown on upper surface, and to a lesser degree on the underparts.

Pacific slope of Colombia in central Chocó from the Río Jurubidá, inland to the base of the Serranía de Baudó, south to western Ecuador.

The darker coloration is distinctive and easily evident.

MYRMOTHERULA FULVIVENTRIS FULVIVENTRIS
(Lawrence)

Myrmetherula [sic] *fulviventris* Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 7, 1862, p. 468. (Line of Panama Railroad, Atlantic slope, Canal Zone, Panamá.)

Characters.—Averaging slightly darker above and below in both sexes.

Measurements.—Males (10 from western Panamá), wing 49.0–52.6 (50.9), tail 30.7–35.0 (33.0), culmen from base 14.1–16.2 (15.2), tarsus 17.0–18.0 (17.4) mm.

Females (10 from western Panamá), wing 47.8–52.3 (50.3), tail 31.7–35.9 (33.1), culmen from base 14.9–16.4 (15.4), tarsus 16.6–17.0 (16.8) mm.

Weight, ♂ 8.5, 9.0; ♀ 8.8 grams (G. Child, G. V. N. Powell).

Resident. Found locally in forested areas on the Caribbean slope, from western Bocas del Toro (Almirante) east to the northern Canal Zone and the eastern sector of Colón; on the Pacific slope recorded from the high southern slope of Cerro Campana, and Chorrera, western Province of Panamá.

This form is widely distributed in the lowland forests of the Caribbean slope from near the Costa Rican boundary to the northern Canal Zone.

It was described by Lawrence from male and female collected by McLeannan and Galbraith near the line of the railroad on the north slope in what is now the Canal Zone. Peters (Bull. Mus. Comp. Zool., vol. 71, 1931, p. 320) recorded a male from Bocas del Toro taken March 25, 1928, by von Wedel at 600 meters on the trail leading to Boquete from the Laguna de Chiriquí. The bird is fairly common in the vicinity of Almirante where I found it regularly in January and February 1958. I collected it also at the head of the

Río Guabal in northern Coclé in 1962, and earlier (1952) had found it along the Río Indio in western Province of Colón. Here it ranged inland to El Uracillo in the Caribbean extension of Coclé. In the Canal Zone it has been especially common on Barro Colorado Island where nests with eggs have been recorded in mid-January and late October.

The only reports from the Pacific slope are from Cerro Campana in western Province of Panamá where I secured a male March 19, 1951, in wet forest at 900 meters, near the summit of the mountain, and Chorrera, where Richardson secured a pair November 5 and 6, 1914 (specimens in American Museum).

The inclusion by Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 2, 1892, p. 210) of "Veraguas (Arcé)" in their range for this bird is uncertain. Possibly it refers to Sclater (Cat. Birds Brit. Mus., vol. 15, 1890, p. 234) who in the list of specimens in the British Museum lists "♂ ad. sk. Veragua (Arcé) Salvin-Godman Coll." This report, from present information, has no validity.

On Barro Colorado Island, Eisenmann (Smithsonian Misc. Coll., vol. 117, no. 5, 1952, p. 35) lists nests with eggs found by Skutch, January 14, 1931, and March 29, 1935, and by Allen, October 20, 1944.

Skutch (Pac. Coast Avif., no. 35, 1969, pp. 219-221) observed two males in display perched facing one another on twigs in the undergrowth. With lowered heads and fluffed out plumage of their backs, they turned from side to side, rapidly and incessantly repeating sharp, squeaky notes. They continued this performance for many minutes, without changing their perches until one flew away and the other continued calling. During this display several females flitted around them, taking no part in the dispute.

Two nests seen were deep pouches with narrowed tops suspended "from a fork at the end of a slender drooping branch in undergrowth in forest" a little less than 2 meters above the ground. They were "composed of fibrous materials and partly decayed leaves, with an inner layer of dead leaves and a lining of fine fibers in the bottom." The two eggs were white, finely spotted, and lined with pale lilac that formed a wreath on the large end. One set measured 18.3×13.5 , and 17.5×13.5 mm. Both sexes worked at nest construction and also shared in incubation.

The eggs described as of this race by Carriker (Ann. Carnegie Mus., vol. 6, 1910, p. 608) with measurements of 20.3×14.8 and 22.5×15.5 mm appear large to be of this bird.

MYRMOTHERULA FULVIVENTRIS SALMONI (Chubb)

Rhopias fulviventris salmoni Chubb, Ann. Mag. Nat. Hist., ser. 9, vol. 2, July 1918, p. 124. (Remedios, Antioquia, Colombia.)

Characters.—Slightly paler above and below in both sexes.

A male, near Cañita, eastern Province of Panamá, on the lower Río Bayano, February 6, 1962, had the iris yellow; maxilla dull black; mandible neutral gray; tarsus and toes neutral gray, claws dark neutral gray. In another male, from Boca de Paya, Río Tuira, Darién, February 22, 1959, in which the iris was light buffy yellow, the filamentous tip of the tongue was dull buffy white, while the fleshy base was bright light orange. A female taken at Puerto Obaldía, San Blas, February 16, 1963, had the iris light orange.

Measurements.—Males (10 from Panamá), wing 49.1–51.8 (50.1), tail 31.7–36.4 (34.2), culmen from base 15.2–16.7 (15.7), tarsus 16.3–17.2 (16.7) mm.

Females (10 from Panamá), wing 49.0–51.5 (49.9), tail 32.8–34.9 (34.0), culmen from base 13.9–16.4 (14.9), tarsus 16.3–17.0 (16.4) mm.

Resident. Locally common in forested areas on the Pacific slope from the lower Río Bayano east through eastern Province of Panamá and Darién; on the Caribbean side throughout San Blas. Specimens seen from the Río Pacora and extreme western San Blas (Mandinga) are somewhat intermediate toward *fulviventris*.

A series in the Museum of Comparative Zoology was collected in April 1922 by Barbour and Brooks on Cerro Sapo, and in the area adjacent on the Río Esnape and Jesucito. The Fifth George Vanderbilt Expedition in 1941 took others at Garachiné and Cerro Sapo. Hasso von Wedel collected numerous specimens at Permé, Ranchón, and Puerto Obaldía. I found them also at Armila in this area in 1963. In my own investigations these birds were common at Jaqué in March and April 1946, and on the upper Río Jaqué in the same months of 1947. They have been common also along the Río Tuira and its tributaries and on the lower Chucunaque. Inland here they are found on the base of Cerro Tacarcuna at the old Tacarcuna village site.

MYRMOTHERULA AXILLARIS ALBIGULA Lawrence:

Black Ant-wren, Hormiguerito Negro

FIGURE 16

Myrmotherula albigula Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, 1865, p. 131. (Line of the Panama Railroad, Atlantic slope, Canal Zone, Panamá.)

Small; male, black to slaty black, sides and flanks white; female, dark gray to olive above, cinnamon-buff below, with flanks white as in the male, throat white.

Beyond Panamá this subspecies ranges in Colombia from the western side of the Gulf of Urabá east to the lower Magdalena Valley.

Description.—Length 90–100 mm. Adult male, above black to slate; outer scapulars and most of lesser wing coverts white; middle and greater coverts with a white spot at tip; inner primaries and secondaries in some edged and tipped narrowly with white; tail tipped lightly with white (this mark often lost from wear); forepart of under surface and abdomen black; under tail coverts black, tipped with white; sides, flanks, under wing coverts, and inner webs of primaries clear white.

Adult female, anterior line of forehead grayish to dull cinnamon; upper surface, dark gray to dull olive, becoming brownish on lower back; upper tail coverts dull brown; tail dull brown, tipped and edged narrowly with dull cinnamon; wing coverts in some with obscure spots of dull cinnamon-brown; wings edged narrowly with dull cinnamon-brown; side of head dull gray, spotted obscurely with white; throat white; rest of under surface buff, including under wing coverts, and inner margins of primaries; under tail coverts cinnamon-buff.

Juvenile male, crown blackish slate; back and scapulars dull brownish black; upper tail coverts dull grayish brown; wings dull fuscous-black, with wing coverts spotted and primaries edged narrowly with pale cinnamon-buff; throat dull white, barred indistinctly with black; lower foreneck and breast dull buffy brown; lower abdomen and flanks white; under wing coverts as in adult.

A male, collected at Cañita, Panamá, February 6, 1952, had the iris wood brown; bill black, tarsus, toes, and claws bluish neutral gray.

Measurements.—Males (10 from Panamá), wing 51.0–54.3 (52.2), tail 30.4–34.5 (32.7), culmen from base 14.0–15.1 (14.4), tarsus 15.5–16.7 (15.9) mm.

Females (10 from Panamá), wing 48.9–50.9 (49.7), tail 30.0–31.9 (30.9), culmen from base 13.5–14.9 (14.3), tarsus 15.4–15.9 (15.6) mm.

Resident. Common in regions of heavy forest. On the Pacific slope from Cerro Campana, Cerro Azul, and Chepo, Province of Panamá, east through Darién to the Colombian boundary. On the

Caribbean slope throughout from western Bocas del Toro to eastern San Blas (Puerto Obaldía).

The most western record on the Pacific slope, a single female, was collected March 12, 1951, in high forest at 850 meters on the south face of Cerro Campana. Others taken in this same woodland during the week of March 10 to 20 were all *Myrmotherula schisticolor*. From Cerro Azul, Chepo, and the Río Chimán eastward through



FIGURE 16.—Black ant-wren, hormiguerito negro, *Myrmotherula axillaris albigula*.

Darién *M. a. albigula* was common. It was recorded by Barbour and Brooks in 1922 in numbers from Garachiné and the lower Sambú Valley. In my own field studies I found it distributed through the Chucunaque-Tuira drainage, including the lower slopes of Cerro Pirre and Cerro Tacarcuna.

Where they are common these ant-wrens range in small flocks that move actively with low chattering calls in scattered company through the top of the undergrowth and in the lower branches of the trees. In these small groups, frequently they flit the wings quickly, an action

that in the black males displays a flash of color from the long, white feathers of the sides and flanks. Regularly I found them in friendly association with the Fulvous Ant-wren (*Myrmotherula fulviventris*). Occasionally also they were in low growth with other species that gathered over moving swarms of ants. They were in breeding condition from February to May, when males gave low trilling songs. On Barro Colorado Island, where they are common, nests have been recorded in April and May. Goldman on May 2, 1911, collected two eggs, slightly incubated, near Gatun, Canal Zone. His notes describe the nest site as a meter above the ground in the top of a small bush under shelter of a large palm leaf, on a steep hillside in heavy forest. The cup-shaped nest, hung between two forks, was made of fibrous leaf fragments and hairlike vegetable fibers, lined with the latter material. It was about 90 millimeters in diameter with the rather deep cup 50 millimeters across and about the same in depth. The eggs are white, without gloss, heavily marked with rather dull reddish brown, mainly as a broad wreath around the larger end, with a few scattered dots and irregular spots elsewhere. In form they are between subelliptical and oval, one being more rounded at the small end than the other. They measure 18.0×11.8 and 17.3×12.1 mm. Skutch (Condor, 1946, pp. 21–27) gives size for four eggs as $16.7\text{--}17.5 \times 12.3\text{--}12.7$ mm. He found male and female sharing in incubation during the day, with the female alone at night. The newly hatched young "were pink with blackish heads and were devoid of the slightest trace of natal down." Nestlings were fed and brooded by both parents.

The food, as found in stomachs of those that I have collected, is composed of small insects and spiders. A typical example, taken by E. A. Goldman, June 4, 1912, at Caná on Cerro Pirre, Darién, was filled with remains of spiders and of insects among which I identified a small tenebrionid beetle, eight pentatomid eggs, the jaws of an orthopteran, and bits of two ants.

As a species *Myrmotherula axillaris* has an extensive range from southeastern Honduras south on the Caribbean slope in eastern Nicaragua, eastern Costa Rica, and Panamá to Cerro Azul where it shifts to include the Pacific slope also, and continues in South America, from Colombia, Venezuela, and Trinidad, south to Bolivia and southern Brazil. Those from Central America and Colombia east to the lower Magdalena Valley, and south along the Pacific Coast to western Ecuador, in series differ in the female in average darker coloration above, with the rump and upper tail coverts only faintly if at all rufescent. These are the subspecies *albigula*.

In eastern Colombia and western and southern Venezuela, south to eastern Perú and northwestern Brazil, females average more olive-brown above, with edgings in the primaries more rufescent, rump and upper tail coverts more cinnamon-brown and the spots on the wing coverts much less evident and more cinnamon-brown. These have been recognized as *Myrmotherula axillaris melaena* (Sclater). Males (130 examined) in the two groups are highly variable from dark gray to black. Females (84 compared), with considerable individual variation, may be separated as indicated but only in series.

MYRMOTHERULA SCHISTICOLOR SCHISTICOLOR
(Lawrence): Slaty Ant-wren, Hormiguero Pizarroso

Formicivora schisticolor Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, 1865, p. 172. (Turrialba, Costa Rica.)

Small; male, dark gray, black from chin to breast; female, dark brown above and below, including flanks.

Description.—Length 90–105 mm. Tail longer than in *M. a. albigula*. Adult male, upper surface, including tail, slate color; a small white patch, mainly concealed, at junction of wing and body; lesser, middle, and greater coverts slaty black to black, tipped with white; rest of wing like back, with outer primaries edged faintly with grayish brown; malar area black, barred with slate; chin, throat, foreneck, and in some upper breast, black; rest of central under surface slate color; under tail coverts edged and tipped with white, each feather with a subterminal bar of black; under wing coverts mixed white, slate, and black; inner margins of wing feathers white.

Adult female, forehead narrowly buff to cinnamon-buff; crown and hindneck buffy olive-brown; back, scapulars, and upper tail coverts gray, less olive; tail dark brown, edged with russet-brown; primaries and secondaries edged with dull reddish brown; tips of wing coverts dull cinnamon-brown, forming poorly defined spots; sides of head grayish buff to buff; chin and throat buff; rest of underparts tawny-buff to clay color, darker, more olive on sides and flanks; under wing coverts and inner edging of wing feathers cinnamon-buff.

Immature male, like female, with the throat and foreneck early becoming mixed with the black of the adult.

Nestling, above Vandyke brown, with the tail duller; under surface russet.

An adult male, taken on Cerro Malí, Darién, February 24, 1964, had the iris reddish brown; bill black, with neutral gray border on the base of the cutting edge in maxilla and mandible and the gape;

tarsus, toes, and claws bluish neutral gray; top of the tongue and fauces orange.

An immature male, in which only a slight amount of black had appeared on the throat, taken at the same point on February 21, had the iris dark brown; bill black with a narrow line of dull white on posterior half of cutting edge; gape faintly honey yellow; tarsus, toes, and claws dark neutral gray; tip of tongue and inside of mouth orange.

An adult female, collected at El Volcán, Chiriquí, March 15, 1965, had the iris dark brown.

Measurements.—Males (10 from Panamá), wing 55.5–58.3 (57.1), tail 34.2–39.4 (36.1), culmen from base 13.6–15.1 (14.2), tarsus 16.1–16.9 (16.4) mm.

Females (10 from Panamá), wing 52.4–56.3 (54.4), tail 33.3–36.7, (35.0), culmen from base 13.0–14.5 (13.9), tarsus 16.1–16.8 (16.4) mm.

Alden Miller (Univ. Cal. Publ. Zool., vol. 66, 1963, p. 25) recorded weights of *M. s. schisticolor* at San Antonio, Valle, Colombia, in three males as 10.0 to 10.8 grams, and in one female as 9.8 grams.

Resident. Locally common on the Pacific slope in areas of forest, from western Chiriquí, mainly in the upper Tropical and Subtropical zones, less frequently in the lowlands; less common in the Azuero Peninsula; not recorded between Cerro Campana and Cerro Azul. Recorded at the Río Calovévora, Caribbean slope of Veraguas.

This is the most common ant-wren of the western half of the Pacific slope in the Republic, east to and including Cerro Campana. After a brief break in the range through the lowlands where the Canal crosses the Isthmus, it appears again on Cerro Azul. Beyond, they are at present recorded on Cerro Pirre and on the slopes of Cerro Tacarcuna. While they are most common in the mountain forest, where they range to 1750 meters in western Chiriquí, they are found also at lower elevations in this western area. Bangs (Auk, 1901, p. 365) recorded four taken at Divalá, Chiriquí, by W. W. Brown, Jr., in 1900, and Salvin (Proc. Zool. Soc. London, 1870, p. 195) received specimens collected by Arcé at Bugaba, Chiriquí, and (idem, 1867, p. 144) at Santiago, Veraguas. There are two, male and female, in the American Museum of Natural History from Calovévora, northern Veraguas, on the Caribbean side, collected by Benson and Gaffney August 12 and 25, 1926.

On March 17, 1957, in a small tract of virgin forest, about 5 miles southwest of Pedasí, Los Santos, in the southern end of the Azuero Peninsula, I secured a single female, the only one seen. As further

indication of occurrence, there are two specimens, now in the Carnegie Museum, collected by Dr. John W. Aldrich in 1932 on the western side of the Peninsula, inland from the Golfo de Montijo, one on the Río Mariato, taken February 24, and one at 600 meters on Cerro Viejo, farther in the interior, on March 6. At the time in question, species in some of the ant-wrens and their plumages were not well understood as few specimens then were available. The two mentioned, both immature males, were beginning to change to the adult status with a few black feathers appearing on the throat. On examination of them, through the courtesy of Dr. Kenneth Parkes, they prove to be *schisticolor* instead of *Myrmotherula fulviventris* as originally recorded (Aldrich, Sci. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, pp. 87-88).

In the highland forests of Chiriquí these ant-wrens were found in the main with the groups of small birds that ranged in loose company through the lower levels of the trees. It is their custom to move quickly in fluttering flight among the branches. As they alight under cover of leaves, usually they freeze motionless for several seconds, and then if there is no alarm continue movement, but still under cover, in search of the small insects and spiders that form their principal food. Their soft calls give contact with others of the group.

The single stomach on which I have made detailed analysis, a male taken on Cerro Pirre in June, held remains of Homoptera (Fulgoroidea) and many fragments of spiders.

In February those that I collected on the slopes of Cerro Tacarcuna were in full breeding condition.

In Costa Rica, Skutch (Pac. Coast Avif., no. 35, 1969, pp. 209-213) found them breeding from March through May. The nest, placed in undergrowth in forest at from less than a meter to nearly 2 meters above the ground, was a small cup of fine black fibers bound with cobweb, suspended in a horizontal fork, woven thinly so that the contents were outlined from the sides and below. The two eggs are white or cream colored with coarse dark markings and lines on much of the surface, in some forming a band around the larger end. Measurements made from seven ranged from 17.1-18.3×13.1-13.5 mm. The young at hatching were dark skinned with no down. Male and female incubated, the latter alone through the night, and both fed the young. In one distraction display a male dropped from the nest nearly to the ground where he clung to a slender stem with slowly beating spread wings, displaying a small white area at each wing base. The male may be slow in changing to adult dress, and so be mated while still in a transition stage.

HERPSILOCHMUS RUFOMARGINATUS EXIGUUS Nelson:
Rufous-winged Ant-wren, Hormiguerito Alirufó

Herpsilochmus rufomarginatus exiguus Nelson, Smithsonian Misc. Coll., vol. 60, no. 3, September 24 (27), 1912, p. 11. (Cana, Cerro Pirre, 1050 meters elevation, Darién, Panamá.)

Small, slender; wing prominently rufous, with shoulder black.

Description.—Length 100–110 mm. Adult male, crown, hindneck, broad line down back and rump black, the back and rump bordered by dark gray, which continues on upper tail coverts; outer scapulars edged with white; wing coverts black, the middle and greater series tipped with white to form two prominent wing bars; tertials and inner primaries edged with white, primaries and secondaries bordered widely with rufous on outer margins forming a prominent band; rectrices black, the central ones tipped with white, the two outer feathers edged and tipped broadly with white; a prominent white superciliary streak; broad line from the lores through eye, black; side of head and most of upper foreneck white; lower foreneck, breast and abdomen light yellow; under tail coverts white; under wing coverts, edge of wing, and inner margins of wing feathers white.

Adult female, crown and hindneck dull rufous; back and rump dull brownish gray, paler posteriorly on the upper tail coverts; streak through eye duller rufous than crown; otherwise as in male.

Measurements.—Males (5 from Darién and northwestern Colombia), wing 48.2–51.7 (49.6), tail 36.0–38.3 (37.1), culmen from base 15.5–16.5 (16.0), tarsus 18.0–19.0 (18.6) mm.

Female (1 from Darién), wing 48.4, tail 36.8, culmen from base 16.1, tarsus 18.1 mm.

Resident. Rare in forested areas in Darién; recorded from Cerro Sapo, Cerro Pirre, and the lower Tuira-Chucunaque Valley.

This interesting race was named from two specimens collected in 1912 by E. A. Goldman, a male (the type) on Cerro Pirre, above Cana, June 6, and a female at Boca de Cupe on the lower Río Tuira, June 18. Griscom secured one and saw another at Garachiné in February 1927, and the George Vanderbilt Expedition collected five at Garachiné and Cerro Sapo (at 900 meters) in April and May 1941.

Near the mouth of the Río Tuquesa on the Río Chucunaque, on March 29, 1959, I found a male with a mixed group of small forest birds that searched the crown of a fairly high tree in open forest. In its movements this bird resembled its companion *Myrmotherulus* fluttering from one bunch of leaves to another, and then, on alighting, remaining motionless for a minute or two under cover before

beginning its search for food. One in the Gorgas Memorial Laboratory was taken on the Río Mono, Darién, in January 1969.

In the stomach of the male taken by Goldman on Cerro Pirre I found remains of spiders, bits of a lygaeid, a homopteran, a chryso-melid and other coleoptera not identified, and remains of earwigs.

Specimens of this race taken by M. A. Carriker, Jr., in north-western Colombia, include a male from Socarré on the Río Sinú in the Department of Córdoba, and another from Santa Rosa, near the Río Magdalena, in the southern Department of Bolívar.

**MICRORHOPIAS QUIXENSIS (Cornalia): Dotted-winged
Ant-wren, Hormiguerito Alipunteado**

Thamnophilus quixensis E. Cornalia, *Vertebratorum Syn. Mus. Mediolanense extentium* (Osculati coll.), 1849, pp. 6, 12. (Quixos = Río Quijos, eastern Ecuador.)

A small ant-wren, with tail nearly as long as wing; male black, with wing barred and spotted with white; female, above like male, under surface cinnamon-brown to chestnut.

Description.—Length 100–110 mm; with large white patch on back, concealed by dark feather tips. Adult male, black, usually with sides and flanks slate gray; center of back broadly white, concealed by the black tips of the long feathers; lesser and middle wing coverts spotted with white; greater coverts broadly tipped with white, to make a prominent wing band; tail tipped with white; axillars, under wing coverts, and inner margins of wing feathers white; in some the lateral feathers of the breast, and occasionally the sides with narrow, concealed shaft lines of pure white.

Adult female, upper surface, wings and tail like male, but usually more grayish black, especially on the crown; under surface cinnamon-rufous to chestnut; under wing coverts and edgings of primaries white.

Juvenile, sooty black above; wing and tail markings reduced in extent; under surface in male brownish black; in female dull rufous with a sooty wash, especially on the sides.

When the wing is fully grown in the immature male, the tips of the secondaries are dotted with white, a marking that tends to disappear with wear as the bird becomes older.

The species is one of extensive range on the Caribbean slope from southern México through Central America to Costa Rica, and then on both Pacific and Atlantic sides through Panamá; in South America in the west from Colombia (east to the middle Magdalena Valley

and eastern Nariño) south through Ecuador, eastern Perú, north-eastern Bolivia, and Brazil south of the Amazon; and in the east in eastern Surinam, French Guiana, and northeastern Brazil (Amapá). Two subspecies are found in Panamá.

These are mainly forest birds ranging in open forest and forest edge from the undergrowth to the lower tree crown, sometimes singly or in pairs, often with flocks of other ant-wrens and small birds that travel in company. Usually they are less secretive than the species of *Myrmotherula* which often are their associates. In color and plumage pattern they are definitely attractive. As they move about they utter low chattering scolding calls, usually higher pitched than those of other small ant-wrens. Occasionally I have heard them give rapid, trilling songs. Often in display males expand the back feathers so that the white, normally concealed, is shown prominently.

MICRORHOPIAS QUIXENSIS VIRGATA (Lawrence)

Formicivora virgata Lawrence, Ibis, ser. 1, vol. 5, April 1863, p. 182. (Lion Hill, Canal Zone, Panamá.)

Characters.—White tip on outer rectrices 5–7 mm long; male, with flanks slate color; female, lighter cinnamon-rufous on the under surface.

A male taken at Cañita, on the lower Río Bayano, eastern Province of Panamá, February 6, 1962, had the iris dark brown; posterior three-quarters of the cutting edges of maxilla and mandible neutral gray; rest of bill black; tarsus and toes dark neutral gray; claws black. Another male, collected at Puerto Armuelles, Chiriquí, February 22, 1966, differed in having the iris reddish brown, and the tarsus, toes, and claws bluish slate.

A female from Juan Mina, Canal Zone, January 17, 1961, had the iris dark brown; side of maxilla from base forward to halfway between the nostril and the tip, and the side of the mandible, except the tip, neutral gray; rest of bill black; tarsus, toes, and claws dark neutral gray. One taken at Puerto Armuelles, Chiriquí, February 22, 1966, differed in having the iris dark reddish brown, and the claws black.

Measurements.—Males (10 from western Panamá), wing 48.2–51.7 (49.7), tail 41.5–45.5 (43.5), culmen from base 14.2–14.9 (14.5), tarsus 15.2–16.0 (15.5) mm.

Females (10 from western Panamá), wing 46.5–49.9 (48.1), tail 40.0–44.4 (42.6), culmen from base 13.7–15.6 (14.6), tarsus 15.1–15.9 (15.4) mm.

Resident. Found in the tropical lowlands in western and central Panamá; recorded on both slopes though more widespread on the Caribbean side. Recorded in western Chiriquí, from Puerto Armuelles, Bugaba, and Divalá; appears again on Cerro Azul, the lower Río Bayano (Cañita); intergrades with *M. q. consobrina* on the Río Chimán and Río Majé; distributed on the Caribbean side from the Costa Rican boundary in Bocas del Toro, east through the northern Canal Zone, the lower Chagres Valley above Madden Lake, and western San Blas (Mandinga).

In Chiriquí, Arcé collected this bird near Bugaba a hundred years ago (Salvin, Proc. Zool. Soc. London, 1870, p. 195), and W. W. Brown, Jr., found it at Divalá in November and December, 1900 (Bangs, Auk, 1901, p. 365). Specimens in the California Academy of Sciences from Puerto Armuelles were taken in 1929 by Mrs. M. E. Davidson. In 1966, I found a few in that area, inland adjacent to the hills on the Costa Rican boundary, but elsewhere did not encounter it as the forests in the lowland area had been cut except along the streams.

On the Caribbean side, it is a common species through the forests in the lowlands and the lower foothills. I found it common near Almirante, Bocas del Toro, in 1958, and on the Río Indio, western Colón, inland to the foothills on the Caribbean slope of Coclé. It is seen regularly through the northern Canal Zone, and the lower Chagres Valley to western San Blas at Mandinga. The single specimen taken by Goldman on Cerro Bruja appears to be intermediate toward the following subspecies. At Cerro Azul it appears on the Pacific slope, and continues through the eastern sector of the Province of Panamá to the lower Río Bayano at Cañita and east to the Río Majé and Cerro Chucantí where it intergrades with the race *consobrina*.

These birds are common on Barro Colorado Island in the Canal Zone, where Skutch found them nest-building on February 22, 1935. Here R. A. Johnson saw them ranging briefly over raiding swarms of ants. He reported a nest found February 5, 1948 (Auk, 1953, p. 496) in a small bush in the forest slightly more than a meter above the ground. It was "a deep cup, with thick sides, suspended from the fork of two branches . . . composed of dead leaves bound together with plant fibers and lined with finer black fibers." It measured in outside diameter approximately 75 mm, inside diameter 45 mm, and inside depth 45 mm. The two eggs were "white with small brown spots over the entire surface and with heavier blotches around the

large end." The male was incubating when the nest was first found. The newly hatched young were without down.

The male type came to George N. Lawrence from McLeannan, stationmaster at Lion Hill on the Panama Railroad, so that the type locality is accepted as that point. In the original description Lawrence noted "feathers on the sides of the breast marked along their shafts with a narrow stripe of white, which reaches nearly to their ends—these marks being only apparent on raising the feathers." This pattern is not universal but is present in occasional specimens, usually as narrow lines on the feather shafts.

MICRORHOPIAS QUIXENSIS CONSOBRINA (Sclater)

Formicivora consobrina P. L. Sclater, Proc. Zool. Soc. London, pt. 28, August 1860, p. 279. (Babahoyo, Ecuador.)

Characters.—White tip on outer rectrices 9–12 mm long; male with flanks slate-black to black; female with under surface decidedly darker, deep chestnut.

A male taken at Armila, San Blas, February 26, 1963, had the iris dark brown. The colors of bill and feet in general were those of the race *virgata*.

Measurements.—Males (10 from Darién and San Blas), wing 48.0–52.0 (49.6), tail 42.7–46.9 (45.0), culmen from base 13.8–15.6 (14.9), tarsus 15.1–16.0 (15.5) mm.

Females (10 from Darién and San Blas), wing 46.5–50.0 (48.1), tail 42.5–47.0 (45.4), culmen from base 13.6–15.2 (14.6, average of 9), tarsus 15.2–15.9 (15.5) mm.

Resident. Common in lowland forests through Darién, and in eastern San Blas to the Colombian boundary; to 550–575 meters on Cerro Pirre and Cerro Tacarcuna.

On the whole the birds of this race are less common than those of the form of central and western Panamá. Bangs and Barbour (Bull. Mus. Comp. Zool., vol. 65, 1922, p. 207) reported them from Cerro Sapo and the lowlands eastward to Jesucito. There is a male in the U.S. National Museum collected by the botanist R. S. Williams at Cana on Cerro Pirre in April 1908, and another taken there by Goldman in June 1912. Griscom (Bull. Mus. Comp. Zool., vol. 69, 1929, p. 168) received a male and three females, taken near Cana by Benson in 1928. In work in the Tuira Valley I found them distributed widely from El Real along the Chucunaque and Tuira Rivers to the base of Cerro Tacarcuna at the old village site on the Río Tacarcuna. They were common at Jaqué and on the lower Río Jaqué, near the

coast toward the boundary with Colombia. I collected them also at Armila in eastern San Blas in 1963.

Schönwetter (Handb. Ool., pt. 14, 1967, p. 38) stated that he had one egg in his collection, and had seen nine others in the cabinet of Pässler. He described them as creamy white, without gloss, marked with small spots of lilac-gray, dark purple-gray, and dark violet-brown. He gives the measurements as 16.0–18.7×12.3–13.3 mm.

The subspecies *consobrina* ranges across northern Colombia to the lower Cauca and Magdalena valleys, and south in the west to western Ecuador.

FORMICIVORA GRISEA ALTICINCTA Bangs: Black-breasted
Ant-wren, Hormiguerito Pechinegro

Formicivora alticincta Bangs, Proc. New England Zoöl. Club, vol. 3, March 31, 1902, p. 71. (Isla del Rey, Archipiélago de las Perlas, Panamá.)

Small warbler size; under surface in male, black with white sides, in female buff; color pattern like that in the Dotted-winged Ant-wren, but bird definitely larger.

Description.—Length 110–120 mm. Without concealed white patch on back. Adult male, forehead and a prominent superciliary, extending back to nape, white; upper surface from crown to rump dark grayish brown; pileum with faintly indicated dark streaks; upper tail coverts tipped with white to buff; wings black, shoulder white; wing coverts tipped with white, forming a broad band on the greater coverts; inner primaries and secondaries edged lightly with buffy white; two outermost rectrices tipped and edged widely with white; others with narrower white tips, with those on the central pair often worn or missing; side of head, foreneck, breast, abdomen, and under tail coverts black; sides and flanks white; under wing coverts black, spotted distally with white; inner webs of primaries white.

Adult female, above rather dull brown; side of head, throat, and abdomen white; tibia white, with partly concealed bases of feathers black; breast and sides buff; otherwise like the adult male.

Immature male, sides light cinnamon-buff; breast blotched irregularly with black and white.

On the label of a male in the British Museum the collector, H. J. Kelsall, noted the iris as dark brown, bill dark horn, legs and feet slatish blue.

Measurements.—Males (10 from Islas San José, Pedro González, and del Rey), wing 52.8–55.9 (54.1), tail 43.5–46.8 (45.1), culmen from base 15.8–17.2 (16.6), tarsus 19.7–20.9 (20.6) mm.

Females (10 from islas San José, Pedro González, and Rey), wing 50.6–54.0 (52.6), tail 41.5–45.6 (43.8), culmen from base 15.4–17.1 (16.1), tarsus 20.8–21.5 (21.2) mm.

Resident. Recorded from islas San José, Pedro González, Rey, Saboga, and Víveros, Archipiélago de las Perlas.

The first published record of this subspecies is that of Bangs (Auk, 1901, p. 30) of two adult males collected by W. W. Brown, Jr., near San Miguel on Isla del Rey April 30 and May 1, 1901. The following year Bangs described these birds as a form new to science. In a second visit from the end of February to the latter part of April 1904, Brown secured a further series of 13 birds, including females and one juvenile male (Thayer and Bangs, Bull. Mus. Comp. Zool., vol. 46, September 1905, p. 150). An earlier specimen taken by Dr. Carl Bovallius April 7, 1882 on Isla Víveros, in the Zoological Museum of the University of Uppsala, Sweden, was brought to attention by H. Rendahl (Ark. Zool., vol. 13, 1920, pp. 41–42). It is the only report for that island. Eugene Eisenmann recorded it on Isla Saboga. Another male in the British Museum (Natural History) was collected June 24, 1924, at Bahía Santelmo in the south of Isla del Rey. In February and March 1944, I found them common on Isla San José, and on March 9 and 11 of that year equally common on Isla Pedro González. In a second visit to San José from March 7 to 9, 1947, these birds were especially abundant in the northern end of the island.

This interesting bird, known locally as the *parvita*, the most common of the smaller birds on Isla San José, was found under cover from the borders of the coastal mangrove swamps inland to the high forest and to the dense mats of vines that covered many of the more open slopes. They ranged warbler-fashion through the undergrowth into the lower areas of the tree crown. In these heavily shaded areas their dark dorsal coloration was protective, but if I moved about quietly, frequently they came near at hand. Then the flashes of white in flanks and under surface, and their steady flitting of wings and tail, attracted the eye. Near the ground in tangles of vines they tended to hide, and then were seen with difficulty. In such circumstances their presence was indicated by their low call, *terp terp terp*. In early March, males began to sing a steadily repeated note suggestive of that of the Barred Ant-shrike, the *Pavita Rayada*. Enlargement of the gonads at this season indicated the beginning of nesting.

They seem to be less common on Isla del Rey, judging from the few that have been collected there. I did not find them in an area

near the mouth of the Río Cacique at the head of Bahía Santelmo in the southern end of the island in late January 1960, as here much of the forest had been cut. Nor did I see them at Mafofa on the southern peninsula in examination of the cover adjacent to the airstrip in several journeys when the plane stopped there briefly.

The subspecies *alticincta* is closely similar to the race *hondae* found in northwestern Colombia, from the eastern shore of Golfo de Urabá (Necoclí) eastward mainly in the departments of Córdoba and Bolívar, differing in darker dorsal coloration in both male and female, and also in decidedly heavier bill. Relationship obviously is close between these two. The race *intermedia* from the Santa Marta area, west through Guajira into northern Venezuela, differs strongly in the spotted breast and foreneck of the female, as well as in the more slender bill of both sexes.

TERENURA CALLINOTA CALLINOTA (Sclater): Rufous-backed Ant-wren, Hormiguerito Lomo Acanelado

Formicivora callinota P. L. Sclater, Proc. Zool. Soc. London, pt. 23, July 23, 1855, p. 89, pl. 96. (Bogotá, Colombia.)

Small, slender; crown black; lower back and rump rufous.

Description.—Length 97–100 mm. Male, crown dull black; lower hindneck, upper back, and scapulars greenish olive; upper back streaked with black, with a concealed patch of rufous; lower back and rump rufous-chestnut; upper tail coverts pale greenish olive; inner lesser wing coverts bright yellow; outer lesser coverts black; middle and greater wing coverts dull black tipped with yellowish white; primaries and secondaries dusky, edged narrowly with greenish olive; tail dull grayish brown, tipped faintly with white; lores and narrow superciliary grayish white; side of head dull gray; edge of eyelids, above and below, and a line behind the eye black; ramal area white; throat, foreneck, and upper breast dull white, becoming grayish toward sides; sides and lower breast somewhat greenish yellow; flanks, abdomen, and under tail coverts brighter yellow; under wing coverts and axillars pale yellow.

Female, crown grayish olive; otherwise somewhat duller than male.

Measurements.—Males (3 from Veraguas, Darién, and Huila, Colombia), wing 48.0–53.2 (50.3), tail 37.5–44.8 (40.9), culmen from base 13.5–13.8 (13.6), tarsus 14.7–16.6 (15.6) mm.

Females (8 from Chiriquí, southern Colombia, and western Ecu-

dor), wing 49.9–53.7 (52.1), tail 35.5–47.2 (41.7), culmen from base 13.3–15.6 (13.9), tarsus 14.9–16.1 (15.4) mm.

Resident. Known in the Republic from two males, one from Calobre, Veraguas, one from Cerro Malí, Darién; and two females, one from 1200 meters on Cerro de Nique, Darién, the other of uncertain locality.

The bird from Calobre, collected by Arcé, according to Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 2, 1892, p. 213) "was sent to us . . . by our collector Arcé after the second list of his birds published in 1870, was issued." The specimen, in the British Museum (Natural History), labeled from Calobre, Veraguas, does not have the date of collection. A female in the American Museum of Natural History, purchased by Rothschild from the dealer Rosenberg, labeled "Chiriquí, 1899," without other data, from its appearance also may have been prepared by Arcé. A male taken on the summit of Cerro Malí, June 4, 1963, and the female netted April 17, 1972, on Cerro de Nique, both by Galindo, are recent records.

The only note, other than records of specimens, that I have seen concerning these small birds, is that of Taczanowski (Ornith. Pérou, vol. 2, 1884, p. 52) with the description of a female taken in Perú. Here he quotes the collector Jelski who said that he collected it from a wandering flock moving among the terminal leaves of branches. The specimen in question, listed originally as *T. callinota*, has been referred to the related *T. humeralis*. Zimmer (Amer. Mus. Nov., no. 584, 1932, p. 4) remarks that *humeralis* and *callinota* "appear closely related perhaps as conspecies."

**CERCOMACRA TYRANNINA (Slater): Tyrannine Ant-bird,
Hormiguerito Tiranuelo**

Pyriglena tyrannina P. L. Slater, Proc. Zool. Soc. London, July 23, 1855, p. 90, pl. 98. (Bogotá, Colombia.)

A small inhabitant of thickets and forest; male dark gray with white wing bars, female rufous-brown below, olive-brown above.

Description.—Length 125–140 mm. Adult male, slate color, darker above, paler below, with rump, upper tail coverts, and flanks more or less olive; wing coverts tipped with white; anterior inner lesser coverts more or less white; wings dusky to black, with alula and outermost primary edged narrowly with white; others bordered with slate or dull olive; a large dorsal area pure white, concealed by darker feather tips; under wing coverts slate, in part tipped with white; inner margins of primaries and secondaries edged with white; rectrices

tipped narrowly with white (this often wholly lost through wear).

Adult female, above olive to grayish olive; wings dusky-brown, edged narrowly with olive to ochraceous-olive; alula edged with buff; in some, the wing coverts, especially the greater row, tipped lightly with ochraceous; tail also darker; lores and in some the nasal capsule feathering ochraceous; side of head, in some the ramal area, mixed olive and tawny-ochraceous; chin and upper throat ochraceous; lower throat, breast, abdomen, under tail coverts, and tibia tawny-ochraceous; sides and flanks strongly olive; under wing coverts and inner edge of primaries and secondaries buff to ochraceous.

Immature male, like female but averaging darker.

These are quiet birds of forests in the Tropical Zone, found in pairs, and located mainly through the low trilling song of the male, a quiet repetition of a single note, heard usually from behind thin screens of slender vines that cloak shrubs and the lower trees. When located by their notes usually they decoy easily. In addition to the song they have low sibilant calls, varied occasionally to chattering notes.

Little has been recorded of the habits of these birds. Two subspecies are found in the Republic.

CERCOMACRA TYRANNINA CREPERA Bangs

Cercomacra crepera Bangs, Auk, vol. 18, no. 4, October 1901, p. 365. (Divalá, Chiriquí, Panamá.)

Characters.—Darker; adult male, above dull black to blackish slate; under surface dark slate to blackish slate. Females darker above, and deeper tawny below.

A male, taken near El Volcán, March 14, 1965, had the iris light mouse brown; bill black; tarsus, toes, and claws dark neutral gray.

In a female, secured at Puerto Armuelles, Chiriquí, February 1, 1966, the iris was brownish gray; maxilla fuscous-black, with the cutting edge brownish gray; side of mandible dull neutral gray; gonys pale brownish white; cutting edge and gape dull honey yellow; tarsus and toes as in male.

Measurements.—Males (10 from Chiriquí and Bocas del Toro), wing 61.9–65.2 (63.5), tail 53.4–61.0 (56.3), culmen from base 17.6–19.8 (19.0), tarsus 21.9–23.0 (22.5) mm.

Females (10 from Chiriquí, Veraguas, Bocas del Toro, and Costa Rica), wing 59.0–63.3 (61.3), tail 52.1–59.1 (57.2, average of 9), culmen from base 17.4–18.8 (18.1), tarsus 21.0–23.8 (22.2) mm.

Resident. Fairly common, mainly in Tropical Zone forests on both

slopes, in Chiriquí, Bocas del Toro, and northern Veraguas, ranging upward to the lower Subtropical Zone in Chiriquí and Bocas del Toro; found near 1525 meters on the slopes of Cerro Pando, beyond El Volcán, and at 750 meters on the upper Río Changuena, Bocas del Toro.

Beyond Panamá this race ranges on the Caribbean slope from southeastern México through Central America to Nicaragua, and on both Pacific and Caribbean sides from Costa Rica into western Panamá.

I have found them fairly common in Chiriquí from near El Volcán west beyond Santa Clara toward Costa Rica, near Buena Vista, on the upper Río Escárrea, in the Puerto Armuelles area at Aguacatón near the sea, and along the Río San Bartolo at the base of the hills that mark the Costa Rican boundary. One in the British Museum (Natural History) was taken by Arcé at Mina de Chorchá, near David in 1869. There are specimens in the American Museum of Natural History from Bugaba and Boquerón, Chiriquí, and the Río Calovévora, on the Caribbean slope of northern Veraguas.

A nest found by Wharton Huber (Proc. Acad. Nat. Sci. Philadelphia, 1932, p. 226) was a "more or less globular pendant affair hanging from the end of a very thin limb. It is carefully attached and woven to the end of two twigs having a bunch of green leaves at their ends. The entrance is near the top and on one side, nearly roofed over. Composed of dry leaves and palm shreds woven together with the long shredded stems of ferns, some of these from stems hanging down eighteen inches below the nest. The lining is of fine fern stems, the whole nest with its green moss and long dripping fern stems looks just like so many other bunches of moss hanging everywhere that without the singing bird on the nest it would never have been noticed." The two eggs, heavily incubated were "creamy white spotted chiefly around the larger end with dark vinaceous brown with a slight violet tint." They measured 22×16 and 21.5×16 mm. This nest was brooded by the male, which sang steadily with his head thrust out the entrance. The female was not seen.

Skutch (Pac. Coast Avif., no. 35, 1969, pp. 229–235) on Barro Colorado Island and in southwestern Costa Rica, found them choosing nest sites in the more open areas of forest, or at the outer border. The nesting season extended from February to October. The nest, located from a little more than half a meter to about $2\frac{1}{2}$ meters from the ground was "a deep, pensile pouch with a strongly oblique

opening at the top. It is composed of leaves and fibers and is slung below the fork of a drooping slender branch or vine." Both sexes build and share the incubation, with the female on the nest through the night. The two eggs in one set were dull white, spotted with reddish brown with the markings heaviest on the large end. One set of two measured 20.6×14.3 and 21.4×15.1 mm. Another single egg was spotted only on the larger end. It measured 19.4×14.3 mm. The young on hatching are black and bare of down.

CERCOMACRA TYRANNINA RUFIVENTRIS (Lawrence)

Disythamnus (sic) *rufiventris* Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, 1865, p. 131. (Line of Panama Railroad, Caribbean slope, Canal Zone, Panamá.)

Characters.—Lighter colored; adult male, paler throughout; slate color above, grayish slate color underneath; female lighter brown above, lighter rufous on under surface.

A male taken on Cerro Galera, Canal Zone, January 8, 1961, had the iris light buffy brown; bill black; tarsus, toes, and claws dark neutral gray. Another of this sex, collected at Cañita, Panamá, February 6, 1962, had the iris dark mouse brown; bill black; tarsus, toes, and claws neutral gray. A third from the old Tacarcuna village site, on the upper Río Tacarcuna, Darién, March 7, 1964, had the iris mouse brown; base of gonys fuscous; rest of bill black; tarsus and toes bluish neutral gray; claws dark neutral gray.

In a female taken with the male from Cerro Galera, Canal Zone, the iris was pale brownish buff; maxilla fuscous, mandible dull buffy white, with a narrow line of neutral gray on either side from base to near tip where the two joined; tarsus, toes, and claws dark neutral gray. One taken at Cañita, Panamá, February 6, 1962, had the iris dark brown; maxilla, except cutting edge, fuscous-black; cutting edge and mandible brownish white; tarsus, toes, and claws neutral gray.

Measurements.—Males (10 from Canal Zone, Panamá, San Blas, and Darién), wing 59.9–63.2 (61.4), tail 53.3–57.3 (55.5), culmen from base 16.7–19.7 (17.9), tarsus 21.5–23.1 (22.4) mm.

Females (10 from Canal Zone, Panamá, San Blas, and Darién), wing 57.0–63.0 (59.3), tail 54.0–58.6 (55.3), culmen from base 17.1–18.7 (17.8), tarsus 22.5–23.3 (23.0) mm.

Resident. Common in tropical lowland forests from eastern Chiriquí (San Félix), on the Pacific slope, and the Río Indio near the eastern border of western Colón, and northeastern Coclé on the

Caribbean side, east to the Colombian boundary in Darién and San Blas; in the mountains to 550 meters on the upper Río Tacarcuna and 575 meters at Cana, on Cerro Pirre.

Beyond, in Colombia, this form ranges in Chocó (Acandí, Unguía) to the lower Atrato Valley and southwest of the western Andes to Punto Muchimbo, Valle, and western Nariño (Barbacoas).

In heavy forest in Darién it is found in the undergrowth. It is adaptable as where there are abandoned clearings it may be found in rastrojo.

The food is insects. Several stomachs that I have examined held orthopteran remains, the egg case of a roach, the head and mouth-parts of a moth, bits of caterpillar skin, fragments of ants, a snout beetle, cerambycids, and other beetles, and remains of spiders.

The entire population assigned to *rufiventris* is merely a transition from the dark northern *crepera* to typical *Cercomacra tyrannina tyrannina*, found through most of Colombia, southern Venezuela and northwestern Brazil, with its type locality in the Bogotá area. In fact, occasional specimens in the area assigned to *rufiventris* are as pale as the average of *tyrannina*. Most, however, are slightly darker.

The type of the race was collected by McLeannan and Galbraith.

On Barro Colorado Island, Skutch found a nest on April 29, 1935.

CERCOMACRA NIGRICANS Sclater: Jet Ant-bird, Hormiguerito Azabache

Cercomacra nigricans P. L. Sclater, Proc. Zool. Soc. London, pt. 26, November 9, 1858, p. 245. (Santa Marta, Magdalena, Colombia.)

Rather small; male black with wing coverts and tail tipped with white; female slate to blackish slate, under surface lined narrowly with white.

Description.—Length 145–160 mm. Adult male, deep black; upper lesser wing coverts wholly white; tail tipped with white; alula and outer primary with outer web edged with white; under wing coverts black, edged broadly or barred posteriorly with white; a broad patch of white in center of back, concealed by black tips of the feathers.

Adult female, blackish slate to slate; under surface from side of head and throat to abdomen lined and sometimes barred with white, the amount variable, in some extensive; wing, including under surface, tail and concealed back patch white as in male, but with the concealed marking less extensive.

Immature male, like female.

Juvenile (a male from Department of Magdalena, Colombia), dull

slaty brown; tail tipped narrowly with white; wing coverts plain, without white.

A male, collected at Juan Mina, Canal Zone, January 14, 1961, had the iris dull reddish brown; bill black; tarsus and toes neutral gray; claws dark neutral gray. In another from El Llano, Panamá, February 5, 1961, the iris was wood brown; bill black; tarsus and toes bluish gray; claws black.

A female, at El Llano, February 4, had the iris light brown; maxilla black; mandible light neutral gray; tarsus and toes neutral gray; claws dusky neutral gray. In another, in the collection of R. S. Crossin, taken at Gamboa, Canal Zone, August 8, 1968, the iris was recorded as dark brown; maxilla slate; mandible pale gray.

Measurements.—Males (10 from Panamá), wing 65.7–69.9 (66.8), tail 62.6–69.4 (65.6), culmen from base 18.4–20.0 (19.2), tarsus 23.4–24.8 (24.2) mm.

Females (10 from Panamá), wing 59.3–63.2 (61.3), tail 57.0–63.0 (59.6), culmen from base 18.0–18.6 (18.2), tarsus 22.0–23.6 (22.8) mm.

Weight, ♂ 18 grams; ♀ 13 grams (G. V. N. Powell).

Common in lowland forest on the Pacific side from western Veraguas (west of Zapotillo, near the Río Bubí), east commonly to the lower Río Bayano (El Llano), including the Azuero Peninsula (to Punta Mala), less commonly to the lower levels of Cerro Pirre (Cana), Darién; on the Caribbean slope from western Colón (Río Indio) east through the Canal Zone (locally) to western San Blas (Mandinga); islas del Rey, Viveros, and Cañas, Archipiélago de las Perlas.

These are forest birds, often with restricted and irregular range, probably due in part to extensive clearing, but also elsewhere for reasons that are not clear. In 1953 I found them in small number in western Veraguas west of Zapotillo on a small stream tributary to the lower Río Bubí, and also on the Río San Pablo, below Soná, though Arcé many years earlier did not secure specimens for Sclater and Salvin in this area. In 1948 I found it near Parita (at El Barrero) and at Punta Mala, and in 1957 at Los Asientos, the latter two localities in Los Santos. It has not been reported on the western side of the Azuero Peninsula. It has been recorded regularly in the Canal Zone, more commonly in the lower Chagres Valley (but not on Barro Colorado Island). Farther east we found it near Pacora and Chepo, and it is known from El Llano on the lower Bayano. In Darién, Bond and de Schauensee (Acad. Nat. Sci. Philadelphia, Mon. 6, 1944, p. 33) recorded it at Garachiné, and Griscom (Bull.

Mus. Comp. Zool., vol. 69, 1929, p. 168) received three males from Cana on Cerro Pirre, taken by Benson in 1928. I have not found it in work in the Tuira-Chucunaque Valley. On the Caribbean side it was fairly common near Mandinga, western San Blas, in January and February 1957. In the Archipiélago de las Perlas it is common on Isla del Rey and adjacent Isla Cañas. Bovallius collected male and female on Isla Víveros in April 1882 (Rendahl, Ark. Zool., 1920, p. 42).

This interesting ant-bird normally lives in the forest undergrowth, though it may range higher in the trees, possibly when drupes are ripening. The usual food is comprised of small insects—beetles, bugs, and ants, also spiders, but vegetable matter may be found in the stomach.

The presence of this ant-bird may be announced by a wrenlike call *ker check, ker check*, or modified to a rapidly repeated *chee ká, chee ká, chee ká*. As they move about, male and female in company, the long tail with its white tip is vibrated regularly. Males may display by spreading the depressed tail and moving it slowly. Where common, they often show definite curiosity regarding a human intruder, and usually decoy easily.

Sclater and Salvin (Proc. Zool. Soc. London, 1879, p. 526) quote T. K. Salmon's description of a nest found near Remedios, Antioquia (northwestern Colombia) as made of dry grasses and placed in a fork in low bushes. The two eggs, now in the British Museum (Natural History) and described rather uncritically by the authors as "mahogany-colour," I found on personal examination to have a pinkish ground color, so heavily overlaid with smeared blotches, spots, and lines of reddish brown to lilac-gray as to be almost obscured. In form they were elliptical, with the measurements 21.4×15.2 and 21.5×14.9 mm.

The species is widely distributed from Colombia and northern Venezuela to western Ecuador and northern Brazil, a broad area but one in which the bird remains remarkably uniform. It is especially interesting that the population of the Perlas Islands appears identical with that of the mainland.

**GYMNOCICHLA NUDICEPS (Cassin): Bare-crowned Ant-bird,
Hormiguero Frentipelado**

FIGURE 17

Size medium, with stout body and short tail; male black, forepart of head without feathers, the skin bright blue; female olive-brown to russet-brown.

Description.—Length 145–160 mm. Adult male, with forehead and side of head bare, in many the entire crown with only scattered hair-like filaments and feather shafts without webs, the skin bright blue; a concealed area of white in center of back in some, reduced or absent in others; entire plumage black; wing coverts and tail tipped with white, the latter marking often reduced or absent through wear;



FIGURE 17.—Bare-crowned ant-bird, hormiguero frentipelado, *Gymnocichla nudiceps*, male left, female right.

alula and outermost primary white; inner wing coverts partly white; under surface of primaries and secondaries edged with white.

Adult female, forehead feathered (in definite contrast to the male), only the lores and area around eye bare; upper surface and flanks from olive-brown to light or dark russet-brown (according to the subspecies); concealed white on back present or absent, as in males; outer webs of primaries and secondaries, and tips of wing coverts, brighter brown; tail blackish brown; under surface, including under wing coverts lighter, brighter brown; inner margins of primaries and secondaries on under surface, buffy white to cinnamon-buff.

Immature male, forehead more or less feathered, with only the

lores and space around eye bare as in female; greater wing coverts slaty-brown without white tips; otherwise like adult male.

As a species, this bird is found in lowland forests from southern British Honduras through the Caribbean slope of Guatemala, Honduras, and Nicaragua. In Costa Rica it ranges also on the Pacific slope and continues in Panamá into Colombia through Chocó (to Punto Muchimbo, Valle, on the Río San Juan) and the Sinú Valley to the middle Magdalena, including the Santa Marta lowlands.

Four geographic races currently are recognized, based on the depth of color in the female, *G. n. santamartae* of Colombia being the palest member of the series. Three of the forms are found in Panamá.

GYMNOCICHLA NUDICEPS ERRATILIS Bangs

Gymnocichla nudiceps erratilis Bangs, Auk, vol. 24, no. 3, July 1907, p. 297. (Boruca, Río Térraba Valley, Pacific slope, Costa Rica.)

Characters.—Male, with white tipping on the wing coverts narrow; female brighter, more cinnamon-brown above, with brown brighter, lower surface generally similar to the following race (*chiroleuca*); concealed white on back reduced or absent.

Measurements.—Males (10 from Chiriquí and Veraguas), wing 74.5–79.2 (76.4), tail 54.0–60.5 (57.8), culmen from base 20.5–23.1 (21.8), tarsus 29.4–32.2 (30.7) mm.

Females (10 from Chiriquí and Costa Rica), wing 72.2–75.1 (73.4), tail 54.3–59.8 (57.7), culmen from base 21.0–22.6 (21.7), tarsus 29.2–30.8 (30.1) mm.

Resident. Uncommon in the lowlands of Chiriquí, east to the valley of the Río San Félix.

The earliest record is by Salvin (Proc. Zool. Soc. London, 1870, p. 195) who received two males and two females taken by Arcé in 1869 at Bugaba and Mina de Chorchá. I have seen these in the British Museum, and also another Arcé specimen dated 1870, marked only as from the southern slope of the volcano. Sclater (Cat. Birds Brit. Mus., vol. 15, 1890, p. 189) in error listed this as "specimen g" under *Thamnophilus immaculatus*. Bangs (Auk, 1901, p. 366) lists seven males in the collection made by W. W. Brown, Jr., at Divalá from October to December 1900. Two of these are now in the National Museum. Two females in the California Academy of Sciences were taken in Chiriquí by Mrs. M. E. Davidson at Concepción on December 10, 1929, and near San Félix on December 3,

1931. Two females in the American Museum of Natural History were collected at Remedios, Chiriquí, by Ludlow Griscom on March 24 and 25, 1924. The only specimen record for Veraguas is a male in the British Museum that Sclater received from Arcé. Until a female is available the race of that area must remain indefinite.

There are no recent reports, and it is probable that the bird now is very rare in Panamá. In Costa Rica, Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 217) reported it from the southwest in "the general Térraba-Golfo Dulce sector, from the lowlands to the lower limits of the subtropical belt."

GYMNOCICHLA NUDICEPS CHIROLEUCA Sclater and Salvin

Gymnocichla chiroleuca Sclater and Salvin, Proc. Zool. Soc. London, October 1869, p. 417. (Tucurrique, upper Río Reventazón Valley, Caribbean slope, Costa Rica.)

Characters.—Slightly larger; male with the white tips on the wing coverts broader; female olive-brown on back, wings and tail, with the crown darker; concealed white on back reduced in extent or absent.

Measurements.—Males (6 from Bocas del Toro, Guatemala, Nicaragua, and Costa Rica), wing 77.0–80.5 (79.4), tail 58.0–60.2 (58.6, average of 5), culmen from base 21.6–23.7 (22.6), tarsus 30.7–32.2 (31.5) mm.

Females (5 from Bocas del Toro, Nicaragua, and Costa Rica), wing 76.8–77.4 (77.0), tail 59.8–63.0 (61.2), culmen from base 21.3–23.1 (22.1), tarsus 30.5–32.4 (31.6) mm.

Resident. Uncommon in western Bocas del Toro, where recorded in the region around Almirante.

On February 5, 1958, I collected an adult male in heavy undergrowth on the Río Occidente. Others were taken in mist nets near Almirante by assistants of Dr. Pedro Galindo, two by R. Hinds, a female December 16, 1960, and a male February 8, 1961, and a female, by A. Quiñones, October 26, 1962.

GYMNOCICHLA NUDICEPS NUDICEPS (Cassin)

Myiothera nudiceps Cassin, Proc. Acad. Nat. Sci. Philadelphia, vol. 5, 1850, p. 106, pl. 6. (Near Panama City, Province of Panamá.)

Myrmeciza ferruginea Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 7, 1862, p. 470. (Lion Hill, Canal Zone, Panamá.)

Myrmelastes corvinus Lawrence, Ibis, vol. 5, no. 2, April 1863, p. 182. ("Panama" = Lion Hill, Panama Railway.)

Myrmelastes lawrencii Salvin and Godman, Biol. Centr.-Amer., Aves, vol. 2,

March 1892, p. 226. (New name for *Myrmelastes corvinus* Lawrence 1863.)
Myrmelastes ceterus Bangs, Proc. New England Zool. Club, vol. 2, September 20, 1900, p. 25. (Loma de León, Canal Zone, Panamá.)

Characters.—Male resembles that of *G. n. erratilis*; female, duller, more grayish brown above, including the crown; lighter, more cinnamon-brown on lower surface.

A male collected at Cañita, Panamá, on the lower Río Bayano, had the iris dark reddish brown; bare skin of head bright blue, paler on the frontal area; bill black; tarsus and toes neutral gray; claws dark neutral gray. In this bird the periosteum overlying the anterior frontal area of the skull, underneath the bare blue skin of the forehead, was deep black.

Measurements.—Males (10 from central and eastern Panamá), wing 73.3–78.6 (75.6), tail 54.6–59.2 (56.7), culmen from base 21.0–22.5 (21.2), tarsus 29.3–30.7 (30.1) mm.

Females (10 from central and eastern Panamá), wing 69.0–74.9 (71.7), tail 52.6–57.0 (53.6), culmen from base 20.2–21.4 (20.9), tarsus 29.2–30.9 (29.9) mm.

Resident. Found locally in lowland forests on the Pacific slope from the northern Canal Zone and Panama City east to eastern Darién; on the Caribbean side from the Río Indio in northern Coclé (El Uracillo) east through the Canal Zone to Mandinga, western San Blas.

To date, there has been no report of this bird on the Pacific side west of the Canal Zone. To the east it is known from Pacora, and from Cañita on the lower Río Bayano above El Llano. From Darién there is a specimen in the Academy of Natural Sciences taken at Garachiné (Bond and de Schauensee, Acad. Nat. Sci. Philadelphia, Mon. 6, 1944, p. 33). Griscom (Bull. Mus. Comp. Zool., vol. 69, 1929, p. 168) recorded a female taken by Benson at Cana on Cerro Pirre. I secured a male March 23, 1959, on the Río Chucunaque near the mouth of Quebrada San Félix. Specimens in the American Museum of Natural History come from El Real, Boca de Cupe, and Sucubtí on the upper Río Chucunaque; the latter collected by J. L. Baer.

On the Caribbean side, we took a pair on the upper Río Indio at El Uracillo, northern Coclé; there were numerous early records from the Canal Zone, near the Río Chagres at Tabernilla, Lion Hill, and Gatun; Goldman secured one at Portobelo, Colón, and I found it at Mandinga, western San Blas. The species seems to be one that has become less common in recent years.

In the stomach of the one taken by E. A. Goldman on May 30,

1911, I identified remains of more than 25 ants of three species, bits of a locustid, and part of an earwig.

The nest and eggs appear to be unknown.

In early records male and female were regarded as separate species, and there was confusion early also over the name. Lawrence (Ann. Lyc. Nat. Hist. New York, 1862, p. 293), who received a female from McLeannan, was uncertain as to its identity and listed it first with a query as *Pithys rufigularis* Boddaert. When he sent the specimen to Sclater in London for check, the latter replied that it was unknown to him, and considered it to be a species of *Myrmeciza*. Lawrence then (idem, p. 470) described it as new under the name *Myrmeciza ferruginea*. Sclater and Salvin (Proc. Zool. Soc. London, 1864, pp. 356–357) on further study, referred it properly to the female of *Gymnocichla nudiceps*, named by Cassin in 1850.

In the meanwhile, in the Ibis for 1863, Lawrence had named a male specimen forwarded by McLeannan *Myrmelastes corvinus*. Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 2, 1892, p. 226) in their study of the family decided that a bird described in 1855 by Gould as *Thamnophilus corvinus* was properly a species of the genus *Myrmelastes*. As this then antedated Lawrence's name, they replaced the latter by *Myrmelastes lawrencii*. When Bangs received a male collected by W. W. Brown, Jr., at Lion Hill in what is now the Canal Zone, he regarded *M. lawrencii* as applying to the bird of Nicaragua and Chiriquí, overlooking the fact that Lawrence's original specimen came also from the region of Lion Hill. Bangs then named the Lion Hill bird *Myrmelastes ceterus*.

The oldest name as noted above is *Myiothera nudiceps* proposed by Cassin, who in the description wrote "Hab.—Panama; discovered by Mr. John G. Bell." Cassin cites Bell's observations which end as follows: "These birds kept on the ground, running and scratching among the leaves . . . It was represented to me as a very rare bird by several residents at Panama." It seems appropriate from this to cite the type locality as near Panama City.

MYRMECIZA LONGIPES PANAMENSIS Ridgway: White-bellied
Ant-bird, Hormiguero Pechiblanco

Myrmeciza boucardi panamensis Ridgway, Proc. Biol. Soc. Washington, vol. 21, October 20, 1908, p. 194. (Line of Panama Railway, Canal Zone, Panamá.)

Of medium size; terrestrial, usually located through its steadily repeated call; brown above, male with throat and breast black; female with these areas cinnamon-brown.

Description.—Length 135–150 mm. Adult male, crown, hindneck,

and loreal area slate-gray, with a wash of chestnut-brown, in some extensive, in others reduced; rest of upper surface, including wings and tail cinnamon-rufous; edgings of primaries slightly paler; anterior margin of lesser wing coverts white or pale buff; wing coverts in some tipped indistinctly with cinnamon, occasionally with faint indication of a subterminal bar of dusky; side of head, throat, foreneck, and upper breast black, passing to gray on upper breast and sides, with median area and abdomen white; lower sides and flanks tawny to clay color; under tail coverts tawny; under wing coverts white or buffy white; inner edges of primaries pale cinnamon-buff.

Adult female; crown slightly paler gray, with brown wash on pileum and hindneck duller; upper surface cinnamon-rufous, with more extensive black on anterior lesser wing coverts, and all of the wing coverts with indefinite to clearly marked subterminal bars of black; wings and tail otherwise as in male; sides of head dark brown or dusky, usually with narrow shaft lines of white or buff; chin white; malar region and throat ochraceous-buff, becoming slightly darker on foreneck and upper breast; sides and flanks ochraceous-buff; lower breast and abdomen white; under tail coverts tawny-ochraceous; under wing markings as in male.

Immature male, like female, but without dark markings on wings, changing early to the adult stage through growth of black and gray feathers on anterior lower surface.

A male, taken at La Jagua, Panamá, January 13, 1962, had the iris reddish brown; bill black; tarsus and toes flesh color; claws brownish neutral gray.

A female collected at El Llano, February 5, 1962, was similar in color of iris; maxilla and tip of mandible black; base of mandible pale neutral gray; tarsus and toes very pale brownish white; claws neutral gray.

Measurements.—Males (10 from Province of Panamá and Canal Zone), wing 66.4–69.5 (67.7), tail 47.2–53.5 (50.8), culmen from base 19.7–21.6 (20.8), tarsus 30.0–31.7 (30.8) mm.

Females (10 from Province of Panamá and Canal Zone), wing 63.4–66.1 (64.7), tail 46.9–51.0 (48.9), culmen from base 19.0–21.6 (20.2), tarsus 28.9–30.7 (29.6) mm.

R. S. Crossin recorded the weight of a male taken near Gamboa, Canal Zone, as 28 grams.

Resident. Locally common in central Panamá, where it is recorded from El Valle, Coclé and the south base of Cerro Campana east

through the southern Canal Zone to the lower Río Bayano on the Pacific slope, and near the Río Chagres (Juan Mina, Barro Colorado Island) on the Caribbean side.

Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 2, 1892, p. 229) cite it from farther west, as "Veraguas (Arcé)," and Sclater (Cat. Birds Brit. Mus., vol. XV, 1890, p. 279) lists male and female from the old Salvin-Goldman collection from "Veragua (Arcé)." These are questionable records, that may be based on specimens taken by Arcé near Chepo as the species has no other report to the west of El Valle, Coclé, cited above. In 1951 I found them in dry forest on the Río Camarón near La Campana at the southern base of Cerro Campana, and on March 29, secured one at the edge of a clearing at 760 meters on Cerro La India Dormida at El Valle, Coclé.

These birds range in pairs in thickets and open forests, always on or near the ground, where in general appearance and action they suggest wrens. Though they may be detected by their active movements, usually attention is drawn to them through their calls. The song is a loud burst, that increases in rapidity as its syllables are repeated, and then terminates abruptly. It bears so strong a resemblance to that of the Buff-rumped Warbler, also a terrestrial species, that it may be confused with that bird. When seen clearly the unusual length of the leg for so small a bird may attract attention. As they walk quickly with steadily twitching tail occasionally they pause to turn over a fallen leaf. Their food is insects. In a well-filled stomach from a bird taken by Goldman at the old Lion Hill locality, I found a pentatomid bug, remains of earwigs, and seven ants of two species. Ants appear to be a regular source of food.

The only available information on nesting is from the closely allied *Myrmeciza longipes longipes* on Trinidad. A set of two eggs that I have examined in the British Museum (Natural History) collected by Sir Charles Belcher, April 10, 1935, have the form subelliptical. In color, they are faintly buffy white, blotched and spotted with cinnamon to lilac-gray, mainly about the larger end. They measure 23.1×16.6 and 23.2×17.2 mm. Another set of two from the same locality, taken March 8, 1936, are similar in form, slightly more heavily spotted, and measure 23.3×17.9 and 22.2×17.3 mm. The collector's notes describe the nests as an "open, shallow saucer of pliable twigs and rootlets, lined with black hairlike fibers like horse hair in appearance." They were located from 1.2 to 1.8 meters from the ground, one in the crown of a fern, the other in an aroid.

Though the race *panamensis* is not recorded in eastern Panamá in

Darién and San Blas, in our series from Colombia I find specimens exactly similar to those of Panamá from the lower Magdalena Valley in the Department of Bolívar (Santa Rosa, Río Viejo, Norosí, Colosó, Coveñas), adjacent Córdoba (Pueblo Nuevo), and Magdalena (La Gloria, Ayacucho, and along the Río César).

MYRMECIZA EXSUL Sclater: Chestnut-backed Ant-bird,
Hormiguero Lomo Castaño

Size medium, with heavy body and short tail; like a wren in action; head black to slate color, body brown.

Description.—Length 130–150 mm. Adult male, crown and hindneck black to slate-black; rest of upper surface, including wings, chestnut; tail faintly duller; wing coverts plain, or spotted more or less with white, the anterior lesser series margined with white; anterior under surface black to blackish slate or slate; flanks and under tail coverts, and in some the lower abdomen, chestnut to duller brown; under wing coverts mixed white and black.

Adult female, upper surface as in male, but colors of crown and hindneck duller; side of head, chin, and throat slate to slate-black; rest of under surface plain brown; under wing coverts as in male.

Juvenile male, like adult, but colors duller, the brown area mixed more or less with sooty brown to sooty black.

This is one of the common ant-birds of the Tropical Zone forests, where it ranges from the lowlands to elevations of 600 to 700 meters. The birds normally are found in pairs that move on or near the ground in the undergrowth of the forest floor, seldom ascending more than a meter or so among the branches. They are common in swampy woodlands, or along small quebradas, and are found also in drier areas. Though their proper haunt is in forested land they are able to adapt to life in rastrojo where the larger growth has developed fair-sized trees. Often they are found in such deeply shaded areas that they are detected only in movement, since at rest their dark colors render them invisible. As they travel, they examine tangles of leaves that may conceal insects, walking when on the ground, hopping rather slowly through the branches above.

Males call at short intervals—a clear, double-noted whistle, that often is repeated by the female in slightly different tone. The note is easily imitated, when the birds are attracted and come near. At such times they may become disturbed and utter chattering calls. Then as they approach, whistling and scolding, the feathers of the rump and lower back are raised, and the tail is vibrated. Occasionally

one will compress the feathers at the sides, so that the white wing edging shows as a prominent line. The bright blue of the small amount of bare skin of the sides of the face then shows prominently in both male and female. Other notes include a low chatter, and a purring call, heard only when they are near at hand.

They are casual rather than persistent attendants on ant swarms, and also sometimes join briefly little groups of other low bush feeders, as the song wrens. In fact this ant-bird, in its general form, with its heavy body, short tail, and rather long bill, coupled with its secretive habits, may suggest superficial resemblance to the larger wrens.

The species ranges from the Caribbean lowlands of Nicaragua and on both slopes of Costa Rica south to western Ecuador and northern Colombia. It is a common bird with some diversity in color throughout the Isthmus where four subspecies may be recognized. In Panamá I have not recorded them in the savanna areas of the Pacific slope, nor in the lowlands of the eastern side of the Azuero Peninsula.

MYRMECIZA EXSUL OCCIDENTALIS Cherrie

Myrmeciza immaculata occidentalis Cherrie, Auk. vol. 8, no. 2, April 1891, p. 191. (Poza Azul de Pirris, Pacific slope, Province of San José, Costa Rica.)

Characters.—Similar to *M. e. exsul*, but paler. Male, with head and hindneck slate-black; rest of upper surface chestnut-brown; ventral surface slate-gray with foreneck averaging grayer; flanks and under tail coverts lighter brown.

Female, slightly darker brown above than the female of *exsul*; brigher brown on ventral surface.

Measurements.—Males (13 from Costa Rica, Chiriquí, and Veraguas), wing 63.5–69.2 (67.2), tail 44.0–48.8 (46.7), culmen from base 21.4–23.6 (22.3), tarsus 27.7–28.9 (28.4) mm.

Females (17 from Costa Rica, Chiriquí, and Veraguas), wing 62.6–68.0 (64.7), tail 41.2–46.9 (44.6), culmen from base 20.3–22.5 (21.4), tarsus 27.0–29.5 (28.2) mm.

Resident. Found locally on the Pacific slope of Chiriquí and Veraguas, east to the western side of the Azuero Peninsula, from sea level to 600 meters elevation.

The race ranges north beyond Chiriquí on the Pacific slope of southwestern Costa Rica to the Gulf of Nicoya.

Fortunately these birds are able to live in the small areas of suitable habitat that remain on steep slopes, in forested ravines, or along the banks of streams, since now these are the main, or only

shelters remaining across wide lowland areas in Chiriquí and Veraguas that formerly were heavily forested.

Carriker (Ann. Carnegie Mus., vol. 6, 1910, p. 616), described a nest found May 10, 1902, at Pozo Azul de Pirris in Costa Rica, as built of twigs and roots, lined with finer black roots, placed near the ground in forest. The two eggs, whitish with "nearly the whole surface obscured with specks, blotches, and scrawls of purplish chestnut" measured 23×17 and 24×17 mm.

In studies in southwestern Costa Rica, Skutch (Pac. Coast Avif., no. 35, 1969, pp. 237–244) noted that these birds lived in dark undergrowth in heavy forest, rarely rising more than 3 meters above the ground. They are found mainly in pairs that forage by hopping rapidly, or where cover is dense, by flitting from one low perch to another. They may forage over ant swarms, in company with other small birds, but more usually range alone in search of the insects that with an occasional small lizard form their food. Their nests, placed only a few centimeters above the ground, have a loose foundation of bits of fern and dead leaves that supports an open cup lined with finer materials. Two nests seen held only one egg, two others had two eggs each. These were dull white "heavily blotched, speckled, and streaked with deep, rich purplish or rufous brown . . . heaviest on the thick end, where they almost obscure the ground color." Four had the following measurements: 23.0×16.7 , 23.8×16.7 , 23.8×17.1 , and 24.6×15.1 mm. The male aided in incubation, with the female alone at night. Both fed the young, which on hatching have dark skins without down. "In antagonistic display, males spread their wings, revealing on their forward edges white patches . . . females puff out the feathers on the back." They also use a distraction display against enemies.

MYRMECIZA EXSUL EXSUL Sclater

Myrmeciza exsul P. L. Sclater, Proc. Zool. Soc. London, vol. 26, 1858 (January–May 1859), p. 540. (Panamá, type locality restricted to near Gatun, Canal Zone.)

Myrmeciza immaculata Sclater and Salvin, Proc. Zool. Soc. London, 1864 (February 1865), p. 357. (Lion Hill, Panamá.)

Characters.—Male, head and hindneck black; rest of upper surface chestnut; foreneck nearly black; rest of lower surface blackish gray, with the flanks and under tail coverts near Mars brown.

Female, dull brown on lower surface, posterior to the foreneck.

A male, taken February 27, 1962, near the head of Río Guabal on

the Caribbean slope of northern Coclé, had the iris light brown; skin around eye, lores, forehead, and throat (partly concealed by feathers) bright blue; bill black; tarsus, toes, and claws dusky neutral gray. In a female from Gamboa, Canal Zone, January 13, 1960, the iris was chestnut-brown; skin around the eye light leaden blue; bill black; tarsus plumbeous; toes and claws dull neutral gray.

Measurements.—Males (15 from Bocas del Toro to eastern Colón), wing 62.6–67.3 (65.4), tail 43.3–48.2 (45.6), culmen from base 20.4–22.7 (21.4), tarsus 27.7–29.5 (28.4) mm.

Females (15 from northern Coclé to eastern Colón), wing 62.5–66.7 (64.1), tail 41.0–46.7 (43.5), culmen from base 20.0–21.6 (20.7), tarsus 27.5–29.3 (28.3) mm.

Resident. Fairly common on the Caribbean slope from Bocas del Toro eastward through northern Veraguas, northern Coclé, western Colón, northern Canal Zone, the lower and middle Chagres Valley, Panamá, and eastern Colón (Portobelo, Cerro Bruja), intergrading with *M. e. nigrarus* in the upper Chagres Valley.

To the north this race ranges in the Caribbean lowland forests through Costa Rica to Nicaragua. The extensive swampy woodlands, in the area where this subspecies often is found, seldom are suitable for cultivation so that the bird here may be less subject to the pressures of shrinking habitat than in other parts of its range.

In the original description of this race P. L. Sclater indicated that he named it from birds that came from Nicaragua and Panamá. Hellmayr (Cat. Birds Amer., Part 3, 1924, p. 262), who examined the actual type specimen, collected by Delattre, in the Liverpool Museum, found that it came from Panamá. The route of Delattre in Panamá does not appear to be recorded, but since he collected in Nicaragua, and later in Perú it would appear that he crossed the Isthmus in his journey between Central America and northwestern South America. Near Gatun, therefore, in the Chagres Valley near the north coast, is a possible source for this type so that this has been designated as a restricted type locality. The life history, mainly of this race as found on Barro Colorado Island, has been described in detail by Willis and Oniki (Condor, 1972, pp. 87–98).

Descriptions of the nest state that it is placed a short distance off the ground. Goldman's notes record one near Portobelo, Colón, May 27, 1911, fastened rather insecurely to the upright stems of vines and bushes, hidden by overhanging leaves, at an elevation of about 40 centimeters above the ground. It was built of leaves, leaf fibers, and slender vines, with leaves placed vertically over the sides and

bottom of the open cup as support for the lining of long, slender fibers. This nest measured as follows: outside height and diameter 125 mm, diameter and depth of cup 70 mm. The two eggs, slightly incubated, are between oval and subelliptical in form. The ground color is light pinkish white, almost obscured by an overlying wash of tiny dots and indefinite lines, with larger markings of dull rufous and rufous-chocolate that cover the entire surface. The lines and markings in general are longitudinal. Measurements are 24.0×18.0 and 24.5×18.1 mm.

A. O. Gross found nests with eggs on Barro Colorado Island, July 25 and August 5, 1925, and July 13, 1927. The first mentioned (Gross, Ann. Rep. Smithsonian Inst. for 1926, 1927, p. 338, pl. 8), slightly elevated among the leaves of a low plant, was "made of coarse stems and roots and contained 2 eggs." Carriker (Ann. Carnegie Mus., vol. 6, 1910, p. 616) records a nest found at Guapiles, Costa Rica, July 13, 1905, with two fresh eggs as follows: "The nest was made of leaves, weed-stalks, and roots, lined with fine brown weed-fiber, and placed in a cluster of ferns in the thick jungle, about a foot [30 cm.] above the earth. The eggs are whitish, but suffused over nearly the whole surface with reddish-purple, and speckled, scrawled, and blotched with deep purplish-chestnut and lilac, gathered about the large end in the form of a cap. Measurements: 22×17.5 and 22.5×17 mm."

Goldman and Gross both found females on the nest, and recorded that when flushed they moved along the ground, feigning injury, to attract attention. Willis and Oniki record incubation and feeding the young by both parents. The nesting period on Barro Colorado Island, from April to November, is in the rainy season.

Stomachs of those that I have examined were filled mainly with remains of small insects that included ants, an elaterid, a carabid, a curculionid, a cerambycid, a chrysomalid, other beetles, egg case of a roach, an acridid, a locustid, parts of a heteropteran; remains of a caterpillar, and bits of earwigs. Added to these items one held a 2-inch-long centipede, others bits of spiders. In one I found two elongated seeds.

In early years there was confusion as to the identity of this bird. As noted in the synonymy above, Sclater and Salvin in 1865 gave this typical race the name *immaculata* based on specimens received from McLeannan, which is antedated by Sclater's own name *exsul* of 1859. The two species are illustrated under the correct names in Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 4, plate 51),

but in figures 2 and 3 from specimens of *Myrmeciza immaculata* that apparently were not fully adult.

MYRMECIZA EXSUL NIGLARUS Wetmore

Myrmeciza exsul niglarus Wetmore, Smithsonian Misc. Coll., vol. 145, no. 1, June 26, 1962, p. 7. (Río Chimán, about 10 kilometers above Chimán, Province of Panamá, Panamá.)

Characters.—Male, crown and hindneck black, like *exsul*, but rest of dorsal surface lighter brown, in shade between *exsul* and *occidentalis*; below definitely paler than *exsul*; very faintly darker than *occidentalis*.

Female, generally similar to that of *exsul*, but averaging lighter and brighter on lower surface posterior to the foreneck; breast brighter brown; definitely darker than *occidentalis*.

A male, taken March 1, 1961, on the Quebrada Candelaria, Panamá, had the iris dark brown; bare skin on side of head from lores to above the auditory region clear blue; bill black; tarsus and toes fuscous-black.

In a female from Cañita, Panamá, February 6, 1962, the iris was dull reddish brown; bare skin on side of head light blue; bill black; tarsus, toes, and claws dark neutral gray.

Measurements.—Males (15 from eastern Province of Panamá and San Blas), wing 65.0–70.1 (67.1), tail 42.5–49.7 (45.7), culmen from base 20.2–22.3 (21.4), tarsus 27.5–29.7 (28.4) mm.

Females (10 from eastern Province of Panamá and San Blas), wing 62.7–67.0 (64.2), tail 40.2–47.6 (43.3), culmen from base 19.9–22.2 (20.8), tarsus 26.4–29.6 (28.1) mm.

Resident. Eastern Panamá; Pacific slope from western end of Cerro Azul east through the Province of Panamá to eastern Darién; on the Caribbean slope from the upper Chagres Valley, above Madden Lake (Quebrada Candelaria on the Río Pequení, Quebrada Peluca on the Río Boquerón) east through San Blas to the Colombian boundary.

Specimens from Acandí on the coast of extreme northern Chocó in Colombia, about 20 kilometers beyond the boundary with Panamá, also belong to this race. This point marks its most eastern and southern extension, as immediately beyond, the next race *M. e. cassini* appears. Since *niglarus* is the race found at Chepo it is supposed that this form ranges up the valley of the Río Bayano, though there are as yet no specimens from that area.

MYRMECIZA EXSUL CASSINI (Ridgway)

Myrmelastes cassini Ridgway, Proc. Biol. Soc. Washington. vol. 21, October 20, 1908, p. 194. (Turbo, Antioquia, Colombia.)

Characters.—Paler than other races; wing coverts always well spotted with white. Male, compared to *M. e. nigrarus*, with head and hindneck grayer, rest of upper surface duller brown, and under surface lighter gray. Female decidedly duller brown above, throat grayer, breast brighter brown, and abdomen paler.

Measurements.—Males (21 from Darién), wing 63.0–69.4 (65.2), tail 38.5–45.6 (41.2), culmen from base 19.5–22.3 (20.9), tarsus 26.4–28.7 (27.9) mm.

Females (10 from Darién, and Chocó, Colombia), wing 62.3–64.6 (63.5), tail 36.8–42.2 (40.4), culmen from base 18.9–20.8 (19.8), tarsus 26.7–28.5 (27.3) mm.

Resident. Pacific slope in Darién from the southern side of the Golfo de San Miguel (Garachiné), and the lower Tuira Valley, south along the Pacific Coast through the drainage of the Río Tuira, to the Colombian boundary; intergrades with *M. e. nigrarus* along the middle Río Chucunaque (near the mouth of the Río Tuquesa).

I have found them fairly common through the forests of Darién, usually in pairs, and have heard them calling regularly.

The range extends into Colombia across northern Chocó (except in the extreme north at Acandí), south along the Pacific Coast to the Río Juradó (probably farther), and in the Atrato Valley to Quibdó, east across the valley of the Río Sinú, the middle Río Cauca, and the middle Río Magdalena.

An ancient specimen received from Heyde and Lux in the National Museum, described by Ridgway (U.S. Nat. Mus. Bull. 50, pt. 5, 1911, p. 110) as an immature male of *M. e. cassini* is without question of that race. The locality "Cascajal, Coclé" however, is certainly erroneous, as that place is in the range of *M. e. exsul*. Hellmayr (Cat. Birds. Amer., pt. 3, 1924, p. 263, footnote b) in discussing this lists three males taken by Heyde and Lux at Cascajal as typical *M. e. exsul*. The National Museum bird probably was collected in western Colombia.

MYRMECIZA LAEMOSTICTA LAEMOSTICTA Salvin: Salvin's Ant-bird, Hormiguero Pechinegro

Myrmeciza laemosticta Salvin, Proc. Zool. Soc. London, 1864 (February 1865), p. 582. (Tucurrique, Costa Rica.)

In size and actions like the Chestnut-backed Ant-bird, but back with a concealed area of white; female with throat spotted with white.

Description.—Length 125–150 mm. Adult male; crown, including lores, slate to slate-black; hindneck usually grayer; upper back brownish olive; lower back, rump, and upper tail coverts chestnut to chestnut-brown; feather bases in center of back clear white, bordered by black, the area usually completely concealed; anterior line of lesser wing coverts pure white; others black, with tips white; greater coverts spotted at the tip with rufous; chin, malar area, and foreneck black; side of head, sides, breast, and upper abdomen slate to slate-gray; upper breast spotted irregularly and indistinctly with black; posterior sides, flanks, and under tail coverts Vandyke brown; under wing coverts white barred with black.

Adult female, upper surface like male, but with crown somewhat grayer; wings with rufous spots more abundant; concealed white on back less in extent; throat black, heavily spotted with white.

A male, from Armila, San Blas, March 4, 1963, had the iris red; maxilla and mandibular rami black; rest of mandible neutral gray; tarsus, toes, and claws neutral gray.

A female from the Río Tacarcuna, Darién, March 10, 1964, had the iris bright red; maxilla black; mandible dusky neutral gray; tarsus, toes, and claws rather dark neutral gray.

Measurements.—Males (10 from Province of Panamá, Colón, Darién, and San Blas), wing 60.0–66.0 (63.5), tail 39.8–45.6 (42.7, average of 9), culmen from base 18.8–21.0 (19.9), tarsus 26.0–27.0 (26.8) mm.

Females (10 from Veraguas, Province of Panamá, and Darién), wing 59.7–64.8 (62.7), tail 40.0–49.2 (43.7), culmen from base 18.3–20.1 (19.1), tarsus 25.1–26.9 (26.2) mm.

Resident. Uncommon, in undergrowth in heavy forest. Recorded in scattered localities on the Pacific slope from Veraguas to Darién; on the Caribbean side from eastern Colón, Canal Zone, eastern San Blas, and one record from Río Calovévora in northern Veraguas.

This interesting species was described by Salvin from a specimen taken in 1864 by Enrique Arcé at Tucurrique, on the Caribbean slope of Costa Rica. Later Salvin (*Proc. Zool. Soc. London*, 1867, p. 145) recorded a female from Santa Fé, Veraguas, also collected by Arcé. Benson secured others there at elevations of 500 to 760 meters from March 2 to April 13, 1925. J. R. Karr found a pair on the Río Men-doza in the Navy Pipeline area in July 1969. Goldman collected a pair on Cerro Azul, eastern Province of Panamá, on March 23, 1911, and a male on Cerro Bruja, eastern Colón, June 7 of the same year. Thomas Barbour and W. S. Brooks found this ant-shrike fairly common on Cerro Sapo, Darién, in April 1922. Griscom (*Bull. Mus.*

Comp. Zool., vol. 72, 1932, p. 345) received several taken by H. von Wedel between 1929 and 1931 at Permé, Ranchón, and Puerto Obaldía in eastern Comarca de San Blas. There is one record of a female collected on the Río Calovévora, Veraguas, by Benson and Gaffney, September 6, 1926. Griscom's inclusion of "Almirante" in the occurrence of this bird in his final list of the birds of Panamá (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 335) apparently was in error as I have seen no record for Bocas del Toro. In my own work we found them first near Jaqué, Darién, on March 31 and April 4, 1946. On April 7, 1949, I secured one near Chepo, and March 8, 1951, collected two males and a female at 850 meters on Cerro Campana, in the Province of Panamá. In the lower levels of Cerro Tacarcuna, Darién, at the old village site at 575 meters on the Río Tacarcuna on March 10, 1964, we shot one, and captured another in a mist net. From the higher elevation of 850 meters at La Laguna, Dr. Pedro Galindo has given me a male taken July 7, 1963. At Armila in the lowlands of San Blas on March 4, 1963, I collected one from a group of other small birds over a moving swarm of ants.

In general skulking habits and movement they suggest the common Chestnut-backed Ant-bird, *Myrmeciza exsul*, though I did not identify any calls from them, sounds which usually attract attention in the related bird. Those that I have examined in the flesh did not have the skin beneath the feathers on the side of the head tinged blue as is the case in the other species.

The only report of the eggs is cited with reservation as to its authenticity by Meise (in Schönwetter, Handb. Ool., pt. 14, 1967, pp. 41, 52) of specimens received from Guayaquil. These have been attributed to the race *Myrmeciza laemosticta nigricauda*, a subspecies found from southwestern Colombia south into western Ecuador, marked by black tail, with the white spotting on the throat in the female reduced in amount. The eggs mentioned are described by Dr. Meise as heavily pigmented, with a rosy white ground color, and reddish brown to dark purple lines and spots in varying amount. With one there was a parasite egg attributed to the cuckoo *Dromococcyx pavoninus*. The measurements listed as 21.5–24.4 × 15.2–16.8 mm, show greater variation in size than usual in this group, so that more than one species may be involved.

Early studies of this species in Panamá listed the few specimens known under two subspecies, *M. l. laemosticta* for the Veraguas specimen, and *palliateda*, described by Todd from northern Colombia,

for all others. I find, however, that all are the nominate race *laemosticta*. This is very slightly darker, and in the male the breast and upper abdomen are marked rather heavily with dull black in the form of large somewhat irregular spots. *Myrmeciza laemosticta palliata* Todd, which we have in series from collections made in Colombia by M. A. Carriker, Jr., is duller brown above, with the crown gray, rather than black, and paler below, both in shade of gray on the breast and abdomen, and in the brown of flanks and under tail coverts. The male lacks the irregular black spots on the breast found in *M. l. laemosticta*.

**MYRMECIZA IMMACULATA (Lafresnaye): Immaculate Ant-bird,
Hormiguero Inmaculado**

Thamnophilus immaculatus Lafresnaye, Rev. Zool., September 1845, p. 340.
(Bogotá, Colombia.)

Medium size; male black; female dark brown with forepart of head black.

Description.—Length 170–190 mm. Adult male, black; anterior lesser wing coverts, a line around bend of wing, and edging on alula white, the extent of the white on the shoulder variable.

Adult female, side of head including lores and malar region, black; elsewhere plain dark brown, paler on under surface.

This is a little-known species found from Costa Rica and Panamá to Colombia, south to western Ecuador, and east to western Venezuela. Four geographic races currently are recognized, of which two are found in Panamá.

MYRMECIZA IMMACULATA ZELEDONI Ridgway

Myrmeciza zeledoni Ridgway, Proc. Biol. Soc. Washington, vol. 22, April 17, 1909, p. 74. (Guayabo, Costa Rica.)

Characters.—Bill larger and stronger; female darker, more chestnut-brown.

Measurements.—Males (10 from Bocas del Toro, Veraguas, and Costa Rica), wing 76.9–81.2 (79.4), tail 70.8–79.1 (74.2), culmen from base 22.1–24.2 (22.8), tarsus 32.5–35.1 (33.7, average of 9) mm.

Females (10 from Veraguas and Costa Rica), wing 74.5–79.3 (76.4), tail 68.0–78.8 (73.3), culmen from base 21.3–23.5 (22.3), tarsus 32.2–34.8 (33.8) mm.

Resident. Rare, in heavy forest, apparently in the upper Tropical and lower Subtropical zones in Chiriquí, western Bocas del Toro, and western Veraguas.

Salvin (Proc. Zool. Soc. London, 1870, p. 194) was the first to report this race from Chiriquí and Veraguas from specimens collected by Arcé. Those in the Salvin-Godman collection (Sclater, Cat. Birds Brit. Mus., vol. 15, 1890, p. 189) are from Calobre, Chitra, and Calovévora, Veraguas. (The one listed under "g. Ad. sk. southern slope of the Volcano of Chiriqui (Arcé)" is a specimen of *Gymnocyclus nudiceps erratilis*.) In Bocas del Toro, W. W. Brown, Jr., secured a female June 12, 1901, at 600 meters on the trail between Boquete and Chiriquí Grande. Another was taken by Mönniche at Camp Holcomb (1525 meters) June 26, 1933, on this same trail. The U.S. National Museum has two males collected by R. Hinds at 730 meters on the head of the Río Changuena, September 10 and 14, 1961.

In Costa Rica, Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 219) recorded this bird as found in groups, the two sexes together, moving rapidly through the undergrowth, often following ant swarms. "The long, rounded tail . . . is constantly raised slowly and lowered quickly." The call is a "series of six to eight resonant, musical, equal-valued, urgent or excited beeps. The bird also makes a high-pitched chatter like that of *exsul*."

Nothing is recorded of its nesting.

MYRMECIZA IMMACULATA BERLEPSCHI Ridgway

Myrmeciza berlepschi Ridgway, Proc. Biol. Soc. Washington, vol. 22, April 17, 1909, p. 74. (Chimbo, northwest Ecuador.)

Characters.—Bill smaller; male with white area on wings more extensive; female, lighter, somewhat brighter brown.

Measurements.—Males (10 from Darién, Colombia, and Ecuador), wing 80.0–83.4 (81.5), tail 67.3–76.6 (72.2), culmen from base 21.8–24.8 (22.9), tarsus 33.8–37.2 (35.1) mm.

Females (10 from Darién and Chocó, Colombia), wing 76.5–81.4 (78.8), tail 66.7–81.4 (78.8), culmen from base 20.6–22.7 (19.4, average of 9), tarsus 33.1–35.7 (34.1) mm.

Resident. Uncommon in the forests of Cerro Pirre and Cerro Tacarcuna (to 575 meters), Darién.

This interesting bird, little known, was found first by E. A. Goldman, above Cana at 900 to 1060 meters elevation. Griscom (Bull. Mus. Comp. Zool., vol. 69, 1929, p. 168) records three males and a female collected by Benson in this same area in 1928. It is found also on the lower levels of Cerro Tacarcuna, where W. B. Richardson collected it near the old village site at 1900 meters on the Río Tacarcuna in March and April 1915.

In the stomachs of four of those taken by Goldman I found remains of ants, roaches, parts of beetles, a cicada nymph, a milliped, bits of a scorpion, and spiders.

MYRMORNIS TORQUATA STICTOPTERA (Salvin): Wing-banded Ant-bird, Pollito Hormiguero de Selva

Rhopoterpe stictoptera Salvin, Bull. Brit. Orn. Club, vol. 1, March 1, 1893, p. 32. (Santo Domingo, Managua, Nicaragua.)

Medium size, heavy body; wings large, tail very short; breast gray, wings heavily banded with cinnamon.

Description.—Length 140–155 mm. Rictal area and space behind eye bare; feathers of crown, throat, and upper tail coverts very short, on rest of body very long, especially on lower back.

Adult male, crown and hindneck chocolate-brown with very narrow shaft lines of rufous; an elongate black area in center of back, with concealed white base; rest of back, scapulars, and rump centrally grayish brown, edged broadly all around with chocolate-brown; tail dark grayish brown edged broadly with rufous-brown; primaries and wing coverts black, the coverts tipped and the outer webs of the primaries edged with cinnamon-brown; secondaries grayish brown externally, internally black; feathers on edge of eyelids black; side of head and neck with short feathers black basally, tipped with grayish white; foreneck black; breast, abdomen, and sides dark gray; flank feathers tipped with cinnamon; under tail coverts rufous; anterior under wing coverts and a band across center of wing cinnamon.

Female like male, but throat and foreneck rufous-tawny.

Juvenile, crown and hindneck chocolate; back, rump, foreneck, upper breast, and upper sides chocolate-brown, becoming paler grayish brown posteriorly; wing as in adult.

A male, taken on Cerro Chucantí, eastern Province of Panamá, March 9, 1950, had the iris dark brown; bare skin back of eye, and on rictal area bright grayish blue; bill black; tarsus and toes fuscous. Another male from the old Tacarcuna village site, Darién, collected March 8, 1964, was similar in color of iris and bill, but had the bare skin around and back of eye light blue; tarsus, toes, and claws dark brownish neutral gray.

A female from Tacarcuna village, March 8, 1964, had the iris pale brown, and tarsus, toes, and claws somewhat browner than in the male, but otherwise was similar.

Measurements.—Males (10 from Canal Zone, eastern Province of Panamá, and Darién), wing 88.7–93.6 (91.5), tail 33.0–39.2 (35.9), culmen from base 23.5–27.2 (24.6), tarsus 24.2–25.8 (24.7) mm.

Females (10 from Canal Zone, Darién, and San Blas), wing 87.8–93.2 (90.6), tail 34.2–37.4 (35.7), culmen from base 23.0–24.9 (24.0), tarsus 23.7–25.5 (24.4) mm.

Resident. Rare in northern Canal Zone (Pipeline Road, Gamboa) ; rare and local in forested areas in foothill country in eastern Province of Panamá, Darién, and San Blas.

The first specimens from Panamá were taken by E. A. Goldman at an elevation of 1060 meters above Cana, on Cerro Pirre, May 30, 1912. Anthony and Richardson, from March to May 1915, collected a series in Darién, at Cituro, Tapalisa, and the Tacarcuna village site at the base of Cerro Tacarcuna. In the Canal Zone, J. R. Karr and others have recorded them regularly (1969) above Gamboa.

The first published record for the Republic is that of Bangs and Barbour (Bull. Mus. Comp. Zool., vol. 65, 1922, p. 209) of eight adults taken on Cerro Sapo, Jesucito, and on the Río Esnape, Darién, in April 1922. They noted that these birds from Darién were not separable from those of Nicaragua. Soon after, Griscom (*idem*, vol. 69, 1929, p. 169) listed a male collected in February 1928 by Benson at Tigre on the Río Cupe, and later (*idem*, vol. 72, p. 345) reported a small series from Permé, Ranchón, and Puerto Obaldía, San Blas.

On March 9, 1950, at 330 meters on the slopes of Cerro Chucanti in eastern Province of Panamá, the chattering calls of birds attracted my attention. As I moved toward them, a male of this species appeared on a low perch in the undergrowth, where it continued calling, with flitting wings. The bird in life impressed me as generally similar to the Spotted Ant-bird, though much larger. James R. Karr has noted that as they move on the forest floor they throw fallen leaves about like a leaf-scraper (*Sclerurus*). At the old Tacarcuna village site at 575 meters on the Río Tacarcuna, B. Feinstein collected a female on January 26, 1959, Dr. Pedro Galindo a male on June 25, 1963, and on March 8, 1964, I secured a pair there as they ranged in undergrowth near the ground. Dr. Galindo collected others somewhat higher at La Laguna in June 1963.

Stomachs of those I have examined have held fragments of roaches, beetles, caterpillars, and other insects, spiders, isopods, and millipedes. In one there was a small ball of spider web and in another a seed.

The birds, found usually in pairs, are highly interesting but elusive, and little is known of them. The present race, described from Nicaragua, is as yet unknown in Costa Rica and western Panamá. It ranges beyond Darién and San Blas across northern Colombia.

Like Bangs and Barbour, I have found the series now available from Panamá similar to those from far distant Nicaragua, the type locality.

Typical *M. t. torquata*, of eastern Colombia, eastern Ecuador to southern Venezuela, the Guianas and Brazil, has the wing bands paler, with that on the underside of the wing white, and is duller, less rufescent brown on the upper surface.

FORMICARIUS ANALIS (d'Orbigny and Lafresnaye): Black-faced Ant-thrush, Gallito Hormiguero

FIGURE 18

Myothera analis d'Orbigny and Lafresnaye, Syn. Av., in Mag. Zool., vol. 7, 1837, p. 14. (Yucates and Chiquitos, Bolivia.)

Medium size, with heavy body and short tail; terrestrial; throat black; side of head and neck chestnut.

Description.—Length 165–185 mm. Plumage dense and compact. Adult, sexes alike, crown and hindneck from rufous-brown and chestnut-brown to nearly black, rest of upper surface brown, varying from somewhat olive-brown to chestnut-brown; lower rump and upper tail coverts chestnut-brown to dull rufous-brown; base of tail brown, tip blackish slate, black, or almost wholly black; suborbital area, chin and throat black; lores also black, but with a central spot of white; side of head behind eye and side of neck chestnut to rufous-brown; under surface gray, varying from light to dark, with lower breast and abdomen paler, to nearly white; under tail coverts chestnut to rufous-brown; under wing coverts buff tipped with sooty brown; under surface of wing banded broadly with rufous.

Juvenile, plumage softer; chin and upper throat dull white to buff, with the feather tips dull sooty brown; fore crown brown, spotted lightly with black, changing posteriorly to dull black.

In a slightly older stage the throat and upper foreneck are white, slightly washed with rufous, and banded narrowly with dusky.

From southern México to northern Honduras, the populations of this species have a narrow but distinct collar of rufous to chestnut on the lower foreneck as a continuation of the brown on either side of the neck. This is found in the races recognized as *moniliger*, *pallidus*, and *intermedius*. Farther south in Central America from south-eastern Honduras through eastern Nicaragua, Costa Rica, and Panamá into northern South America, the collar is not present, or in southern Central America may be faintly and indistinctly indicated by a few spots.

Ridgway in 1911 (U.S. Nat. Mus. Bull. 50, pt. 5, pp. 117–118) recognized *analis* as a distinct species, and grouped the races of Central America and northern South America under the species name, *moniliger*. Hellmayr (Cat. Birds Amer., pt. 3, 1924, pp. 282–288) included all under *analis*. Peters (Check-list Birds World, vol. 7, 1951, pp. 240–242) accepted this procedure, which is followed here. It should be added that studies by Irby Davis (Birds Mex. Central

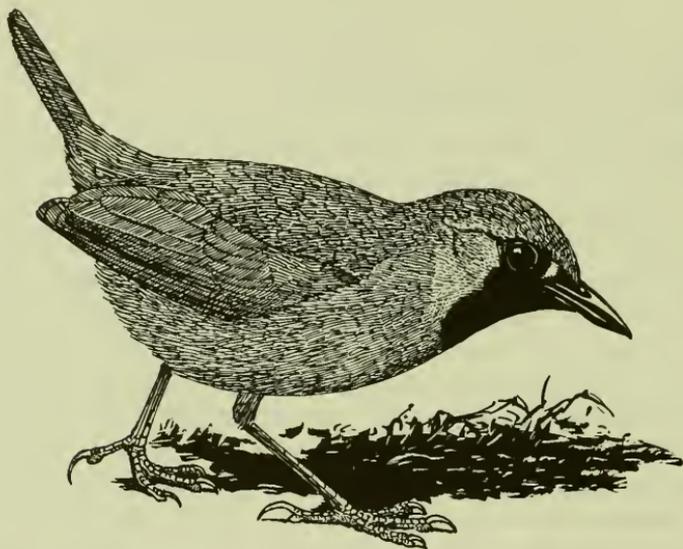


FIGURE 18.—Black-faced ant-thrush, gallito hormiguero, *Formicarius analis*.

Amer., 1972, p. 120) of the voice in males record differences suggesting that three or more species may be included under the name *analis*.

FORMICARIUS ANALIS HOFFMANNI (Cabanis)

Myrmornis Hoffmanni Cabanis, Journ. f. Orn., vol. 9, March 1861, p. 95.
(Costa Rica.)

Characters.—Dark above, somewhat olive-brown; markings of the tail, and the chestnut-brown of sides and head, dark as in *F. a. umbrosus*.

Measurements.—Males (10 from Chiriquí and western Costa

Rica), wing 90.5–96.1 (93.3), tail 48.4–53.3 (51.9), culmen from base 23.0–25.8 (24.4), tarsus 33.5–37.7 (34.8) mm.

Females (7 from Chiriquí and western Costa Rica), wing 88.2–93.1 (90.9), tail 47.1–53.1 (50.4), culmen from base 22.3–24.7 (23.4), tarsus 31.8–34.1 (32.8) mm.

Resident. Rather rare; found locally in forested areas in western Chiriquí, mainly in the tropical lowlands, but to 1460 meters on Cerro Pando.

The first report, by Salvin (*Proc. Zool. Soc. London*, 1870, p. 195), was of one taken by Arcé at Bugaba. Bangs (*Auk*, 1901, p. 366) received a female secured by Brown at Divalá, December 11, 1900. In my own studies I collected a male and heard others calling in the forest at 1250 meters above the Quebrada Guisado, near Santa Clara, March 20, 1954. We have two taken by Dr. Frank Hartman near El Volcán, February 27, 1949, and March 7, 1951. In my collections, a female was taken February 16, 1960, at 1460 meters on Cerro Pando, west of El Volcán, and a male was caught March 17, 1965, in a mist net at a lower elevation, near Palo Santo.

Through the observations of Alexander Skutch in southwestern Costa Rica (*Pac. Coast Avif.*, no. 35, 1969, pp. 275–289) the life history of this race is known in detail. As the birds walk over the forest floor they flick leaves aside with the bill to expose insects hiding underneath. These are seized instantly. They also come to raiding ant swarms but remain on the ground outside the moving ants, and pick up fleeing insects. Small lizards are eaten regularly, and once Skutch saw one killing a tiny snake. He found the nests regularly in the tubelike hollow centers of dead, or occasionally of living trunks of slender palms or other trees, often at some distance below the entrance hole. Dead leaves were used often in considerable amount as a base for the nest. In this two eggs were laid, oval in form and, when fresh, white with slight gloss. They quickly become stained from the damp nesting material, or dirty from mud from the feet of the incubating birds. Two eggs measured 33.9×24.8 and 33.4×24.8 mm. Both male and female incubate and care for the young. These at hatching have dark gray down so long that it completely envelops them. At the corners of the mouth there are wide white flanges that stand out prominently in the dark nest cavity. Young at about 18 days of age are well feathered, but with the developing contour feathers still much covered by the long down. At this age they appear at the nest opening, fly down the short distance, and then follow the parents as they walk on the ground.

This western race was named by Cabanis for Dr. Carl Hoffman, the naturalist, who collected the type specimen in Costa Rica.

FORMICARIUS ANALIS UMBROSUS Ridgway

Formicarius umbrosus Ridgway, Proc. U.S. Nat. Mus., vol. 16, November 28, 1893, pp. 670 (in Key), 681. (Talamanca, Costa Rica.)

Characters.—Dark chestnut-brown above, with tail black for most or all of upper surface; side of head and neck darker brown.

Measurements.—Males (10 from Bocas del Toro, Costa Rica, and Nicaragua), wing 84.4–94.8 (90.0), tail 46.2–54.4 (51.4), culmen from base 21.6–24.4 (23.1), tarsus 29.0–35.8 (33.4) mm.

Females (10 from Bocas del Toro, Costa Rica, and Nicaragua), wing 83.9–91.2 (87.9), tail 46.1–53.3 (49.9), culmen from base 20.6–23.8 (22.3), tarsus 31.5–35.0 (33.2) mm.

Resident. Found locally in forests of western Bocas del Toro.

The first records of this subspecies for Panamá were specimens collected by Hasso von Wedel, taken near Almirante May 24, 1927, and July 17, 1928; at Guabo (a farm near Chiriquicito) April 4 and 9, 1928; and at 360 meters elevation at Buena Vista, on the trail from Chiriquí Grande to Boquete, March 23, 1928. Two from Zegla, near the mouth of the Río Terebe on the Río Changuinola, in the Peabody Museum, Yale University, were taken by Austin Smith May 18 and 20, 1927. The National Museum has two from Almirante, secured by C. O. Handley, Jr., February 14, 1960, and by Rudolfo Hinds, May 23, 1961. Eugene Eisenmann (Condor, 1957, p. 254) recorded them near Changuinola at the end of June and the first of July 1957. They may be only local in this region as I did not find them there from January to March 1958.

The race *umbrosus* ranges on the Caribbean slope from the Río Guampú, eastern Honduras (Monroe, A.O.U., Mon. 7, 1968, p. 238) south through Nicaragua and Costa Rica. From present information, it is not known east of the Laguna de Chiriquí in Bocas del Toro.

A nest, supposed to be this species, placed "in a low, large-leaved plant" which held one heavily spotted egg, found by M. A. Carriker, Jr., near the Río Sixaola, Costa Rica in March 1904 (Ann. Carnegie Mus., vol. 6, 1910, p. 625) was wrongly identified, as birds of this species nest in holes and lay plain white eggs.

FORMICARIUS ANALIS PANAMENSIS Ridgway

Formicarius moniliger panamensis Ridgway, Proc. Biol. Soc. Washington, vol. 21, October 20, 1908, p. 195. (Talamanca, Costa Rica.)

Characters.—Paler, more buffy brown above; black of upper surface of tail restricted to distal half; side of head and neck, and upper and under tail coverts, lighter, brighter brown.

A male taken near the Candelaria Hydrographic Station on the Río Pequení, above Madden Lake, in eastern Province of Panamá, March 3, 1961, had the iris wood brown; bill black; tarsus, toes, and claws light fuscous-brown. Another from Armila, San Blas, collected February 27, 1963, had the iris warm mouse brown; bill black; tibiotarsal joint distinctly white, in contrast with the light dull brown of the tarsus and toes; claws neutral gray.

A female, from La Jagua, eastern Province of Panamá, January 14, 1962, had the iris dark reddish brown; bill black; tarsus mouse brown; toes and claws somewhat darker.

Measurements.—Males (10 from Coclé, Colón, Province of Panamá, Darién, and San Blas), wing 87.0–90.5 (89.0), tail 46.0–52.8 (48.9), culmen from base 20.5–22.7 (21.7), tarsus 30.2–34.1 (32.7) mm.

Females (10 from Coclé, Colón, Canal Zone, Province of Panamá, Darién, and San Blas), wing 83.1–89.8 (86.4), tail 41.9–52.3 (47.6), culmen from base 20.6–23.4 (22.1), tarsus 31.0–34.5 (32.7) mm.

R. S. Crossin recorded the weight of a male taken August 10, 1968, as 54.1 grams (without fat).

Resident. Fairly common in lowland forests on the Pacific side from eastern Coclé (El Valle) through Darién; on the Caribbean slope from northern Coclé (El Uracillo) and western Colón (Río Indio) east through San Blas to the Colombian boundary; to 500 meters on Cerro Pirre, and to 600 meters in other mountain areas.

From available data there is a gap in the distribution of this ant-thrush on the Pacific slope from central Chiriquí to Coclé, including the Azuero Peninsula. Salvin (Proc. Zool. Soc. London, 1866, p. 74) reports that "a young bird from Veragua exhibits the precise plumage of the adult," and (idem, 1867, pp. 145–146) lists a specimen in the first Arcé collections from Panamá as from "Santiago de Veragua." This record, repeated by Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 2, 1892, p. 235), is open to question. In regard to this it may be noted that Sclater (Cat. Birds Brit. Mus., vol. 15, 1890, p. 304) under "*Formicarius hoffmanni*" from the Salvin-Godman collection, lists "*e.* ♂ jr. sk. Chepo, Panama." Arcé's first collections in Panamá were made at Chepo from late 1864 to 1865, so that it seems probable that the "Veragua" report may be based on the Chepo specimen mentioned. In my own field work this bird was recorded in

1951 and 1953 at El Valle, on the Pacific slope in Coclé, and in 1952 it was taken at El Uracillo on the Caribbean slope in that province. Also in 1952, we found it near Chilar, on the Río Indio, in western Colón. These are the most western authentic records that are known to me. From the Canal Zone eastward these birds are fairly common.

Like others of the genus they are birds of the forest floor that walk through the shadows with long stride, the neck extended, and the short twitching tail held at an angle above the back, so that in appearance they suggest small rails. Males may come quietly to peer at human intruders, but more usually their presence is known from their whistled calls, one clear note, followed after a slight pause by two or three others, repeated more rapidly. Occasionally the whistle is varied by chattering, scolding notes. The call, easily imitated, brings immediate response so that presently the bird may approach and be seen. The clicking of a metal cartridge on a gun barrel or machete blade may also arouse their curiosity. Often, however, they remain well concealed. When suddenly startled they fly readily, and then may rise a meter or so above the ground. This, however, is unusual. In the hand, they are heavy bodied and full-feathered.

It is common to see them walking at the border of ant swarms. On Barro Colorado Island, R. A. Johnson (Proc. Linn. Soc. New York, nos. 63–65, March 1954, pp. 48, 57) found them at ant columns when these crossed any ant-thrush territory but not following when the insects had moved outside this limit. Stomachs that I have examined have held remains of ants, and of a variety of small beetles and beetle larvae, hymenoptera, caterpillars, earwigs, millipedes, spiders, and small lizard bones, as well as seeds of *Oxalis*, *Rubiaceae*, and miscellaneous vegetable fibers.

Though widely distributed, little in detail is known of the nesting of these birds. Cherrie (Sci. Bull. Brooklyn Inst. Arts. Sci., vol. 1, no. 13, 1908, p. 366) concerning the race *F. a. saturatus* on Trinidad noted that "this species nests in holes in trees."

Belcher and Smooker (Ibis, 1936, p. 811) on Trinidad report "what is believed to have been a nest of this species on the Heights of Arima (Morne Bleu) on 26 March, 1928. It was a cup of root-fibres and leaf-stems placed in a hole in a tree-stump at about 3 meters from the ground. The two eggs were slightly incubated: They are pure white, smooth-shelled, regular ovals, and measure 28.4×21.9 and 26.8×21.2 mm." (The eggs recorded here are smaller than those described by Mees listed below.) That this species nests in holes was proved by a photograph by Howard H. Cleaves (Wilson Bull., vol.

56, no. 2, June 1944, frontispiece) taken by flashlight on Barro Colorado Island, Canal Zone, May 19, 1929. This shows one of these birds with the body halfway out of a hole in the trunk of a slender shrub. With the picture is the observation that the "nest was three feet above the ground and contained one egg." The egg was not described. For *Formicarius analis analis* Pinto (Papéis Avulsos, Dept. Zool. Secr. Agric. São Paulo, vol. 11, no. 13, June 1953, p. 169) records two eggs, collected at Utinga, a suburb of Belém, March 12, 1929, as white, with measurements of 32×23 and 29.5×23 mm. A further account of *F. a. saturatus*, not fully definite, by G. F. Mees (in Junge and Mees, Avifauna of Trinidad and Tobago, Zool. Verh. Rijksm. Nat. Hist. Leiden, no. 37, 1958, p. 91) describes a nest "almost certainly of this species, but only a glimpse of the bird, when fleeing from it, was found on 8 October [1953] near the summit of Mt. Tabor. It was in a hollow tree of about 20 cm. diameter. The two eggs are white, roundish, and measure $31.5 \times 23.8 \pm 32 \times 24.6$. They were heavily incubated, but could be preserved, they are rather dirty." Finally Skutch (Ibis, 1966, p. 10) in studies in western Costa Rica remarks that *F. analis* "nests in low, hollow trunks, often in cavities open to rain at the top."

Cherrie in his Ornithology of the Orinoco Region in description of the related species *Formicarius colma colma* (Mus. Brooklyn Inst. Arts, Sci., Science Bull., vol. 2, no. 6, 1916, p. 292) wrote that a nest "from which the parent was flushed, was found at Nericagua in March 1899. It was a natural cavity in a tree trunk, about 5 metres from the ground. The cavity was about 40 cm. in depth and about 15 cm. in diameter. The bottom was lined with rootlets and dry grasses. The two eggs were pure white." It is of interest to refer also to the accounts by Meise (in Schönwetter, Handb. Ool., pt. 14, 1967, pp. 42, 43) of eggs in this genus, in which he cites white eggs without marking in *Formicarius analis* in the subspecies *moniliger*, *hoffmanni*, *saturatus* (but with reference to Belcher and Smooker, quoted above), *crissalis* and *analis*, and also in *Formicarius colma ruficeps*.

From this summary there seems to be no question that the species of *Formicarius*, unlike others of the family, nest in holes and lay white eggs.

As I have handled these birds in the field in the preparation of museum specimens I have noted that the pterylosis does not agree with that of such Formicariids as *Cymbilainus lineatus*, *Taraba major*, *Myrmeciza longipes*, and *M. exsul*, where the dorsal area

broadens in the center of the back and terminates distally in a rounded margin with a broad apterion, except for a few scattered feathers, extending down to the region of the upper tail coverts. Instead, in *Formicarius analis panamensis* as recorded in male and female taken at Mandinga, San Blas, February 5, 1957, and a male collected near the Candelaria Hydrographic Station, back of Madden Lake, March 3, 1961, the dorsal feathering was an elongate ellipse expanding over the back at the level of the heads of the humeri, with a long, narrow central apterion. As it continues it narrows at the lower end and terminates without a break at the upper tail coverts.

FORMICARIUS NIGRICAPILLUS NIGRICAPILLUS Ridgway:
Black-headed Ant-thrush, Gallito Hormiguero Cabecinegro

Formicarius nigricapillus "Cherrie," Ridgway, Proc. U.S. Nat. Mus., vol. 16, November 28, 1893, pp. 670 (in key), 675. (Buenavista, Province of Alajuela, Costa Rica.)

Size and form of the Black-faced Ant-thrush, but head entirely black.

Description.—Length 165–175 mm; crown, side of head and neck, and breast black; hindneck, upper side of neck, back, and scapulars chestnut-brown; rump and upper tail coverts rufous-brown; tail dull black, with a faint brownish tinge; primaries and secondaries dusky-brown edged with chestnut-brown; black of upper breast changing gradually to brownish slate-gray on lower breast and abdomen; side and flanks basally similar to abdomen, but with a wash of olive; under tail coverts rufous-brown; under wing coverts black at base and tip, ochraceous in center; axillars similar, but central area buff; inner webs of wings with a broad band of ochraceous.

Adult female, similar to male, but with lower surface more olive.

Measurements.—Males (9 from Bocas del Toro, Veraguas, western sector of Province of Panamá, and Costa Rica), wing 89.2–94.1 (91.3), tail 44.5–51.5 (48.9), culmen from base 22.8–26.1 (24.7), tarsus 31.5–33.5 (32.4).

Females (5 from Veraguas and Costa Rica), wing 85.0–92.4 (89.0), tail 45.4–48.6 (46.4), culmen from base 24.1–27.6 (25.2), tarsus 29.8–31.5 (30.4) mm.

Resident. Rare, in heavy forest in the upper Tropical Zone. Five records—two in Bocas del Toro, two in Veraguas, and one on Cerro Campana, western Province of Panamá.

The first report (under the name *Formicarius analis*) is of an

immature female (now in the British Museum) taken by Arcé and forwarded to Salvin in one of his early collections. It is labeled "Veragua" and was so listed by Salvin (Proc. Zool. Soc. London, 1866, p. 74), but the following year was cited by this same author (idem, 1867, p. 145) as from "Santiago de Veragua," and still later by Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 2, 1892, p. 235) as "Santiago de Veraguas." Since *F. nigricapillus* is not found in the lowlands, this is another of the early erroneous reports attributed to "Santiago." It may have come from Arcé's locality Calovévora, as a female in the American Museum of Natural History, labeled Río Calovévora, was taken there by Benson, September 12, 1926.

Peters (Bull. Mus. Comp. Zool., vol. 71, 1931, p. 321) records a male taken by H. von Wedel, March 24, 1928, at 450 meters on the trail from Chiriquí Grande to Boquete, in Bocas del Toro. Blake (Fieldiana Zool., vol. 36, 1958, p. 532) listed another male collected July 14, 1933, at 1460 meters at Cedral, higher up on this same trail. The fifth report is of a male that I found at 900 meters near the summit of Cerro Campana, on the south face, in the western sector of the Province of Panamá. This individual ranged in heavily shaded undergrowth, and unlike *Formicarius analis* was silent. It may be noted that because of the sweep of the trade winds over this elevated ridge the vegetation was dripping wet on the exposed northern slope, and correspondingly dry on the other side.

In Costa Rica, Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 220) reports that *F. n. nigricapillus* is known from "the Cordillera Central and from the Cerro de Santa María in the Guanacaste Cordillera. . . . This distribution makes it almost exclusively a Caribbean species confined to the upper tropical and lower subtropical belts."

From the little known of the few individuals that have been reported, it is similar to the widely distributed *F. analis* in form and general appearance, but differs definitely in darker color pattern. This is seen especially on the head, where the reddish brown pattern of the other group is replaced by an extension of the black of the crown. The nominate race of *nigricapillus*, as stated, is found in Costa Rica and western Panamá. The subspecies *F. n. destructus*, named by Hartert from western Ecuador, ranges in western Colombia north to central Chocó.

Eisenmann reports the call, heard on Cerro Campana, as a single note, given about 10 times in the space of 5 seconds, with repetition

following a brief pause. He described it as melancholy in tone, with a slight acceleration toward the end and a sudden stop.

From information now available, *nigricapillus* seems in general to replace *analís*. In our series of 11 specimens of *destructus* from the departments of Valle and Chocó, Colombia, there is no indication of hybridization with *analís*, listed as a possibility by Haffer (Amer. Mus. Nov. 2294, 1967, p. 13). The two, while evidently closely related, so far as known appear to have developed into distinct species entities.

Hartert (Nov. Zool., vol. 9, December 1902, p. 614) in an account of the Black-headed Ant-thrush in Ecuador, remarks that "Two eggs, said to belong to . . . *destructus*, are white without gloss, more pointed at one end, and measure $29\frac{1}{2} \times 22\frac{1}{2}$ and $30\frac{1}{2} \times 22\frac{1}{2}$ mm."

FORMICARIUS RUFPECTUS Salvin: Rufous-breasted Ant-thrush,
Gallito Hormiguero Pechicastaño

Size medium; larger than other ant-thrushes, with tawny breast.

Description.—Length 180–200 mm. Adult male, crown and hindneck dark chestnut, with feather bases dull black; rest of upper surface (except rump) dark olive; rump and upper tail coverts reddish chestnut; wings dark sooty brown; tail dull black; side of head and throat black; lower foreneck and upper breast chestnut, changing on lower breast and abdomen to tawny; under tail coverts bright chestnut; sides and flanks olive, in part indistinctly lined with chestnut; under wing coverts blackish olive mixed with rufous; anterior bases of primaries cinnamon-buff.

Adult female, like male, but back and wings more slaty, under surface paler.

Immature, like female but with throat brownish black; browner on upper foreneck.

The habits and nesting of this forest species as yet are unknown. Two races are recorded from the Republic, one in the west, and the other in Darién.

FORMICARIUS RUFPECTUS RUFPECTUS Salvin

Formicarius rufpectus Salvin, Proc. Zool. Soc. London, May 1866, p. 73, pl. 8.
("Santiago de Veraguas," = Santa Fé, Veraguas.)

Characters.—Breast darker chestnut; sides and flanks darker; more brownish above.

Measurements.—Males (5 from Veraguas and Costa Rica), wing

90.0–94.3 (92.0), tail 52.1–56.8 (55.0), culmen from base 24.4–27.0 (25.7), tarsus 39.5–41.2 (40.3) mm.

Female (1 from Veraguas), wing 87.1, tail 51.0, culmen from base 26.5, tarsus 40.1 mm.

Resident. Rare, in upper Tropical and Subtropical Zone forests. Reported in Panamá from mountain areas in western Veraguas and Chiriquí.

In the original description Salvin listed the type locality only as "in Veragua." In a second account (*idem*, 1867, p. 145) he expanded this somewhat to "Santiago de Veragua." Salvin and Godman (*Biol. Centr.-Amer., Aves*, vol. 2, 1892, p. 236) said of it, "*F. rufipectus* was described from a single skin (marked ♀) obtained by our collector Arcé at Santiago de Veraguas; he some years afterwards secured us a second specimen." The type specimen, in the British Museum, I found to be labeled merely "Veragua." From the record cited above, the bird came to Salvin in one of the first collections from Arcé in which there was often confusion as to provenience. In this case, as the species is an inhabitant of mountain forests, Santiago, far distant in the tropical lowlands toward the sea, is obviously incorrect. From the records of Arcé's early work the bird must have been taken near Santa Fé, where he made his first collections in "Veragua." This, therefore, is cited here as the restricted type locality.

The label of the later specimen mentioned by Salvin and Godman reads, "Veragua, Arcé, 1874." In connection with this it should be noted that the term "Veragua" at that early date included both Chiriquí and Veraguas as at present recognized. As in the period indicated Arcé was located in western Chiriquí, this bird probably was taken on the volcano, possibly in the Boquete area. The sex is not marked, but from the wing measurement of 94.3 mm, and the color, it appears to be a male.

FORMICARIUS RUFPECTUS CARRIKERI Chapman

Formicarius rufipectus carrikeri Chapman, *Bull. Amer. Mus. Nat. Hist.*, vol. 31, July 1912, p. 146. (San Antonio, above Cali, Valle, Colombia.)

Characters.—Breast somewhat paler brown; sides and flanks paler; upper surface darker, blackish slate.

Measurements.—Males (10 from Darién, western Colombia, and northwestern Ecuador), wing 88.8–94.7 (91.9), tail 52.0–58.8 (54.3), culmen from base 24.2–27.7 (25.6), tarsus 38.5–41.8 (40.2) mm.

Females (10 from Darién, western Colombia, and northern Ecuador), wing 86.2–90.8 (88.5), tail 50.5–56.8 (53.4), culmen from base 23.0–27.0 (24.8), tarsus 36.5–41.7 (38.7) mm.

A female, from Cerro Malí, Darién, February 21, 1964, had the iris wood brown; bill black; tarsus and toes fuscous, claws fuscous-black.

Resident. Recorded from Subtropical Zone forests on Cerro Pirre, and the Cerro Malí spur of Cerro Tacarcuna, Darién.

The first report of this little-known form for Panamá was a pair collected by E. A. Goldman at 1525 meters on Cerro Pirre, March 5, 1912. Two in the American Museum of Natural History were taken by A. W. Anthony and his party at the old Tacarcuna village site on the base of Cerro Tacarcuna, March 7 and 27, 1915.

From Cerro Malí, at 1430 meters I have a female caught on February 21, 1964, in a mouse trap set in the forest. C. O. Handley, Jr., secured two others there, captured also in traps, on February 12 and 18, 1964. These were preserved entire in formaldehyde.

Anthony's specimens from eastern Darién were placed by Zimmer (Amer. Mus. Nov., no. 584, 1932, p. 9) with typical *rufipectus*. In the present review, in which I have had the advantage of study of the type and other specimens of nominate *rufipectus* in London, they differ from that race and agree with *carrikeri*. They were therefore correctly listed by Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 336).

**GYMNOPITHYS BICOLOR (Lawrence): Bicolored Ant-bird,
Hormiguero Bicolor**

Size medium, with heavy body and short tail; reddish brown above and on the sides; breast and throat white.

Description.—Length 132–145 mm. Side of head surrounding the eye bare, without feathers. Adult (sexes alike), upper surface chestnut-brown; inner webs of wing feathers dusky, outer webs chestnut-brown; side of head below the bare area black; throat, fore-neck, center of breast and abdomen white; sides from neck to flanks lighter brown than back; in some, spots of this paler color along side of neck and breast; under tail coverts like flanks, but in some tipped with buff or white; under wing coverts mixed buffy brown and white.

Juvenile, plumage of upper surface chestnut-brown, with wing coverts tipped indistinctly with rufous; under surface dull grayish brown, with the throat bare but edged with white; breast basally

white, the light color partly evident in center; cheeks and malar region dull black.

These are birds of the forest undergrowth, most common in the lowlands and lower hills from central Panamá eastward. Their life history has been described by Dr. Edwin O. Willis whose detailed report, *The Behavior of Bicolored Antbirds* (Univ. Cal. Publ. Zool., vol. 79, 1967, pp. 1-127, 3 pls., 21 figs.), covers many months of observation in Costa Rica, Panamá, and northwestern Colombia.

Zimmer in a review of these birds in Perú (Amer. Mus. Nov., no. 917, 1937, p. 5) combined two groups of generally similar appearance, viz., *bicolor* and *leucaspis* under the latter name, an action accepted by Peters (Check-list Birds World, vol. 7, 1951, pp. 247-248) and currently in general use. Willis points out (cit. supra, p. 3) that if this course is followed there should be a further combination with another similar group, *rufigula*, which is brown underneath. In another statement, Willis (Condor, 1968, p. 128) prefers to treat them as three separate species, a course that appears appropriate on existing evidence. The subspecies united under the specific name *bicolor* have the central under surface pure white, with the side of the head on cheeks, malar, and anterior-auricular regions black. The females have the center of the back plain brown. The *leucaspis* group of forms also are white on the under surface but include in this color the side of the head. They also have a black superciliary. The females have a large area of cinnamon-rufous partly hidden by the longer feather tips in the center of the back, that would be prominent in display.

The *bicolor* group as here accepted, ranges from the Caribbean slope of Honduras and Nicaragua, in Costa Rica also on the Pacific side, and continues in Panamá and Colombia to western Ecuador. Two subspecies are found in Panamá.

GYMNOPITHYS BICOLOR OLIVASCENS (Ridgway)

Pithys bicolor olivascens Ridgway, Proc. U.S. Nat. Mus., vol. 14, October 26, 1891, p. 469. (Santa Ana, Honduras.)

Characters.—Forehead and side of head behind eye chestnut-brown like the rest of the crown; very slightly more olive on dorsal surface when viewed in series.

Measurements.—Males (10 from Chiriquí and Bocas del Toro), wing 72.8-76.6 (74.8), tail 42.3-47.8 (45.1), culmen from base 19.1-20.2 (19.6, average of 9), tarsus 26.0-27.2 (26.4) mm.

Females (10 from Chiriquí, Bocas del Toro, and Costa Rica),

wing 71.2–73.6 (72.6), tail 41.4–44.9 (43.0), culmen from base 18.3–20.8 (19.3), tarsus 25.2–26.5 (26.0) mm.

Resident. Found locally in forests in the Tropical Zone in Chiriquí, Veraguas, and Bocas del Toro. Now reduced in number in Chiriquí through forest clearing.

From Chiriquí, Arcé in early collections made for Salvin forwarded one from Bugaba, and there is one from this same collector in the National Museum marked Chiriquí without other locality. W. W. Brown, Jr., sent male and female from Divalá taken November and December 1900, to Bangs. Three in the California Academy of Sciences from Barriles, at a higher elevation, were collected by Mrs. Davidson in December 1929, and February 1931. The U.S. National Museum has four from El Volcán, secured by F. A. Hartman between 1951 and 1956.

The few known from Bocas del Toro are slightly intermediate toward typical *bicolor* in somewhat grayish forehead, but are best placed with *olivascens*. These include three collected by Benson near Almirante, one taken by Wedel at 750 meters on the Boquete Trail, March 17, 1928, and one obtained by Mönniche at 1460 meters on this same trail July 14, 1933.

Alexander Skutch (Anim. Kingd., vol. 60, 1957, pp. 75–80) records an interesting experience near El General, Costa Rica, in which one of these birds joined him regularly as he walked slowly through the forest, to capture the insects that his feet flushed from the leaves. In time, this bird became so tame that Skutch was allowed to touch it with the end of a small stick but not with his hand. The association continued for sixteen months, and during this period was resumed immediately when Skutch returned after an absence of several months. Once the bird accompanied him for a distance of half a mile without hesitation. Always, however, it refused to leave the forest shelter "into the brighter light of neighboring second-growth thickets or pastures." When the bird finally disappeared it was three years before another undertook this association, but in all he had several that followed this friendly custom. Occasionally he was accompanied by two together, possibly a pair.

A nest that Skutch found was placed in a hollow palm stump, open at the top. He described the two eggs as "creamy . . . thickly marked with elongate blotches of rufous-chocolate, which lay in a nest composed of a double handful of leaf fragments, with a thin lining of rootlets and other fibrous material." Both birds of the pair in-

cubated. The young when hatched "had dark flesh-colored skin wholly devoid of down, and the interior of their mouths was yellow."

GYMNOPTHYS BICOLOR BICOLOR (Lawrence)

Pithys bicolor Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, 1863, p. 6.
(Atlantic slope near the Panama Railroad, Canal Zone, Panamá.)

Characters.—Forehead and side of head back of the eye dark gray; very faintly more reddish brown above.

A male, taken at Juan Mina, Canal Zone, January 13, 1961, had the iris dark brown; mandibular rami and maxilla, except as noted, dusky neutral gray, cutting edge of maxilla to tip, and rest of mandible neutral gray; tarsus, toes, and claws neutral gray; bare skin on side of head light grayish blue. Two males from Armila, San Blas, February 21 and 27, 1963, had the iris bright reddish brown; cutting edge and tip of maxilla and distal half of mandible neutral gray; rest of bill, including mandibular rami black; tarsus, toes, and claws neutral gray.

Three females, collected in mist nets at Armila, February 27, 1963, had the iris warm brown, but otherwise were like the males from this locality.

Measurements.—Males (10 from Canal Zone, Colón, and Province of Panamá), wing 73.3–76.4 (74.6), tail 43.3–47.5 (45.2), culmen from base 19.8–21.2 (20.3), tarsus 27.0–28.5 (27.5) mm.

Females (10 from Canal Zone, Province of Panamá, Darién, and San Blas), wing 70.0–74.6 (73.0), tail 42.0–44.8 (43.7), culmen from base 19.0–20.8 (19.8), tarsus 26.3–27.9 (26.9) mm.

Weight, ♂ 33.1 grams (Gamboa, August 10, coll. R. S. Crossin).

Resident. Locally common in Tropical Zone forests on the Pacific slope from Santa Fé, Veraguas, east through Darién, to 575 meters in the mountains; on the Caribbean side from the Río Calovévora, northern Veraguas east through the Comarca de San Blas.

The report by Salvin (Proc. Zool. Soc. London, 1867, p. 145), repeated by Salvin and Godman (Biol. Centr.-Amer., Aves vol. 2, 1892, p. 221) of a specimen (now in the British Museum in London), collected by Arcé from Santa Fé, Veraguas, is verified by a series in the American Museum of Natural History taken by R. R. Benson in 1926. He secured others on the Caribbean slope on the Río Calovévora.

These are birds of the undergrowth in forest, found occasionally singly, more often in pairs or several in loose association, almost invariably over moving ant swarms. In this association they tend to

move quickly with partly spread, trembling wings. Attention often is attracted to them by their high pitched calls. During March 1950, at our forest camp on the Quebrada Cauchero near the boundary between eastern Province of Panamá and Darién one came daily to sing a clear, simple song of a dozen whistled notes, with four or five others, scattered through the forest nearby, answering in kind. When ant swarms were inactive often I have found these birds so shy that few were seen, so that their abundance was difficult to ascertain. As an example, in February and March 1963, in our daily search in the forest near Armila, San Blas, that regularly gave us little-known species of birds, we saw these ant-thrushes only when they were caught in our mist nets.

Willis in his detailed account of behavior, referred to above, in the nesting cycle describes the courtship during which the male begins to feed the female until finally she "gradually stops foraging and comes to depend on her mate for food." The nest site is usually a cavity in the top of a stub among the bases of palm fronds near the ground. The nest, according to Willis, "is a simple cup of . . . dead strips of palm leaves and fragments of dead dicotyledonous leaves, pressed into the bottom of the cavity or wedged across it after the birds have thrown out dead leaves and other accumulated debris . . . the two eggs . . . are always white to cream, heavily streaked and splotched longitudinally with dark reddish brown." Van Tyne (Occ. Pap. Mus. Zool., Univ. Michigan, no. 491, 1944, p. 2) gives measurements of two eggs from a nest on Barro Colorado Island as 24.5×18 and 23.5×18 mm. Willis (cit. supra, pp. 84-85) found that both male and female share in incubation, as is usual in this family. At one nest the incubation period was 15 days, and at another 16 days.

With regard to the food, Willis (loc. cit., p. 32) records that "Birds which follow army ants generally eat arthropods flushed by the ants rather than the ants themselves. Once a bicolored antbird ate an army ant, but usually the antbirds snapped up roaches, crickets, other orthopterans, and spiders. Less commonly the prey is a scorpion, centipede, millipede, sourbug, true bug, beetle, or ant or other hymenopteran. Rarely vertebrates, such as small frogs and lizards (mostly *Anolis limifrons*) are captured." In stomach examinations I have found earwigs, gryllids, moths, hymenoptera, and spider remains.

**HYLOPHYLAX NAEVIOIDES (Lafresnaye): Spotted Ant-bird,
Corregidor**

FIGURE 19

Small; tail short; back chestnut-brown with a concealed white patch; black wings heavily marked with brown; throat in male, black; in female, buff.

Description.—Length 105–120 mm. Adult male, crown and hind-neck grayish brown to olive-brown, changing to gray on forehead, lores and side of head behind the eye; back chestnut (with the concealed central area white) changing to dull cinnamon on the upper tail coverts; wings black, with middle and greater coverts and secondaries

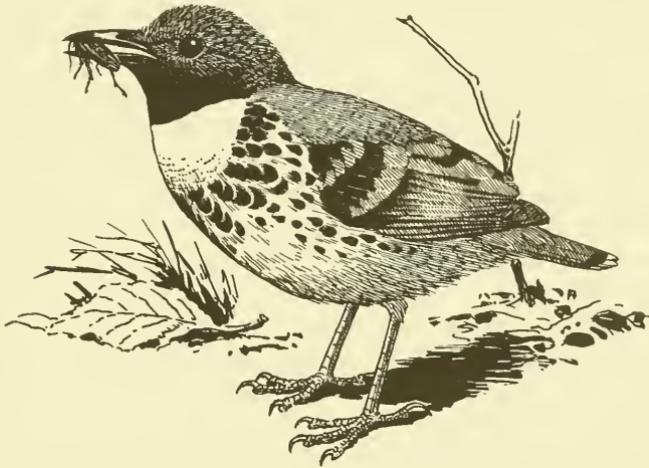


FIGURE 19.—Spotted ant-bird, corregidor, *Hylophylax naevioides*, male.

aries tipped broadly with cinnamon-rufous; lesser coverts spotted with white; tail grayish brown, with a subterminal band of black, tipped with cinnamon, outer rectrices with tips paler brown to white; throat and malar area black; lower foreneck to abdomen white, the breast and anterior area of the sides spotted heavily with black; sides gray, passing to brownish buff on flanks; under tail coverts pale brownish buff; under wing coverts and axillars mixed gray and white, spotted with black on the carpal edge.

Adult female, crown and hindneck dull brown; back dull chestnut with concealed white area small; wing markings as in male, except that the lesser coverts are spotted with buff; side of head blackish

slate, lined narrowly with pale cinnamon-brown; throat white or buff; rest of central lower surface white or with a wash of buff, the breast spotted irregularly with olive or dull gray; sides and flanks olive to olive-buff; tail as in male.

Juvenile male, like female, but without concealed white on the back.

These small birds are found in the undergrowth in gallery forest, usually in pairs or small groups that may include a dozen individuals when assembled over moving ant swarms. Attention is drawn to them by their chattering calls, often scolding in sound, and their trilling songs. They range low, immediately above the ants, often fluttering excitedly from perch to perch. At rest, the tail is twitched nervously and the slightly extended wings tremble. At times I have found them near moving lines of leaf-cutting ants, though it seemed that this was a casual association as the birds were less active and made little noise. Because of their activities country men in eastern Panamá, especially in Darién, call them *corregidor*, the title of the head official in small settlements, as they say that the bird by its calls and active movements assembles and directs the activities of the other avian species encountered with them. Like their companions their food is taken from the insects and other small creatures disturbed as the ants surge across the ground cover of leaves and other debris.

When away from the ant swarms, these ant-birds are found in pairs that move through the undergrowth, near the ground. In heavily shaded areas often they remain hidden as they are quiet without the nervous display and active movements that they affect when excited by the moving hordes of ants. Only the white collar on the foreneck, that shows clearly even in subdued light, may attract the human eye. (On life history, see Willis, A. O. U. Mon. 10, 1972.)

In preparing specimens it will be noted that the head is especially large in proportion to the size of the body so that the skull is passed through the cylinder of the neck skin only with considerable pressure.

As a species these birds range from the Caribbean lowlands of eastern Honduras through Nicaragua and Costa Rica (where in Guanacaste they cross to the Pacific slope). They continue on the Caribbean side through western Panamá in Bocas del Toro and northern Veraguas, appear on the Pacific drainage on Cerro Campana, and then are found where there is suitable forest cover on both slopes through the Canal Zone and the whole of the lowlands of eastern Panamá in Darién and the Comarca de San Blas. They have not been recorded on the Azuero Peninsula.

HYLOPHYLAX NAEVIOIDES CAPNITIS (Bangs)

Hypocnemis naevioides capnitis Bangs, Proc. Biol. Soc. Washington, vol. 19, July 10, 1906, p. 107. (Volcán Miravalles, Costa Rica.)

Characters.—Back somewhat darker; sides and flanks slightly darker gray; subterminal black tip on tail narrower, with the rufescent brown on the end darker; female more grayish on under surface; averaging slightly larger.

Measurements.—Males (10 from Veraguas, Nicaragua, and Costa Rica), wing 60.4–65.0 (62.9), tail 31.4–36.6 (34.5), culmen from base 17.2–18.1 (17.6, average of 9), tarsus 22.0–23.3 (22.5) mm.

Females (10 from Veraguas, Nicaragua, and Costa Rica), wing 59.6–64.0 (61.7), tail 30.4–33.4 (31.7), culmen from base 16.1–18.5 (17.7), tarsus 22.0–23.5 (22.7) mm.

Resident. Found in restricted number near Santa Fé, Veraguas, on the Pacific slope, and in Bocas del Toro, from the Río Sixaola westward, inland on the Río Changuena (at 700 meters); ranging east on the Caribbean slope of northern Veraguas to the valley of the Río Calovévora.

A male collected by von Wedel near Guabo (beyond Chiriquito, inland from Chiriquí Grande) April 8, 1928, was the first published report of this race for Panamá (Peters, Bull. Mus. Comp. Zool., vol. 71, 1931, p. 321). There are, however, two specimens, male and female, in the Havemeyer collection in the Peabody Museum at New Haven, taken earlier by Austin Smith at Sibube, inland on the Río Sixaola, February 12, 1927. Others in the American Museum of Natural History were collected by R. R. Benson near Santa Fé, Veraguas, in March and April 1925, and near the Río Calovévora on the Caribbean slope of northern Veraguas in August and September 1926. A male in the National Museum was taken by R. Hinds, September 23, 1961, at about 700 meters elevation on the upper Río Changuena, Bocas del Toro. The race is more common in eastern Costa Rica, where in the low mountains in the north it crosses to the head of the Pacific drainage.

The Veraguas specimens, while slightly intermediate, are placed with *capnitis*.

Dr. A. M. Young (Condor, 1971, pp. 367–368) records an interesting observation on sleeping habits made at Finca La Selva, on the Caribbean slope of Costa Rica. From February 4 to May 30, 1970, a male was found frequently at night “3.2 m. off the ground on a horizontal branch of a leafy small dioecious tree. . . . This spotted

antbird roosted in the same tree on many evenings each month, and for about 84 per cent of these evenings it was on the same branch.”

HYLOPHYLAX NAEVIOIDES NAEVIOIDES (Lafresnaye)

Conopophaga naevioides Lafresnaye, Rev. Zool., vol. 10, March 1847, p. 69.
(Near Panama City, Panamá.)

Characters.—Back somewhat lighter brown; sides and flanks paler gray; subterminal black tip on tail slightly wider, with brown tip averaging lighter, more buff; female more buffy on the under surface, especially on the breast and flanks; averaging slightly smaller.

A male taken on Cerro Campana, Panamá, March 5, 1951, had the iris very dark brown; bill black; tarsus, toes, and claws neutral gray. Another, collected at Cañita, Panamá, February 6, 1962, had the iris dark reddish brown, but otherwise was similar.

A female taken with the male on Cerro Campana, had the iris, tarsus, and toes similar to the male, but with the maxilla dull slaty black and the mandible neutral gray. In another collected with the male at Cañita, the iris was dark wood brown; the maxilla and the extreme tip of the mandible black, and the rest of the mandible pale neutral gray; tarsus, toes, and claws as in the male.

Measurements.—Males (10 from Province of Panamá, Canal Zone, Darién, and San Blas), wing 61.0–65.7 (63.0), tail 33.4–37.6 (35.1), culmen from base 16.9–18.7 (17.4), tarsus 21.9–22.9 (22.3) mm.

Females (10 from Province of Panamá, Canal Zone, and Darién), wing 60.0–63.8 (61.6), tail 31.7–34.9 (33.6), culmen from base 16.2–17.4 (16.9), tarsus 21.2–23.1 (22.3) mm.

An adult male collected near Gamboa, Canal Zone, August 8, 1968, by R. S. Crossin weighed 18.0 grams. G. Child at Santa Fé, Darién, March 30, 1963, recorded weights of a male as 14.9 and of two females as 15.7 and 13.3 grams.

Resident. Locally common, on the Pacific slope in forested areas in the Tropical Zone, from Cerro Campana, western Province of Panamá, and on the Caribbean side from western Colón to the Colombian boundary in Darién and San Blas; to 850 meters on Cerro Campana, 575 meters on Cerro Tacarcuna.

Reproduction in this species is reported as follows. Johnson (Proc. Linn. Soc. New York, no. 63–65, March 1954, p. 56) recorded display in late March in which the “male lowers the head and flattens the back by spreading the shoulders and the tail slightly to expose the white spots in the back and wings.” Stone (Proc. Acad. Nat. Sci.

Philadelphia, vol. 70, 1918, p. 261) quotes notes from L. L. Jewel made in the Canal Zone on a nest (date not given) "found in fork of a small bush in the forest about four feet [1.2 meters] from the ground, a thin pensile cup containing two nearly feathered young." Gross (Ann. Rep. Smithsonian Inst. for 1926, 1927, p. 339, fig. 9) on Barro Colorado Island recorded incubation by both female and male, with the latter singing on the nest. A photograph shows the nest (with the male on it), a rather deep, thick-walled cup, suspended from a forked branch. Eisenmann (Smithsonian Misc. Coll., vol. 117, no. 5, 1952, p. 36) on Barro Colorado Island, listed nests with eggs found by Skutch April 18, May 7 and 16; by Gross July 16, and July (with no day specified); and by Milne and Laughlin, June 24. Nests were recorded by Skutch (Condor, 1946, pp. 19-21) as placed low in undergrowth from 30 to 75 cm above the ground. The two eggs were "heavily and rather uniformly mottled all over with umber which covers half or more of the surface and is diffused into the whitish ground cover." One set measured 23.0×15.1 and 23.0×15.9 mm. Both male and female construct the nest and incubate the eggs, alternating during the day, the female alone at night. Nestlings "were black-skinned, blind and devoid of down."

The nominate form was described by Lafresnaye from specimens collected by Delattre but with no locality noted on the type specimen. Hellmayr (Cat. Birds Amer., pt. 3, 1924, p. 307) designated the type locality as Panamá. As Delattre is believed to have been in Panamá City it seems reasonable to restrict this to near Panama City, Panamá. While the bird may not occur near that point now due to expanding human activities it was found there formerly. Three adult specimens in the Museum of Comparative Zoology were taken there by W. W. Brown, Jr., in May 1904.

Beyond Panamá, the extensive series in the National Museum demonstrates that the range of nominate *naevioides* extends across northern Colombia from northern Chocó through the Sinú and middle Cauca and Magdalena valleys to the Hacienda Santana north of Bucaramanga. The considerable series of these birds now available demonstrates also that another proposed race *subsiniilis* described by Todd (Proc. Biol. Soc. Washington, vol. 30, 1917, p. 129) with type locality Jaraquiel, Department of Córdoba (formerly part of the Department of Bolívar), in the lower Sinú Valley, south of Montería, may not be recognized. In a small series from the west coast in central Chocó and the lower Río San Juan, Valle, the females appear

somewhat darker, especially on the lower surface, than the average in a long series from eastern Panamá and northern Colombia.

**PHAENOSTICTUS MCLEANNANI (Lawrence): Ocellated Ant-bird,
Hormiguero Manchado**

FIGURE 20

Size medium, tail long; reddish brown, heavily spotted with black, bare skin of head bright blue.

Description.—Length 185–205 mm. Side of head without feathers; tail long, culmen sharply ridged, nostril exposed. Adult (sexes

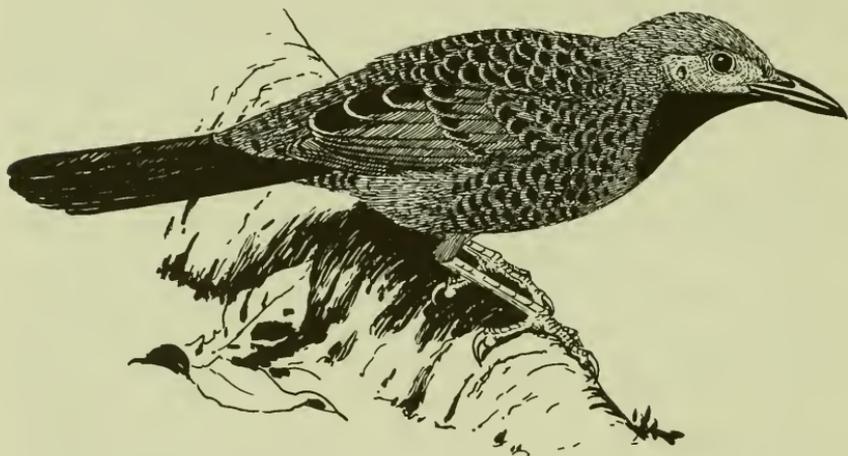


FIGURE 20.—Ocellated ant-bird, hormiguero manchado, *Phaenostictus mcleannani*.

alike), crown and upper hindneck dark gray to brownish gray; a narrow band of rufous-chestnut across lower hindneck; upper surface olive-brown to light rufous-brown, with feathers of back, wing coverts, and tertials with large spots of black, each margined with pale buff to cinnamon-buff; upper tail coverts black basally, tipped with olive-brown to rufous-brown; primaries and secondaries dull black, edged on outer webs with olive-brown to rufous-brown, tail black, in fresh plumage the outer rectrices tipped narrowly with white; side of head bare except for two small patches of black feathers near the middle of the upper and lower eyelids; throat, foreneck, and upper breast black; lower breast, sides, and abdomen cinnamon-rufous, spotted with black, less heavily on lower abdomen;

flanks olive-brown; under tail coverts black basally, tipped with pale buff or cinnamon-buff; tibia subterminally black, tipped with buff.

Juvenile, side of head around eye more heavily feathered than in adult; crown and upper hindneck black, tipped broadly with gray; upper surface with buff edgings broader; breast feathers tipped narrowly with black; lower abdomen plain olive-brown.

This strikingly patterned species is a bird of the forest undergrowth, seen most often over ant swarms in company with the Bicolored and Spotted Ant-birds, but in lesser number, usually only two to four in company. It is identified immediately on sight from its companions by larger size, slender form, darker color, and especially the longer tail which is vibrated regularly up and down as the birds move about. Usually they forage slightly higher in the undergrowth than the smaller companion species, clinging sideways, with needle-sharp claws, to erect stems and branches. They are timid and at any alarm slip quietly away. Their chattering calls suggest the notes of their companions, but in general they seem less vociferous.

This is another species in which the neck is slender in contrast to the expanded diameter of the skull so that in preparing specimens it is usually necessary to split the skin in order to free the head.

PHAENOSTICTUS MCLEANNANI SATURATUS (Richmond)

Phlegopsis saturata Richmond, Proc. U.S. Nat. Mus., vol. 18, August 12, 1896, p. 65. (Río Escondido, 80 kilometers above Bluefields, Nicaragua.)

Characters.—Darker, more reddish brown; crown and hindneck darker, more brownish gray.

Measurements.—Males (10 from Bocas del Toro, Nicaragua, and Costa Rica), wing 89.5–96.3 (93.1), tail 78.9–88.6 (84.0), culmen from base 22.8–25.4 (23.6), tarsus 30.7–33.3 (32.4) mm.

Females (10 from Bocas del Toro, Nicaragua, and Costa Rica), wing 84.5–90.1 (87.3), tail 73.7–81.9 (77.6), culmen from base 22.1–23.8 (22.8), tarsus 31.5–33.4 (32.2) mm.

Resident. Rare, in forested areas of western Bocas del Toro.

This form was first identified from Panamá by James L. Peters (Bull. Mus. Comp. Zool., vol. 71, 1931, p. 322) from a male collected March 21, 1928, by Hasso von Wedel at 400 meters elevation on the trail leading from Chiriquí Grande to Boquete. The National Museum has a female taken at 730 meters on the headwaters of the Río Changuena, Bocas del Toro, by R. Hinds, September 21, 1961. These are the only records to date. The race, a Caribbean form, is known from eastern Nicaragua and eastern Costa Rica (with a slight

extension to the Pacific slope in the low northwestern mountains in the latter country).

PHAENOSTICTUS MCLEANNANI MCLEANNANI (Lawrence)

Phlogopsis McLeannani Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 285. (Lion Hill Station, Panama Railroad, Canal Zone, Panamá.)

Phaenostictus macleannani [sic] *chocoanus* Bangs and Barbour, Bull. Mus. Comp. Zool., vol. 65, September 1922, p. 208. (Cerro Sapo, Darién.)

Characters.—Lighter colored, slightly less reddish brown on the body; crown and hindneck grayer, less brownish.

A male, taken at Armila, San Blas, February 26, 1963, had the iris mouse brown; bare skin of side of head bright blue, with a dull yellowish green line below the feathered spot on the lower eyelid; bill black; tarsus brownish white shading to flesh color on toes and claws.

Measurements.—Males (10 from Coclé, Canal Zone, Colón, Darién, and San Blas), wing 90.3–94.2 (91.8), tail 81.7–90.5 (84.8), culmen from base 21.5–24.8 (23.8), tarsus 32.0–33.9 (33.5) mm.

Females (10 from Colón, Canal Zone, Province of Panamá, and Darién), wing 85.0–89.8 (87.4), tail 78.5–83.6 (81.5), culmen from base 21.3–23.2 (22.3), tarsus 30.0–33.7 (31.9) mm.

Resident. Locally, fairly common in forests in the Tropical Zone, on the Pacific slope from western Province of Panamá, east through Darién, and on the Caribbean side from northern Veraguas, through the Canal Zone and the Comarca de San Blas to the Colombian boundary.

Lawrence, in his original description of this bird, wrote "*Habitat.*—Isthmus of Panama" followed by mention of a second specimen, and the remark that they "were obtained at a locality about equidistant from both oceans." Sclater and Salvin, in a later account with a colored figure of the bird (*Exotic Orn.*, pt. 2, 1867, p. 17, pl. 9) wrote that "Mr. McLeannan's specimens were obtained in the dense forest in the vicinity of his residence," which indicates the old Lion Hill station on the railroad now submerged in Gatun Lake as the definite type locality.

The point farthest to the west at which the bird is known with certainty is the south face of Cerro Campana, in the western sector of the Province of Panamá, based on sight records. A specimen in the American Museum of Natural History from near Chorrera, nearer the Canal Zone, was collected by W. B. Richardson, November 6, 1910. The bird is fairly common from the Cerro Azul and Chepo

eastward. While a specimen in the British Museum (Natural History) recorded by Salvin (Proc. Zool. Soc. London, 1867, p. 145), taken by Arcé, is labeled "Santiago de Veraguas" the locality is doubtful as there is no other report from that area. Griscom received specimens of this race, collected by Benson, from near the Río Calovévora on the Caribbean side so that it is probable that the Salvin specimen may have been one of those secured by Arcé in his early work at Santa Fé on the old trail to Calovévora. The birds are found rather regularly on Barro Colorado Island in the northern Canal Zone; Goldman collected specimens at Portobelo and on the slopes of Cerro Bruja, eastern Colón, in 1911; and February 8, 1957, I secured one of a pair at Mandinga, in western San Blas. At the eastern end of San Blas from Permé to Puerto Obaldía there are numerous records. From northwestern Colombia we have specimens from northern Chocó and the Sinú Valley in the Department of Córdoba. Older specimens of this race darken considerably with age which led Bangs and Barbour in study of a collection made by Barbour in Darién to name their recently taken birds, pale in color in comparison with older ones, as a separate race *chocoanus*. The series now at hand demonstrates that this is not valid.

Little information is available as to life history other than observations of the activities of these birds over ant swarms in company with the Bicolored and Spotted Ant-birds. Eisenmann (Smithsonian Misc. Coll., vol. 117, no. 5, 1952, p. 36) on Barro Colorado Island noted under breeding "July 10, 1950, adults feeding stub-tailed fledgling." Two nearly grown young birds, both males, that I collected on January 18, 1955, as they fed actively over a line of ants were both still in juvenile dress, though with wings and tail fully developed and functional. I have seen no description of the nest and eggs. Johnson (Proc. Linnaean Soc. New York, nos. 63-65, 1954, pp. 45-60) also on Barro Colorado Island recorded them in pairs, heard them singing frequently during March, and noted that one member of a pair often fed the other. I have noted the song as a rapid repetition of a soft note.

Stomachs that I have examined held remains of crickets, roaches, and spiders.

PITTASOMA MICHLERI Cassin: Black-crowned Ant-pitta,
Merendero

A terrestrial species, one of the largest of the family, with plump body and short tail; brown above with breast heavily barred with black and white.

Description.—Length 165–185 mm. Tail about as long as bill; tarsus very long, about half as long as wing; a small bare area behind eye. Adult male, crown and upper hindneck black; a chestnut band across hindneck; back, rump, and upper tail coverts olive-brown, with the feathers of back edged with black, producing indistinct streaks; wings chestnut-brown; wing coverts with narrow spots of white or buff, bordered with black; tertials with a terminal spot of buff; outer webs of primaries cinnamon; lower margin of lores white mixed with chestnut; feathers around eye white, more broadly on lower lid; side of head chestnut, mixed somewhat with black, or in one race wholly black; chin and throat black, mixed in greater or less amount with narrow shaft lines or spots of white and chestnut; breast and abdomen white, barred heavily with black; flanks light brown; under tail coverts buff to tawny, with a circular subterminal line of black; under wing coverts dull olive-brown, with edge of wing and distal under coverts dull white.

Immature (specimens in British Museum collected by McLeannan), barring on lower surface reduced, especially on the center of the breast, with a buffy wash on the sides and upper breast.

These are forest birds that live on the ground in dense undergrowth, where they keep carefully concealed. Probably they may be present in greater number than is now known from the few occasions when one is seen. It is certain that their total population has been reduced decidedly through forest clearing.

As a species this ant-pitta is found from eastern Costa Rica through Panamá (mainly from the Canal Zone eastward) to extreme northern Chocó, in northwestern Colombia. Two races, differing in depth of color, have been recognized.

PITTASOMA MICHLERI ZELEDONI Ridgway

Pittasoma michleri zeledoni Ridgway, Proc. U.S. Nat. Mus., vol. 6, April 11, 1884, p. 414. (Río Sucio, Heredia, Costa Rica.)

Characters.—Somewhat darker, more rufous above; side of head, including the rictal area, black, only the ear coverts brown.

Measurements.—Males (6 from Bocas del Toro and Costa Rica), wing 96.2–103.9 (100.5), tail 32.4–35.5 (33.3), culmen from base 29.7–32.3 (31.4, average of 5), tarsus 48.2–52.0 (50.1) mm.

Females (3 from Bocas del Toro and Costa Rica), wing 94.1–98.8 (95.1), tail 30.7–35.2 (32.2), culmen from base 30.2–32.0 (30.8), tarsus 48.8–51.1 (50.2) mm.

Resident. Rare in the heavy forests of western Bocas del Toro.

Peters (Bull. Mus. Comp. Zool., vol. 71, 1931, p. 322) recorded male and female taken at Almirante, November 1, 1928, by H. von Wedel. The National Museum has a male presented by the Gorgas Laboratory of Tropical Medicine collected September 11, 1961, on the upper Río Changuena by R. Hinds. These three birds are somewhat intermediate toward *michleri*, especially in chestnut mixed with the black in the cheeks, but are definitely darker.

The subspecies is little known. M. A. Carriker, Jr. (Ann. Carnegie Museum, vol. 6, 1910, pp. 626–627), collected a male and two females on the lower Río Sixaola, Costa Rica in September and October 1904. He wrote “the alarm note is loud and harsh, of a very peculiar tone. . . . It is very shy, and not entirely terrestrial, as I have seen it perched on low limbs at least six feet from the ground.”

PITTASOMA MICHLERI MICHLERI Cassin

Pittasoma Michleri Cassin, Proc. Acad. Nat. Sci. Philadelphia, vol. 14, 1860, p. 189. (Río Truandó, Chocó, Colombia.)

Characters.—Somewhat paler rufescent color on back and wings; side of head below eye rufous with little or no black; throat with lines or spots of white; slightly smaller.

A male, collected at Armila, San Blas, February 21, 1963, had the iris dark brown; mandible and cutting edge of maxilla, expanding anteriorly to include all of tip, ivory-white; rest of maxilla black; tarsus and toes neutral gray; claws light mouse brown, whiter on under surface; inside of mouth including tip of tongue, and inner surface of maxilla and mandible black; rest of tongue and posterior area of mouth dull orange-yellow.

Measurements.—Males (10 from Canal Zone, Province of Panamá, Darién, and San Blas), wing 92.3–99.8 (96.8), tail 31.5–36.3 (33.0), culmen from base 28.9–31.7 (30.4), tarsus 48.7–54.2 (52.0) mm.

Females (10 from Canal Zone, Province of Panamá, and San Blas), wing 93.4–99.4 (95.6), tail 32.0–35.0 (33.2), culmen from base 27.2–30.8 (29.1, average of 9), tarsus 48.1–52.2 (50.3) mm.

Weight, ♂ 99 grams (G. V. N. Powell).

Resident. Local, in small number, in heavy forest in the Tropical Zone, on the Pacific side from Santa Fé, Veraguas; Cerro Campana, and Cerro Azul, east through Darién; on the Caribbean side from Calóvévora, northern Veraguas; Cascajal, northern Coclé; and the Canal Zone, east through San Blas.

These large ant-pittas live in the undergrowth in heavy forest, mainly on the ground, but occasionally higher when curious regard-

ing an intruder or in feeding into the lower branches. They have been seen near ant swarms, but keep carefully under cover so that usually their presence is known from their chattering calls, as only rarely may one be seen. It is certain that they are now reduced in number in many areas due to forest destruction.

The first report for Veraguas is that of Salvin (*Proc. Zool. Soc. London*, 1867, p. 146) of two specimens labeled Santa Fé (on the Pacific slope), collected by Arcé. The second record, also by Salvin (*idem*, 1870, p. 196), lists one from Calovévora on the Caribbean side, beyond Santa Fé, taken also by Arcé. Two males and two females in the American Museum of Natural History were collected by Benson at Santa Fé in March and April 1925, at elevations of 550 to 760 meters. Another specimen was captured in a mist net on Cerro Campana, November 2, 1966, by G. V. N. Powell. W. M. Perrygo and I collected one on the Quebrada Carriaso on the south face of Cerro Azul on April 25, 1949. One received from the Biological Survey is from the Río Bayano, 15 kilometers above the mouth of the Río Mamoní, taken January 20, 1914, by H. B. Johnson. Eastward these birds are fairly common. In March 1950, at Quebrada Cauchero, on Cerro Chucantí, and at Charco del Toro, on the Río Majé, we collected four females. In Darién the bird was found by Festa in August 1895, at the Laguna de Pita on the lower Río Tuira. On Cerro Sapo specimens were taken in 1922 by Barbour, and in 1941 by the Vanderbilt expedition. We collected or recorded several on the Río Jaqué in April 1947.

Early records for the Caribbean side include Cascajal, northern Coclé, February 27, 1889, by Heyde and Lux, and in the Canal Zone, those of McLeannan, with later reports from Goldman, Jewel, and others. Single individuals have been seen from time to time by Willis and Karr near Gamboa. In eastern San Blas the species has been more common, as von Wedel secured several at Puerto Obaldía and Permé; and I collected one near Armila.

April 14, 1947, on the upper Río Jaqué, as I followed a hunting trail in heavy forest, one of these birds appeared suddenly on the ground only 3 or 4 meters distant, and ran, scolding with chattering calls, through the heavy undergrowth. I followed it slowly for nearly a quarter of an hour while it called regularly but always remained hidden. Finally, its calls ceased and I returned to the original point to continue along the trail. Then, by chance, as I looked about, the reason for the actions described became evident as in the crown of a low tagua palm I saw a large cup-shaped nest with two beautiful

eggs. Though we watched for half an hour the bird did not return. The base of the nest was a thin bed of weathered leaves. On these a thin-walled cup of fine dark-colored rootlets had been woven. The elevation of the nest was a little over a meter from the ground. The two eggs, with incubation begun, are pale, somewhat pinkish buff, one slightly darker than the other. The large end in each is marked heavily with chocolate and chocolate-brown blotches that form a cap. Tiny dots and a few larger markings tending to gray or purple are scattered sparingly over the rest of the surface. In form the eggs are between elliptical and oval. They measure 31.3×23.5 , and 32.2×23.0 mm. The cup of the nest had an inside diameter of approximately 90 mm.

In eastern San Blas, country men called this bird the *Merendero*.

The type specimen, one of the birds secured during a survey for a ship canal through Darién, according to its label, was collected by Arthur C. V. Schott (not William S. and Charles J. Wood, as stated in the original description). Cassin, who referred to it as "the most remarkable bird in the collection," named it in "honor of the commanding officer of the expedition, Lieut. N. Michler, of the U.S. Topographical Engineers."

**GRALLARICULA FLAVIROSTRIS (Sclater): Ochraceous Pygmy
Ant-pitta, Ponchito Ocroso**

Grallaria flavirostris P. L. Slater, Proc. Zool. Soc. London, pt. 24, April 26, 1858, p. 68. (Río Napo, Ecuador.)

Very small; with short tail and long legs; grayish brown above, with yellow breast.

Description.—Length 95–110 mm. Rictal bristles half as long as bill. Adult (sexes alike), crown and hindneck grayish olive, with forehead more or less dull rufous; back, scapulars, and rump brownish olive; upper tail coverts somewhat paler; wings and tail brownish; outer web of outer feather of alula ochraceous-buff; one or more of the wing coverts tipped indistinctly with tawny or rufescent brown; lores ochraceous, with an indistinct black or dusky line in central area; eye-rings ochraceous; rest of side of head mixed ochraceous and dusky; chin, throat, malar region, upper breast, sides, and flanks, tawny to ochraceous, the breast usually with a few indistinct edgings of dull black; feathers of lower foreneck white basally, this sometimes showing as a spot of white; abdomen and center of lower breast white; under tail coverts pale buff; under wing coverts and the carpal edge of the wing ochraceous; anterior under coverts, in

some, dusky; inner wing feathers edged on inner web with cinnamon-buff.

Immature, with feathers of breast more heavily edged with dusky, producing more definite lines than in the adult.

As a species this small ant-pitta is found from Costa Rica and Panamá to northern South America where it is known in the Andes from Colombia south to Bolivia. Two of the eight subspecies currently recognized are found in the Republic of Panamá. These birds are poorly known, with very little recorded concerning them.

GRALLARICULA FLAVIROSTRIS COSTARICENSIS Lawrence

Grallaricula Costaricensis Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, 1866, p. 346. (Barranca, slopes of Volcán Poás, Costa Rica.)

Grallaricula vegeta Bangs, Proc. New England Zoöl. Club, vol. 3, January 30, 1902, p. 42. (1220 meters elevation, Bocas del Toro.)

Characters.—Upper surface faintly grayer, with the crown nearly uniform in shade with the back; bill averaging very slightly smaller.

Measurements.—Males (5 from Chiriquí, Veraguas, and Costa Rica), wing 62.8–65.5 (64.1), tail 20.8–23.6 (22.4), culmen from base 14.9–15.6 (15.2), tarsus 20.8–22.0 (21.5) mm.

Females (7 from Chiriquí, Bocas del Toro, and Costa Rica), wing 62.3–65.3 (63.7), tail 21.5–26.5 (24.1), culmen from base 14.6–16.7 (15.5), tarsus 21.1–23.4 (22.0, average of 6) mm.

Resident. Known from a few records in the mountains of Chiriquí and Bocas del Toro, ranging east to Chitra and Calovévora, Veraguas.

The first record for Panamá is a male from the Cordillera de Tolé taken by Enrique Arcé in 1866, now in the British Museum. Salvin in his second paper on Arcé's specimens (Proc. Zool. Soc. London, 1870, p. 196) listed another from Chitra. This latter bird is not present now in the Salvin-Godman collection in London. I have seen the one from Calovévora, now catalog number 16427 in the Naturhistorische Museum in Vienna. This bird, formerly mounted for display, now in poor condition with the bill broken, is labeled "♀, Calovévora, Veragua, 1869, Arcé." W. W. Brown, Jr., collected a female at 1220 meters on the Caribbean slope in Bocas del Toro on the trail from Boquete to Chiriquí Grande. A male in the U.S. National Museum was collected for Dr. Frank Hartman at 1375 meters near El Volcán, Chiriquí, February 22, 1949. Another, a female, was taken at 650 meters on the upper Río Changuena, September 12, 1961, by R. Hinds of the Gorgas Laboratory.

GRALLARICULA FLAVIROSTRIS BREVIS Nelson

Grallaricula flavirostris brevis Nelson, Smithsonian Misc. Coll., vol. 60, no. 3, September 24 (27), 1912, p. 12. (Cerro Pirre, 1275 meters, head of Río Limón, Darién.)

Characters.—Upper surface slightly browner, with the crown faintly grayer than the back; bill a very little larger.

Measurements.—Males (3 from Darién), wing 62.5–64.1 (63.1), tail 23.8–24.3 (24.0), culmen from base 15.7–16.0 (15.9), tarsus 21.0–22.7 (21.9) mm.

Females (3 from Darién), wing 61.5–64.2 (62.6), tail 24.3–25.6 (24.9, average of 2), culmen from base 15.7–15.9 (15.8), tarsus 21.5–23.5 (22.3) mm.

Resident. Found on the higher elevations of Cerro Pirre, Darién.

This is known from two males and two females taken by E. A. Goldman, April 23, May 1 and 6, 1912, from 1375 to 1580 meters elevation. The collector noted only that the first one on April 23 was "shot among the undergrowth in heavy forest."

The race is closely similar to *G. f. costaricensis*.

GRALLARIA GUATIMALENSIS Prévost and Des Murs: Scaled Ant-pitta, Hormiguero Escamoso

Grallaria guatimalensis Prévost and Des Murs, Zool. Voy. Venus, Atlas, livr. 1, "1846" (= 1842), pl. 4. (Guatemala.)

A terrestrial species of the forest floor, with heavy body, long legs, and short tail; dark above, rufescent below.

Description.—Length 162–175 mm. Adult, sexes alike, crown and hindneck slate to slate-gray, browner on the forehead, the feathers edged with black; back, scapulars and rump olive, the feathers of back and scapulars bordered by black; upper tail coverts and tail russet-brown; wings olive, with primaries, secondaries, and wing coverts more or less russet on the outer webs; a few of the coverts tipped with buff and edged with chestnut; a narrow line of white on back of upper eyelid; lores dull buff to pale gray, lined somewhat with white; side of head behind eye dark, often blackish olive, with dull white shaft lines; rictal area dull white to tawny; chin and upper foreneck olive-brown, washed with tawny, mixed in some with dusky; feathers of the lower foreneck usually white basally showing as an obscure spot; rest of lower surface tawny to tawny-ochraceous, darker on sides and under tail coverts; under wing coverts and inner margins of wings tawny-ochraceous.

Immature, crown and hindneck dull slate color lined with buff; paler below with streaks broader; wing coverts tipped more heavily with tawny. This is one of the medium-sized species of its genus, found widely mainly in Subtropical and upper Tropical Zone forests from south-central México through Central America to Perú and northern Brazil, including the island of Trinidad. The bird has varied considerably in its adaptation to change in environment, so that currently eight geographic races are recognized. Two of these are found in Panamá, one in the west, the other through the mountains east of the central lowlands.

Recent studies of the short-tailed, long-legged terrestrial ant-pittas placed currently in the genus *Grallaria* indicate important differences that appear to be of generic value. The findings have application in the three species found in Panamá, namely *guatimalensis*, *fulviventris*, and *perspicillata*. The distinctions were noted early by Ridgway (U.S. Nat. Mus. Bull. 50, pt. 5, 1911, pp. 17–18, 146–147, 152–153) when he listed *guatimalensis* under the genus *Grallaria* from its possession of rictal bristles, form of the nostril and other details, and removed *fulviventris* (with *dives*) and *perspicillata* to a genus *Hylopezus*, in which rictal bristles are lacking, the nostril form is distinct and there is difference in other details.

Recently Mary A. Heimerdinger and Peter Ames (Postilla, Peabody Mus. no. 105, 1967, pp. 1–44) in a review of the form of the posterior border of the sternum in these and other suboscine birds, confirmed Ridgway's findings in the "*Grallaria*" group, with additional characters. Thus the species *guatimalensis* has two notches, one on either side, on the posterior border of the sternum while *fulviventris* and *perspicillata* have four. The subject has been reviewed recently by George H. Lowery, Jr., and John P. O'Neill (Auk, 1969, pp. 9–12) with agreement in these and other details. While full information for all of the species involved is not yet available, what is definitely known is that under these findings the generic designations for the forms that range in Panamá are *Grallaria guatimalensis* with two races *princeps* and *chocoensis*, *Hylopezus fulviventris* with its forms *dives* and *barbacoae*, and *Hylopezus perspicillatus* with three subspecies *lizanoi*, *intermedius*, and *perspicillatus*. In these the genus name *Hylopezus* replaces *Grallaria* (as found in other writings on these birds: Hellmayr, Cat. Birds Amer., pt. 3, 1924, pp. 351–355; Peters, Check-list Birds World, vol. 7, 1951, pp. 271–273).

GRALLARIA GUATIMALENSIS PRINCEPS Sclater and Salvin

Grallaria princeps Sclater and Salvin, Proc. Zool. Soc. London, October 1869, p. 418. (Calovévora, Veraguas, Panamá.)

Characters.—More rufous; adult with breast rufous with few streaks or none; hindneck lighter gray; back and wings more reddish brown.

In a male in the British Museum (Natural History), collected by C. H. Lankester at Cachí, Costa Rica, the label records the iris as "dark brown; bill dusky horn, fleshy at base; feet fleshy leaden."

Measurements.—Males (10 from Chiriquí, Bocas del Toro, and Costa Rica), wing 109.8–113.2 (111.5), tail 35.0–41.5 (38.6), culmen from base 26.7–30.8 (28.8), tarsus 44.4–52.0 (48.8) mm.

Females (8 from Chiriquí, Bocas del Toro, and Costa Rica), wing 109.8–113.2 (111.5), tail 35.0–41.5 (38.6), culmen from base 26.7–30.8 (28.8) mm.

Resident. Found in small number in the Subtropical Zone from western Chiriquí and western Bocas del Toro to north-central Veraguas.

This form was first recorded by Salvin (Proc. Zool. Soc. London, 1867, p. 146) from a specimen collected by Arcé labeled "Santa Fe," listed in this account as *G. guatemalensis*. When a second specimen, a bird in more adult stage of plumage, came from Arcé two years later Sclater and Salvin described the bird of Panamá (idem, 1869, p. 498) as *Grallaria princeps*. A third specimen from Arcé was reported by Salvin (idem, 1870, p. 196) as from "V. de Chiriquí." In the original description Sclater and Salvin for the locality list the bird as "*Hab.* in Veragua (*Arcé*)." Sclater (Cat. Birds Brit. Mus., vol. 15, 1890, p. 314) lists the two specimens from Santa Fé and Calovévora as "Types of the species." Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 2, 1892, p. 242) included a description of *princeps* (in Latin) and at the end say (still in Latin) "Descr. exempl. ex Calovevora, Panama. Mus. nostr." This is accepted as the restricted type locality, and the specimen from Calovévora, a female, is to be regarded as the holotype. As one further comment, the original description in the Proceedings of the Zoological Society of London has the date "June 10, 1869" at the head of the page, but according to records of Charles W. Richmond the actual date of publication was in October. It may be noted also that Salvin (Ibis, July 1869, p. 312) in a paper discussing published records by George N. Lawrence wrote in a footnote "it may be remarked that *Grallaria guatemalensis* is *G. princeps* Scl. & Salv." While this appears to be

the first publication of the name *princeps* it is here a *nomen nudum*.

W. W. Brown, Jr., collecting for Outram Bangs, secured five specimens from April to June 1901 near Boquete and to 3000 meters on the higher slopes of the great volcano. Peters (Bull. Mus. Comp. Zool., vol. 71, 1931, p. 32) recorded a male taken by Wedel at 1065 meters in Bocas del Toro on the trail from Chiriquí Grande to Boquete, March 29, 1928. Blake (Fieldiana: Zool., vol. 36, 1958, p. 533) listed three in the Mönniche collection from about 1650 to 1735 meters near Lérida and Velo above Boquete. We have a male received from the Gorgas Laboratory, collected by R. Hinds at 730 meters on the upper Río Changuena, in Bocas del Toro, September 23, 1961.

Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 223) in Costa Rica reported it as ranging primarily on the Caribbean slope but crossing the divide to the Pacific side in the northwestern mountains from Tenorio to Rincón de la Vieja. The bird is described as primarily terrestrial "though when disturbed it may fly to a log or a low branch."

Rowley (West. Found. Vert. Zool., vol. 1, no. 3, 1966, pp. 160-161) described the nest of a northern paler colored race *G. g. ochraceiventris*, found at La Cima, Oaxaca, June 2, 1965, as "placed on a large fallen rotting trunk of a moss covered tree around which thick undergrowth was growing" by which it was well concealed. The "nest was composed of a large quantity of wet leaves. . . . The cup was lined with bits of moss and fine rootlets and had small twigs interspaced with the softer materials. The two eggs . . . were amazingly large for the size of the female. They were very much rounded in shape; unspotted deep robin-egg blue in color, and measured 33.1×26.0 and 31.6×25.9 mm." In an accompanying photograph the eggs appear elliptical in form.

Of the related form *Grallaria g. guatemalensis* Edwards and Lea (Condor, 1955, pp. 45-46, fig. 7) report that a nest found August 9, 1950, on the Hacienda Monserrate, Chiapas, was on a nearly horizontal log that had fallen near a small stream. The nest was cup-shaped, composed of small sticks, dry pine needles, moss, and dead leaves. The outside diameter was 165-190 mm; inside diameter 100 to 115 mm; depth of cup 50-75 mm. It held one "pale blue, blunt ended slightly glossy egg." The female when collected had a "shelled egg in the oviduct, which was pale dull blue and measured 26×35 mm."

GRALLARIA GUATIMALENSIS CHOCOENSIS Chapman

Grallaria guatimalensis chocoensis Chapman, Bull. Amer. Mus. Nat. Hist., vol. 36, 1917, p. 394. (Serranía de Baudó, Chocó, Colombia.)

Characters.—Darker on upper surface, foreneck, and breast, the latter streaked with cinnamon-buff; white on bases of feathers on center of upper foreneck in some extended to tips of the feathers to form a small white spot.

A male taken on Cerro Malí, Darién, March 3, 1964, had the iris dark wood brown; maxilla and tip of mandible black; base of mandible dull dark neutral gray, with a faint greenish cast; crus, tarsus, and toes bluish neutral gray; claws brownish neutral gray.

Measurements.—Males (3 from Darién), wing 103.8–112.6 (108.8), tail 36.9–41.1 (38.1), culmen from base 26.7–28.0 (27.5), tarsus 43.8–50.6 (47.6) mm.

Resident. Found locally in the forests of Cerro Tacarcuna, its spur Cerro Malí, and Cerro Pirre.

This dark form of the species was described by Frank M. Chapman from a male collected by Mrs. E. L. Kerr, July 13, 1912, on the higher slopes of the Serranía de Baudó in central Chocó. Griscom recorded it from Darién from a male taken by Benson, March 17, 1928, near Cana on Cerro Pirre.

As noted above, I secured a male near our camp at 1430 meters on Cerro Malí. Another, preserved in alcohol, had been caught there earlier on February 5 by C. O. Handley, Jr. March 5 I collected another near the lower camp at 575 meters at the old village site on the Río Tacarcuna. The latter was found on a sloping hillside heavily grown with forest. In preparing it I noted that in the dorsal pterylosis the elongate rhomboid was solid in the center, with no break or apterion. A narrow line of feathers extended from its lower end to the base of the tail. It is in this unlike what is found in such typical Formicariids as *Thamnophilus*.

The stomach in the two that I have prepared was strong and muscular. One was filled with fragments of medium-sized beetles, the other with bits of a millipede.

Alden H. Miller (Univ. Cal. Publ. Zool., vol. 66, 1963, p. 25) described a nest of the related subspecies *G. g. regulus*, found in late April near San Antonio, Valle, Colombia, as a "large pile of soft dead sticks . . . mixed with rotting black leaves. It was supported on . . . branches of a fallen understory shrub" in tall forest where there was a break in the canopy overhead. The main part of

the nest was about 145 mm broad and the same in depth, with the base about 300 mm across. The inner cup measured 90 mm across by 50 mm deep. The nest contained two young, probably 3 or 4 days old. "They had black down, rather heavy for a passerine, and the skin was black, matching the black nest material. The mouth and gape were orange-yellow."

The three specimens from Panamá agree in darker coloration with the type of *chocoensis*. The type, however, the only one recorded from Colombia, with the wing 93.5, tail 28.2, culmen from base 24.1, and tarsus 50.6 mm, except in tarsal length is smaller. Assignment of the three from Panamá is tentative, based on color, as possibly they may represent a distinct larger race.

**HYLOPEZUS FULVIVENTRIS (Sclater): Fulvous-bellied Ant-pitta,
Hormiguero Vientrileonado**

Grallaria fulviventris P. L. Slater, Proc. Zool. Soc. London, pt. 28, April 26, 1858, p. 68. (Río Napo, Ecuador.)

Rather small, of typical ant-pitta form; dark above, white below with buff or rufous breast streaked lightly with black.

Description.—Length 125–150 mm; without rictal bristles. Adult (sexes alike), crown and hindneck dull slate with the feathers bordered narrowly with black; lores and ring around eye cinnamon-buff; side of head below and behind eye dull buff; blackish to brownish olive above; outer webs of primaries chestnut; lower surface white, except the breast, which is buff to cinnamon, lined narrowly with dull black; sides, flanks, under tail coverts, and tibiae rufous; edge of wing and under wing coverts cinnamon; inner webs of wing feathers edged with cinnamon-buff.

As a species these birds are found on the Caribbean slope from southeastern Honduras and eastern Nicaragua through Costa Rica and western Panamá. They appear again in the eastern mountains of the Republic, and continue in South America through western Colombia to eastern Ecuador. In this area five geographic races have been recognized, two of them found in Panamá. They are little known inhabitants of undergrowth in forests of the Tropical Zone.

HYLOPEZUS FULVIVENTRIS DIVES (Salvin)

Grallaria dives Salvin, Proc. Zool. Soc. London, 1864 (February 1865), p. 582. (Tucurrique, Costa Rica.)

Hylopezus fulviventris flammulata Griscom, Amer. Mus. Nov., no. 293, January 12, 1928, p. 4. (Almirante, Bocas del Toro, Panamá.)

Characters.—Darker, blacker above on back and wings; crown and hindneck gray, with the feathers margined indistinctly with dusky; brown of under surface darker, more rufous-chestnut.

Measurements.—Males (4 from Nicaragua and Bocas del Toro), wing 75.5–81.6 (78.7), tail 28.5–31.4 (29.5), culmen from base 21.0–21.2 (21.1), tarsus 36.8–37.5 (37.2) mm.

Female (1 from Costa Rica), wing 74.4, tail 25.6, culmen from base 20.6, tarsus 37.4 mm.

Resident. Recorded from western Bocas del Toro.

Benson collected two males near Almirante in 1927, one taken May 16. Griscom described these as a separate form that he believed to differ from the population of Costa Rica and Nicaragua in faintly darker color above and darker chestnut below, with heavier black lines on the breast. The distinction does not seem justified from the limited material examined. The U.S. National Museum has a male, received from the Gorgas Memorial Laboratory taken June 22, 1962, at Almirante.

HYLOPEZUS FULVIVENTRIS BARBACOEAE (Chapman)

Hylopezus dives barbacoae Chapman, Bull. Amer. Mus. Nat. Hist., vol. 33, November 21, 1914, p. 617. (Barbacoas, Nariño, Colombia.)

Characters.—More brownish olive above; brown of flanks and under tail coverts brighter, more rufous; breast cinnamon-buff.

Measurements.—Males (10 from Darién and western Colombia), wing 74.1–79.5 (76.7), tail 28.5–33.5 (30.5), culmen from base 20.0–22.6 (21.0), tarsus 35.3–40.0 (37.8) mm.

Females (2 from Chocó and Nariño, western Colombia), wing 71.6–73.1 (72.3), tail 26.1–28.0 (27.0), culmen from base 20.2 (1 only), tarsus 32.0–37.4 (34.7) mm.

Resident. Rare in the forests of Darién.

Benson, March 19, 1928, secured a male on Cerro Pirre, as recorded by Griscom (Bull. Mus. Comp. Zool., vol. 69, 1929, p. 169). Another, in the American Museum of Natural History, was taken by Anthony and Ball at the Tacarcuna base camp, March 14, 1915. These are the only known records at present for Panamá.

This race apparently is more common in northwestern Colombia where M. A. Carriker, Jr., collected a small series in 1949 and 1950. At Quebrada Salvajín, Córdoba, on the Río Sinú, where he found it in the same forests as *Hylopezus perspicillatus pallidior*, he noted that the calls of the two were similar, except that the note of *barbacoae* was faintly weaker.

**HYLOPEZUS PERSPICILLATUS (Lawrence): Spectacled Ant-pitta,
Hormiguero de Antejos**

FIGURE 21

Rather small, with heavy body, short tail and long legs; breast and sides conspicuously streaked.

Description.—Rictal bristles absent; nasal fossae narrow, with nostrils elongate. Adult (sexes alike), crown and hindneck slate color; forehead slightly olive, in some with indefinite shaft streaks of rufous; rest of upper surface olive or brownish olive; back and scapulars with elongate spots of buff, edged and tipped narrowly



FIGURE 21.—Spectacled ant-pitta, hormiguero de antejos, *Hylopezus perspicillatus*.

with black; the markings often reduced in size and number, and restricted to the scapulars; wings browner, with wing coverts spotted heavily with buff or ochraceous; outer web of alula buff; primaries and tail feathers edged with cinnamon-buff; lores and a conspicuous eye-ring buff to ochraceous-buff; auricular region with shaft lines of buff to ochraceous-buff; a black line on malar region; foreneck and abdomen white; upper breast buff to cinnamon-buff, heavily streaked with black, these streaks continuing on sides; sides, flanks, and under tail coverts pale buff to cinnamon-buff; under wing coverts and inner webs of primaries ochraceous-buff, with some black streaks near carpal edge.

Like related species these birds are inhabitants of undergrowth in forests, ranging from the lowlands to the upper Tropical Zone. They are more common in Panamá than their close relatives, so that though shy and retiring they are more frequently seen. The species is one that has more than usual local variation with five fairly well-marked races recognized, three of them found in the Republic.

The eggs of this species (as described beyond under *H. p. lizanoi*) are heavily spotted. In this they resemble *Pittasoma michleri*, and differ from typical *Grallaria*, in which the eggs are bluish green without markings, so far as they are known.

HYLOPEZUS PERSPICILLATUS LIZANOI (Cherrie)

Grallaria lizanoi Cherrie, Proc. U.S. Nat. Mus., vol. 14, September 4, 1891, p. 342. (Las Trojas de Puntarenas, Puntarenas, Costa Rica.)

Characters.—Flanks and breast pale buff; black streaks on breast and sides averaging very slightly narrower; back somewhat more greenish olive; crown lighter gray; wing markings darker rufous, as in the race *intermedia*.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 77.6–82.5 (80.6), tail 27.5–33.3 (30.3), culmen from base 20.3–22.0 (21.0), tarsus 34.0–38.1 (36.3) mm.

Females (10 from Chiriquí and Costa Rica), wing 78.8–81.5 (80.1), tail 27.4–37.3 (30.7), culmen from base 20.8–22.8 (21.6), tarsus 33.9–36.5 (34.9) mm.

Resident. Found locally on the Pacific slope from southwestern Costa Rica to Chiriquí.

Early specimens from Panamá were collected by Arcé at Mina de Chorchá near David, and on the southern slopes of the great volcano. Others were found later at Divalá by W. W. Brown, Jr., who collected four there from October to December 1900 (Bangs, Auk, 1901, p. 367). The National Museum has a female taken by Dr. Frank A. Hartman at 1250 meters elevation near Santa Clara, Chiriquí, midway between El Volcán and the Costa Rican boundary. In the American Museum there is a male from Bugaba collected by H. J. Watson, November 3, 1903.

In the British Museum (Natural History) I have examined a set of two eggs, identified as of this race, collected at Pozo Azul de Pirris, Costa Rica, June 18, 1902, by C. F. Underwood. The ground color is pale olive-buff, heavily blotched and spotted with chocolate and dull cinnamon so that much of the underlying basal color is concealed. The markings in the main have indistinct outlines. In

form the eggs are subelliptical with the measurements 26.3×20.2 and 25.7×20.0 mm.

In a detailed account of this race in southwestern Costa Rica, Alexander Skutch (Pac. Coast Avif., no. 35, 1969, pp. 271–274) described their nests as placed in heavy forest in a tangle of vines or a bush from half a meter to a little over a meter and a half from the ground. Two examined were merely small platforms of twigs and dried leaves, with a leafy depression in the top for the eggs. A third was a thin-walled cup, built apparently by another passerine of medium size, and abandoned. The ant-pitta had placed a few leaves for a lining and then used it for its own eggs. Both parents incubate; in one instance one on the nest “apparently the male sang repeatedly, while covering the eggs.” Two eggs formed the set, in color “light gray, heavily and coarsely mottled with dark brown, which almost obscured the ground color on the thick end of some.” In one nest the eggs measured 26.2×20.6 and 27.0×21.4 mm. One egg in another measured 26.2×20.6 mm. The young at hatching have no trace of down on the dark skin.

George K. Cherrie when he described this bird was employed as taxidermist and ornithologist in the Museo Nacional of Costa Rica. He named it for Don Joaquín Lizano, Minister of State of the Republic of Costa Rica (born in Heredia, Costa Rica, in 1823, died May 28, 1901), “to whom so much is due for the material advancement and intelligent progress of various institutions of the country, including especially the Museo Nacional.”

HYLOPEZUS PERSPICILLATUS INTERMEDIUS (Ridgway)

Grallaria intermedia Ridgway, Proc. U.S. Nat. Mus., vol. 6, April 26, 1884, p. 406. (Angostura, Costa Rica.)

Characters.—Lower sides and flanks bright buff to rufous; breast band distinctly buff, with heavy black streaks; back olive with few or no buff streaks; crown very dark gray; wing markings darker, more rufous.

Measurements.—Males (10 from Nicaragua and Costa Rica), wing 78.5–84.8 (81.6), tail 22.4–30.5 (27.5), culmen from base 19.8–22.5 (21.2), tarsus 35.2–37.3 (36.0) mm.

Females (10 from Nicaragua and Costa Rica), wing 78.1–83.5 (80.4), tail 20.2–27.9 (25.5, average of 9), culmen from base 20.0–22.3 (21.2), tarsus 35.3–37.7 (36.3) mm.

Resident.—Found locally on the Caribbean slope in western Bocas del Toro.

The only record at present is that of Peters (Bull. Mus. Comp. Zool., vol. 71, 1931, p. 323) of a male taken by H. von Wedel at Cricamola near the western end of the Laguna de Chiriquí, Bocas del Toro, August 19, 1928.

The rufous sides and flanks make this the most brightly colored race of the species. In Costa Rica, Slud (Amer. Mus. Nat. Hist., vol. 128, 1964, p. 224) remarks of this shy bird that each individual or pair appears to have a "restricted forest area in which it roams about . . . It flies only when frightened, and then not far, in a low fluttering dash; usually it strikes an immobile pose or simply walks away quietly. . . . Ordinarily it progresses in rapid hops . . . but it may also patter delicately and come to sudden stops like a little plover."

HYLOPEZUS PERSPICILLATUS PERSPICILLATUS (Lawrence)

Grallaria perspicillata Lawrence, Ann. Lyc. Nat. Hist. New York, 1861, p. 303.
(Atlantic slope near the Railroad, Canal Zone, Panamá.)

Characters.—Paler throughout than the other two forms found in Panamá. Flanks grayish buff; back in most narrowly but definitely streaked with buff (in some these marks reduced or lacking); crown and hindneck paler gray; wing markings paler; breast band very pale buff.

A male, taken on the upper Río Guabal, Coclé, February 27, 1962, had the iris dark brown; maxilla dull black; tip and sides of mandible fuscous-black; lower half of mandibular rami and basal half of gonyes dull buffy white; crus and front of tarsus brownish neutral gray; sides and back of tarsus brownish gray; toes neutral gray; claws dull ivory-white.

Measurements.—Males (10 from Coclé, Canal Zone, Colón, Darién, and San Blas), wing 77.9–82.2 (79.6), tail 26.1–30.2 (28.0), culmen from base 19.2–22.8 (20.9), tarsus 34.2–36.8 (35.7) mm.

Females (10 from Coclé, Canal Zone, Colón, Panamá, Darién, and San Blas), wing 76.1–83.4 (79.9), tail 24.0–31.2 (27.7), culmen from base 19.8–21.9 (20.8), tarsus 33.8–39.6 (36.4) mm.

Resident. Found locally on both slopes from southern and northern Veraguas through Darién and San Blas; to 900 meters elevation at La Laguna on Cerro Tacarcuna.

Salvin (Proc. Zool. Soc. London, 1867, p. 146) listed this bird from Santiago and Santa Fé from the first collections received from Arcé. The American Museum of Natural History has male and female, taken by Benson at Santa Fé, March 20, 1925. The National Museum

has two collected by Heyde and Lux on May 28 and June 8, 1889 labeled from Natá, Coclé, and there is a female in the American Museum taken by these collectors at Capira, Panamá, April 7, 1888. These are the only records on the Pacific side west of the Canal Zone. As this western area was forested—in part at least—in the early period, the reports are possible. On the Caribbean slope the bird is known from the Río Calovévora in northern Veraguas, and from the head of the Río Guabal, in the upper drainage of the Río Coclé del Norte in northern Coclé. It is fairly common through the northern Canal Zone, including Barro Colorado Island. Wedel collected several at Permé and Puerto Obaldía, and I recorded others at Armila in eastern San Blas.

Though this shy forest bird is a terrestrial species that walks or hops about under low undergrowth, it also flies up to perch on open branches usually only a meter or so above the ground, but occasionally in heavily shaded forest it flies as high as 9 or 10 meters. The song is a series of clear, whistled notes, rising slightly in pitch and then descending.

In the original description Lawrence listed his type as from "New Granada, Isthmus of Panama," but in a later supplementary note (in the same reference, p. 326) he indicated that it was taken by McLeannan and Galbraith on the Atlantic slope, near the railroad, which fixes the type locality as on the northern side of the Canal Zone.

Nests have been found in the Navy Pipeline area near Gamboa by J. R. Karr from April to July, and by Ridgely in July.

Family RHINOCRYPTIDAE: Tapaculos, Tapaculos

The species in this family in the main are birds of South America, where their principal diversity is found in the southern third of the continent. Currently, 26 species are recognized divided among 11 genera. Some have the size of large thrushes or quail, lesser ones are small and wrenlike. A few of those found in the far south range under low scrub in open lands, where at any alarm they run swiftly and far. The greater number skulk hidden in the forest undergrowth and so easily escape notice. Everywhere they are shy and secretive so that their presence is revealed mainly through their calls.

Although active in walking, running over the ground, or in climbing through low shrubbery, they have only limited powers in flight. The feet are large, with the legs strong and muscular. Wings and the muscles used in flight correspondingly are reduced. As the birds move

about, the tail is held at an angle above the back, from which they have received the common name of tapaculo.

The little known of the various kinds in life indicates that some place their nests in holes dug in the ground. Others use cavities or crevices beneath loose bark on the bases of trees. The eggs, where known, number two or three, are large for the size of the parent, and are white without markings.

The genus *Scytalopus*, the only one found outside South America, with 9 species and more than 20 geographic races, ranges north from the Falkland Islands, Tierra del Fuego, and southern Chile through the Andes to the mountains of Costa Rica. Three species are represented in Panamá.

KEY TO SPECIES OF RHINOCRYPTIDAE (ADULTS)

1. Forecrown light or dark gray.
 Silvery fronted tapaculo, *Scytalopus argentifrons*, p. 255
 Entire crown black, or blackish brown..... 2
2. A well-marked grayish white superciliary line.
 Pale-throated tapaculo, *Scytalopus panamensis*, p. 259
 Side of head and crown plain, without a superciliary line.
 Nariño tapaculo, *Scytalopus viciniior*, p. 260

Immature birds in all three species are light to dark buff, spotted and barred with dusky. Specific differences in this stage are not clearly indicated in the limited series of specimens seen.

SCYTALOPUS ARGENTIFRONS Ridgway: Silvery fronted Tapaculo, Tapaculo Plateado

FIGURE 22

Small; wrenlike in form and actions; adult with gray center of crown.

Description.—Length 115–120 mm. Bill very short (definitely shorter than the head), the line of the culmen slightly depressed near center. Adult male, crown silvery gray, extending posteriorly on either side as a broad superciliary line; forehead, side of head (including area surrounding eyes), back, scapulars, wings, and tail sooty black; rump and upper tail coverts chocolate-brown; under surface from chin to abdomen slate color to blackish slate, blacker on the sides; flanks and under tail coverts deep russet-brown, barred narrowly with black.

Adult female, with the gray of the crown and superciliary darker, reduced in extent, in some nearly absent; feathers of dorsal surface

marginated indistinctly with dull brown; flanks and under tail coverts more heavily marked with russet-brown, changing on abdomen to cinnamon-buff.

Immature, feathers of dorsal surface tipped with buffy brown to dull brown, in varying amount; wing coverts, and in some the secondaries and inner primaries, with a terminal spot of this color; under surface buff to dull cinnamon-buff, tipped and barred indis-



FIGURE 22.—Silvery-fronted tapaculo, tapaculo plateado, *Scytalopus argentifrons*, male.

tinctly with dull black, the feathers blackish slate basally, the amount and depth of shade in the buff markings varying widely.

Because of its retiring habits and remote mountain haunts, this tapaculo was not found by Arcé and other early naturalists who travelled in Panamá and Costa Rica. The first known specimen, the type of the present species, was collected by Anastasio Alfaro on Volcán de Irazú, Costa Rica, on April 23, 1891. Following this, the bird was reported in western Chiriquí, where Bangs (*Proc. New England Zool. Club*, vol. 3, 1902, p. 48) recorded a series taken by W. W. Brown, Jr., in 1901.

SCYTALOPUS ARGENTIFRONS ARGENTIFRONS Ridgway

Scytalopus argentifrons Ridgway, Proc. U.S. Nat. Mus., vol. 14, October 31, 1891, p. 475. (Volcán de Irazú, Costa Rica.)

Characters.—Under surface grayer on breast and foreneck; adult male with forecrown paler gray, this color extending posteriorly on either side as a broad superciliary line; female with these head markings reduced, in some nearly absent.

An adult male, taken at 2135 meters beyond Bajo Grande, back of Cerro Punta, Chiriquí, March 4, 1955, had the iris brown; bill black; tarsus, toes, and claws fuscous. In an immature female, collected on the west face of Volcán Barú, at 2725 meters, March 2, 1965, the iris was dark brown; maxilla black; mandible fuscous-brown, with the lower margin of the mandibular rami brownish white; front of the tarsus mouse brown; back of tarsus and toes fuscous-brown; claws dark brownish neutral gray.

Measurements.—Males (10 from western Chiriquí), wing 49.2–55.8 (51.5), tail 36.2–42.9 (39.2, average of 9), culmen from base 12.6–13.9 (13.2, average of 9), tarsus 19.4–20.5 (20.1) mm.

Females (8 from western Chiriquí), wing 50.3–53.0 (51.2), tail 35.7–41.2 (37.4), culmen from base 12.2–13.4 (12.7), tarsus 18.4–20.0 (19.2) mm.

Resident. Found locally in the Subtropical and Temperate zones at 1525–2280 meters on the mountain slopes of western Chiriquí.

As stated above, the first published record for Panamá is that of Bangs (cit. supra) who recorded 7 specimens collected between February and May 1901 by W. W. Brown, Jr., on the eastern face of the Chiriquí volcano. It is interesting to note that there is an earlier specimen in the British Museum (Natural History), cataloged on July 10, 1898, with the data "Purch. of Mr. J. Watson." H. J. Watson, a former ship captain, and an early settler in the Boquete area, interested in natural history, collected mammals and birds that he sent to the British Museum. He assisted Brown in his work for Bangs, especially through permission that he gave for work on his extensive plantations.

The series collected by Mönniche in the mountain forests above Boquete, recorded by Blake (*Fieldiana: Zool.*, vol. 36, 1958, p. 533), available on loan, have been of much assistance in the present studies. C. Brooke Worth (*Bird-Lore*, 1939, p. 280), who saw this species on Mönniche's Finca Lérida, wrote of it that this "small, wrenlike bird . . . lived in very dense thickets. . . . In color it was a dark

grayish brown slate, but whenever it popped out of a nearby bush to scold me, I forgot its drab hues to delight in the broad, bluish-frosted superciliary stripe that gave its whole head a striking appearance."

Dr. Eugene Eisenmann, from his field notes, informs me that in September 1965, on the Finca Lérica he identified the voice as a sharp, chirring rattle. Once he heard a higher pitched, somewhat more musical call. In my own somewhat limited experience I have heard them giving low chattering, trilling notes as they moved about in dense undergrowth in heavily shaded woodland. On occasion they may range in more open areas, as when an adult male appeared in a low bush on the open forest floor to scold at the body of a spotted wood quail that I had shot.

The nest and eggs of the species of *Scytalopus* found in Panamá, so far as I am aware, are not yet known.

As stated by Blake (cit. supra, p. 533), the population of Chiriquí has the bill slightly larger than that of Costa Rica, but the birds are otherwise similar in size as will be seen from the following series of 10 males from that country: wing 50.2–55.9 (52.1), tail 33.6–41.7 (37.9), culmen from base 11.5–13.9 (11.2, average of 9), tarsus 19.2–22.6 (20.8) mm.

SCYTALOPUS ARGENTIFRONS CHIRIQUENSIS Griscom

Scytalopus chiriquensis Griscom, Amer. Mus. Nov., no. 141, October 31, 1924, p. 3. (Cerro Flores, eastern Chiriquí, Panamá.)

Characters.—Darker, more sooty gray on upper and lower surface; male with gray markings on crown definitely darker, and the superciliary less well marked; slightly larger; in immature dress averaging darker.

Measurements.—Males (two from Cerro Flores and Chitra, Veraguas), wing 55.2, 56.8; tail 38.8, 49.0; culmen from base 13.0, 14.2; tarsus 20.0, 20.4 mm.

Females (three from Chitra, Veraguas), wing 53.0–54.5 (53.5), tail 37.4–42.8 (40.8), culmen from base 12.8–13.5 (13.2), tarsus 19.8–21.0 (20.3) mm.

Resident. Recorded from Cerro Flores, eastern Chiriquí, and Chitra, on the Pacific slope of the mountains of eastern Veraguas.

In addition to the original description, Griscom (Nat. Hist., vol. 24, 1924, p. 516) mentions the type specimen, taken by R. R. Benson on Cerro Flores, as a member of a genus of "small wrenlike birds of secretive habit." Later, in February 1926, Benson collected a male

and three females at 1100 meters near Chitra, near the boundary with the Province of Coclé.

Zimmer (Amer. Mus. Nov., no. 1044, 1939, p. 17), from an erroneous identification of 4 specimens of *S. a. argentifrons* in immature plumage from Boquete, listed birds from that locality under the name "*S. chiriquensis*." Peters (Check-1. Birds World, Pt. 7, 1951, p. 285), although he correctly identified the material in the Museum of Comparative Zoology from Boquete as *argentifrons*, in personal conversation told Dr. Eisenmann that he had included the locality Boquete also under *chiriquensis* from the erroneous report by Zimmer. It has not yet been recorded on the adjacent mountain ridges of Bocas del Toro, but is assumed to occur in that area.

From information now available in Panamá, this species ranges from near the Costa Rican boundary to the mountains of Veraguas. The eastern group, described in 1924 as a distinct species *chiriquensis*, is here listed as a geographic race of *argentifrons*.

SCYTALOPUS PANAMENSIS Chapman: Pale-throated Tapaculo,
Tapaculo de Tacarcuna

Scytalopus panamensis Chapman, Auk, vol. 32, no. 4, October 4, 1915, p. 420.
(Head of Río Cutí, east base of Cerro Tacarcuna, Chocó, Colombia.)

Small; adult with a well-marked light gray superciliary, but crown without gray; brown of flanks brighter.

Description.—Length 115–120 mm. Compared to *Scytalopus argentifrons*, bill larger; crown plain sooty black; superciliary much paler gray; under surface lighter gray, with flanks and abdomen brighter brown. Adult male, top of head, hindneck, upper back, scapulars, and wing coverts sooty black; a strongly marked, pale grayish white superciliary, extending to back of crown; lower back, rump, and upper tail coverts cinnamon-brown, barred narrowly with sooty; wings and tail faintly brownish black; lores dull gray; space around eye and side of head sooty black; foreneck and upper breast plain gray; tips of feathers of lower breast and abdomen paler, lighter gray, with the darker bases partly visible, producing a mottled appearance; flanks and under tail coverts cinnamon-brown barred with sooty black.

Adult female, similar, except that the back, scapulars and wings are definitely browner, and the rump, flanks, and under tail coverts somewhat brighter.

No immature individuals have been seen among the more than 20 specimens examined.

An adult male, collected on Cerro Mali, Darién, February 20, 1964, had the iris dark brown; bill black; front of lower half of tarsus and the top of the middle anterior toes brownish white; upper half, sides, and back of tarsus and the outer toes, dark brown; three anterior claws fuscous-brown; posterior claw darker, blacker; concealed skin of the region around the ear opening dull yellow.

Measurements.—Males (10 from the slopes of Cerro Tacarcuna, and its spur Cerro Malí, Darién), wing 52.5–57.7 (54.2), tail 36.8–42.9 (40.3, average of 9), culmen from base 14.0–15.2 (14.4), tarsus 20.7–22.0 (21.4) mm.

Females (7 from the same localities as the males), wing 51.0–57.8 (53.9), tail 33.8–41.0 (38.6, average of 6), culmen from base 14.2–15.4 (14.3), tarsus 20.6–22.7 (21.5) mm.

Resident. Found in Darién on the slopes of Cerro Tacarcuna, including Cerro Malí, from 1100 to 1460 meters.

In February 1964, we found these small birds common along the ridge of Cerro Malí and the adjacent slopes of Cerro Tacarcuna. They were seen in pairs, usually around fallen tree trunks, always low down on or only a short distance above the forest floor. Occasionally one paused to give a piping song, a repetition of a single note, *tseety-seety seety seety*. This was heard often when the bird was concealed in the low ground cover. We found them regularly on the high crest of the main ridge of Tacarcuna where they ranged along the international boundary in both Panamá and Colombia. Always, in appearance the rather heavy body and short tail suggested a wren. In handling them during preparation of study skins I found the body as a whole elongated with the breast muscles and the keel of the sternum only slightly developed. The leg muscles were large and strong. The broad operculum over the nostril was somewhat soft, and larger than it appears in study skins, as it shrinks slightly in size as the specimen dries.

SCYTALOPUS VICINIOR Zimmer: Nariño Tapaculo,
Tapaculo Piquigrueso

Scytalopus panamensis vicinior Zimmer, Amer. Mus. Nov., no. 1044, October 11, 1939, p. 11. (Ricaurte, 1525–1825 meters, Nariño, Colombia.)

Bill short, heavy; crown wholly sooty black; no superciliary line.

Description.—Adult male, crown and hindneck dark gray, basally edged with sooty black (producing a faintly mixed pattern); upper back and scapulars somewhat browner; lower back dark chestnut-brown; rump and upper tail coverts brighter brown; barred narrowly

with black; wings and tail brownish black; side of head, foreneck, and upper breast dark gray, with slight indication of partly hidden, paler gray bases, producing a faintly mottled appearance; flanks, abdomen, and under tail coverts rather dark cinnamon-brown, barred with black; axillars dull cinnamon-brown; under wing coverts dark gray.

Adult female, crown and hindneck dark brownish gray; rest of dorsal surface, including wings and tail, distinctly brighter brown; foreneck and breast lighter gray; otherwise like adult male.

Measurements.—Male (one specimen), wing 53.8, tail 38.5, culmen from base 14.4, tarsus 21.1 mm.

Female (one specimen), wing 53.1, tail 38.3, culmen from base 13.5, tarsus 21.8 mm.

Resident. Recorded from the head of Río Limón, Cerro Pirre, Darién.

This form is known in Panamá from two specimens taken by Oliver P. Pearson at 1525 and 1410 meters, on Cerro Pirre, May 11, 1938. Pearson informs me that in company with Ratibor Hartmann he found them near the old camp site occupied by E. A. Goldman in 1912. The specimens, now in the collection of the Academy of Natural Sciences in Philadelphia have been on loan to me for study, through the courtesy of R. M. de Schauensee.

Scytalopus vicini was described by Zimmer for a population ranging along the western Andes of Colombia south to western Nariño, and the continuation of this mountain range in northwestern Ecuador. With the Colombian specimens he included also the two listed above from Cerro Pirre.

His allocation of *vicini* as a race *Scytalopus panamensis* is not accepted, as *panamensis* differs in its strongly marked pale grayish white superciliary. It should be noted also that Cerro Pirre is an isolated mountain, separated geographically from the Western Andes of Colombia by the lowlands of the Río San Juan and the lower Atrato. The two specimens appear allied to *vicini* in lack of the light superciliary, but differ in the definitely heavier basal half of the bill. They also are somewhat darker on the upper surface. It seems probable that with more material those of Pirre may be found to represent a distinct subspecies.

Family COTINGIDAE: Cotingas, Cotingas

This interesting group of the American tropics is another of those considered to be South American in origin, and to have spread

northward with the formation of the Panamanian land bridge. Under present understanding it includes 73 species, of which 20 are resident in Panamá. To the northward cotingas diminish in number, until six are known in México, with one, the Rose-throated Becard, found rarely northward near the Mexican boundary in southeastern Arizona, and in the lower Rio Grande Valley in southern Texas.

Most members of the family superficially more or less suggest tyrant flycatchers (family Tyrannidae) in appearance and habits. Some, however, like the fruit-crows, vary in communal habit, as they live regularly in small groups or bands. Others, the bellbirds and umbrellabirds, are highly specialized in modification of head ornamentation, and in voice. The bellbirds locally are common and widely distributed in forested areas, but are so secretive that their presence is known mainly from their ringing, metallic calls. The even stranger umbrellabirds are rarer and more retiring, so that in spite of large size they are seldom seen, and little information on them and their manner of life is available.

Several of the smaller species of the family are widespread and are common. Some come regularly with other berry-eating birds to feeding trees. Several build large domed nests that may be readily visible, but often are protected through location on branches near colonies of stinging wasps, or of biting and stinging ants.

The classification of several kinds in this family has not been wholly certain. In the present account for those of Panamá recent studies of the anatomy of the syrinx has brought the transfer of four generic groups long considered cotingas to the tyrant flycatcher family (Tyrannidae).

In earlier years the group was known as the chatteringers. More recently in both Spanish and English they are called cotingas, a name for them in an Indian language of South America.

KEY TO SPECIES OF COTINGIDAE

1. Larger, wing more than 200 mm; head with a conspicuous crest; an extensive area bare of feathers on the sides of the neck, or, in adult males, the entire foreneck bare.
 - Bare-necked umbrellabird, *Cephalopterus glabricollis*, p. 306
 - Smaller, wing less than 175 mm; head not prominently crested; neck normally feathered 2
2. Mouth deeply cleft, the angle of the rictus extended back beneath the eye; males with three long, pendant head wattles; females with a rudimentary wattle back of the rictus on either side; chin extensively bare.
 - Three-wattled bellbird, *Procnias tricarunculata*, p. 302
 - Mouth normal; head without wattles; chin not extensively bare. 3

3. Plumage black, except for reddish-purple foreneck and upper breast in male.
 Purple-throated fruit-crow, *Querula purpurata*, p. 299
 Plumage not extensively black..... 4
4. Upper surface, upper breast and sides bright blue..... 5
 Upper surface, breast and sides not bright blue..... 6
5. Tenth, outermost primary shorter than the ninth to the sixth; deeper blue.
 Adult male, Natterer's cotinga, *Cotinga nattererii*, p. 266
 Ninth and tenth outer primaries shorter than the eighth to the sixth, with
 the ninth definitely narrowed at the tip; lighter blue.
 Adult male, Ridgway's cotinga, *Cotinga ridgwayi*, p. 264
6. Under surface pale buff to buffy white, spotted heavily with dusky.... 7
 Under surface with few or no spots..... 8
7. Under surface slightly darker buff.
 Adult female, Natterer's cotinga, *Cotinga nattererii*, p. 266
 Under surface paler, lighter buff.
 Adult female, Ridgway's cotinga, *Cotinga ridgwayi*, p. 265
8. Upper surface and wings (except wing tips in one species) white or faintly
 pale gray on crown and tail..... 9
 Upper surface and wings not white..... 11
9. Bill yellow except for black line on culmen.
 Adult male, Antonia's cotinga, *Carpodectes antoniae*, p. 268
 Bill black to neutral gray..... 10
10. Wings plain white; crown and tail very pale gray.
 Adult male, Snowy cotinga, *Carpodectes nitidus*, p. 269
 Wings tipped with black; tail white, the central feathers in some spotted
 lightly with black. Adult male, White cotinga, *Carpodectes hopkei*, p. 272
11. Upper surface, crown to tail, dark to slaty gray, without markings.... 12
 Upper surface, crown to tail, not wholly plain gray without markings.. 14
12. Bill yellowish brown on base, dull brown to black elsewhere.
 Adult female, Antonia's cotinga, *Carpodectes antoniae*, p. 268
 Bill black to neutral gray..... 13
13. Smaller; wing 125-135 mm; somewhat paler gray.
 Adult female, Snowy cotinga, *Carpodectes nitidus*, p. 270
 Larger; wing 143-150 mm; somewhat darker gray.
 Adult female, White cotinga, *Carpodectes hopkei*, p. 272
14. Large, wing more than 95 mm; wings black, with little or no white
 edging. 15
15. Space around eye and lores bare, except for scattered, hairlike bristles;
 bill stout, arched, with the mandibular rami as long as the gonys; base
 of bill and side of head in life dull red.
 Masked tityra, *Tityra semifasciata*, p. 288
 Side of head and lores closely feathered; bill flattened, relatively broader,
 wholly black, with the gonys decidedly longer than the mandibular rami.
 Black-crowned becard, *Erator inquisitor*, p. 294
16. Crown black 17
 Crown not black..... 21
17. Back black 18
 Back gray 20

18. Wings and back plain; larger, wing more than 80 mm.
 Adult male, One-colored becard, *Platypsaris homochrous homochrous*, p. 286
 Scapulars and wings marked prominently with white..... 19
19. Under surface plain gray.
 Adult male, White-winged becard, *Pachyramphus polychopterus similis*, p. 281
 Under surface whitish to yellowish, barred narrowly with dark gray.
 Barred becard, *Pachyramphus versicolor costaricensis*, p. 273
20. Tail black, tipped with white; forehead white.
 Adult male, Black-and-white becard, *Pachyramphus albogriseus ornatus*, p. 284
 Tail gray, forehead black, like crown.
 Adult male, Cinereous becard, *Pachyramphus rufus*, p. 279
21. Lower surface partly or wholly pale yellow..... 22
 Lower surface cinnamon-buff to nearly white..... 23
22. Crown and back grayish brown, smaller, wing less than 75 mm.
 Female, White-winged becard, *Pachyramphus polychopterus similis*, p. 281
 Crown bright brown, with a black band on sides and nape.
 Female, Black-and-white becard, *Pachyramphus albogriseus ornatus*, p. 285
23. Larger, wing more than 80 mm.
 Adult female, One-colored becard, *Platypsaris homochrous homochrous*, p. 286
 Smaller, wing less than 80 mm..... 24
24. Alula and outer primary coverts wholly or partially black.
 Female and immature male, Cinereous becard, *Pachyramphus rufus*, p. 279
 Alula and primary coverts brown.
 Cinnamon becard, *Pachyramphus cinnamomeus*, p. 275

COTINGA RIDGWAYI Zeledón: Ridgway's Cotinga,
 Cotinga de Ridgway

Cotinga ridgwayi Zeledón, in Ridgway, Proc. U.S. Nat. Mus., vol. 10, April 25, 1887, p. 1, pl. 6, figs. 3, 4. (Pozo Azul de Pirris, Costa Rica.)

Medium size; male bright blue, throat and spot on breast purple; female, buffy on lower surface, spotted with dusky.

Description.—Length 170–185 mm. Male, with ninth and tenth primaries definitely shorter than the eighth, the tip of the ninth much narrowed; female with the eighth and ninth slightly narrower; upper tail coverts shorter, not more than two-thirds length of tail. Adult male, bright blue (the feathers black at base); wings and tail black, with the wing coverts and secondaries edged with bright blue; a narrow black orbital ring; a narrow line of black on forehead at base of bill and on anterior lores; chin bright blue mixed with black; throat, foreneck, and upper margin of breast blackish purple; center of breast and upper abdomen dark purple; rest of lower surface

bright blue; axillars and under wing coverts black, edged with bright blue.

Female, above blackish brown to sooty, the feathers edged with white to buffy white; wings dull black, edged lightly with cinnamon; lesser wing coverts edged with white to buffy white; middle and greater coverts edged with cinnamon; tail dull black, tipped lightly with pale buff or cinnamon; under surface buff to buffy white; upper foreneck spotted indistinctly with grayish brown; rest of under surface with larger, elongate spots of dark grayish brown; center of lower abdomen and under tail coverts buff; axillars and under wing coverts buff to cinnamon-buff, the wing coverts spotted lightly with dusky; primaries and secondaries edged with buff.

Immature male, like female, but with blue feathers of adult scattered through the plumage; an indistinct spot of dull red on lower throat.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 100.1–107.6 (103.1), tail 58.2–62.9 (60.2), culmen from base 14.0–15.9 (14.9), tarsus 20.0–21.7 (20.6) mm.

Females (4 from Chiriquí and Costa Rica), wing 102.7–106.3 (104.3), tail 59.2–65.2 (62.1), culmen from base 15.4–16.5 (15.9), tarsus 20.8–22.2 (21.4) mm.

Resident. Rather rare in high forest in the upper Tropical and lower Subtropical Zones in western Chiriquí.

This interesting species was reported for the Republic first by Salvin (Proc. Zool. Soc. London, 1870, p. 200) from an immature specimen taken by Arcé in Chiriquí in 1870, without indication of definite locality. It was listed with a query as the related species *Cotinga amabilis*, with doubt expressed as to its identity. Salvin and Godman later (Biol. Centr.-Amer., Aves, vol. 2, 1891, p. 139) identified it definitely as *C. ridgwayi*, and recorded the locality as Bugaba. In July 1901, W. W. Brown, Jr., who collected two males at Bugaba, reported it as rare and local, "seldom taken by the feather hunters."

In recent field work near El Volcán around the lakes and the base of Cerro Pando, we have found it with fair regularity but in small number. It ranges also in the hills at Santa Clara toward the Costa Rican boundary.

In early morning single individuals may rest in the tops of tall dead trees, sometimes at the border of clearings, occasionally in trees standing in forest. In such locations they may shift about among the branches, but aside from this rest quietly. Others have come to guarumos (*Cecropia*), or to trees with ripening berries, feeding there

among other birds. Their flight is direct and fairly rapid, accompanied by a rattling sound, heard when birds are near.

In southwestern Costa Rica they are more numerous, as Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, pp. 225–226) found them fairly common from the Gulf of Nicoya to Golfo Dulce, and inland from the coastal lowlands to 1375 meters along the slopes of the mountains. Near Golfo Dulce they ranged in the borders of mangroves. He recorded the call as “a high-pitched thin and level whistle lasting almost a full second.”

Skutch (Pac. Coast Avif., no. 35, 1969, pp. 78–79), in this same region, found a nest about 9 meters above the ground in a tree rising in second growth near heavy forest. The shallow cup of coiled tendrils and other plant material was built slowly during a period of nearly a month by the female alone, with no male in attendance. The two eggs, examined by means of a mirror fastened to a pole, were “buffy, speckled all over with brown which was heaviest on the thick end.”

**COTINGA NATTERERII (Boissonneau): Natterer's Cotinga,
Cotinga Azul Mayor**

Ampelis Nattererii Boissonneau, Rev. Zool., vol. 3, January 1840, p. 2.
 (“Bogotá,” = forests of the lower Río Magdalena, Colombia.)

Medium size; male bright blue, throat black with a faint purple sheen; breast purple; female, paler than that of Ridgway's cotinga, more buff below.

Description.—Length 180–200 mm. Male with only the tenth primary shorter than the others, the ninth not narrowed distally. Female with the outer primaries not narrowed; upper tail coverts in both sexes longer, more than two-thirds to more than three-fourths as long as the tail.

Adult male, bright blue (the feathers basally black); on upper surface crown and hindneck darker blue than back; a black orbital ring, broader in front of eye; black line at base of bill very narrow, not extending on loreal area; wings and tail black; inner primaries and secondaries, and central rectrices edged narrowly with blue; middle and lesser wing coverts blue, in part with black bases showing; greater coverts black, edged narrowly with blue; chin bright blue mixed with black; throat, foreneck, and upper breast black with a faint purple sheen; a central area on lower breast and abdomen purple; axillars and under wing coverts black, edged with blue.

Female, above dull grayish brown, the feathers edged narrowly

with dull white; an indistinct narrow line of dull white back of nostrils and on anterior lores; wings and tail brownish black; lesser and middle coverts edged with dull white; greater coverts, secondaries, and inner primaries bordered with cinnamon-buff to white; rectrices with inner webs edged with cinnamon-buff; lores and under surface buff to pale cinnamon-buff, with the feathers centrally dull blackish to grayish black; under tail coverts cinnamon-buff; under wing coverts, edge of wing, inner border of primaries and secondaries cinnamon-buff.

Immature male, like female, with blue feathers appearing irregularly over body.

A male, taken at El Real, Darién, January 8, 1964, had the iris very dark brown; base of culmen and side of mandible behind nostril pale greenish gray; rest of maxilla black, of mandible neutral gray, shading to pale greenish gray on base; tarsus and toes dusky neutral gray; claws black.

Measurements.—Males (10 from Canal Zone, eastern Province of Panamá, and Darién), wing 102.5–112.0 (108.8), tail 65.0–70.4 (66.6), culmen from base 14.6–17.7 (16.6), tarsus 21.4–22.5 (21.8) mm.

Females (10 from eastern Province of Panamá, and northwestern Colombia), wing 106.2–111.1 (108.3), tail 64.5–69.5 (66.7), culmen from base 15.4–17.4 (16.4), tarsus 21.6–23.8 (22.3) mm.

Resident. Locally fairly common from the Canal Zone east to Colombia on both Pacific and Caribbean slopes.

A male, collected in 1914 by A. Chaves at Chorrera, western Province of Panamá, on the Pacific side a few kilometers west of the Canal Zone boundary, is the most western record. Another comes from near Cocolí, on the Pacific side of the Canal Zone, taken August 3, 1955. The species, found regularly at Barro Colorado Island, was taken by McLeannan a hundred years ago near Lion Hill. Farther east on the Pacific slope I found it at Charco del Toro on the Río Majé; on the Río Tuira at El Real, at the mouth of the Río Paya, and on the Río Chucunaque at the mouth of the Tuquesa. Others have been recorded from Tigre on the Río Cupe, in this valley, and from Garachiné on the coast. Wedel collected a series at Permé and Puerto Obaldía in eastern San Blas.

They live mainly in the leafy screen of the high tree crown, where usually they are hidden from the ground. As they are not active in movement, I have observed them more as they have come to feed in fig and other fruit trees. Once, on February 22, 1959, a female

at our camp on the Río Paya came to a low perch to peer at the ground, apparently in search of nesting material.

On Barro Colorado Island, Dr. Chapman recorded nests in February and March, the site being nearly 30 meters above the ground with the nest placed at the base of epiphytes growing on a horizontal limb. Nest-building and the care of the young were the task of the female, with no male in attendance. It was noted that the young were covered with white down, and that they were fed on berries.

The species continues in the tropical forests of western Colombia, east through the lower Sinú and Cauca valleys to the middle Río Magdalena, and south along the Pacific Coast to northwestern Ecuador.

CARPODECTES ANTONIAE Ridgway: *Antonia's Cotinga*,
Cotinga de Antonia

Carpodectes antoniae "Zeledón, Mss.," Ridgway, *Ibis*, ser. 5, vol. 2, January 1884, p. 27, pl. 2. (Pozo Azul de Pirris, Costa Rica.)

Medium size; male white; bill yellow, with a black line on the culmen. Female dark gray, with white abdomen; bill dark.

Description.—Length 195–210 mm. Adult male, crown very light gray; wings pure white; upper surface, from hindneck to tail, with a faint grayish wash; under surface, including wing coverts and under side of wings, pure white.

Adult female, upper surface brownish gray, darker on the crown; primaries, secondaries, middle and greater coverts and alula, blackish slate; coverts and secondaries edged with white; tail brownish slate; side of head and lores pale gray; a narrow white eye-ring; chin white; foreneck, upper breast and sides pale gray; abdomen, flanks, under tail coverts, axillars, under wing coverts, and inner margin of primaries white.

Bill in the adult male yellow, with the culmen black; in female, culmen blackish brown, rest of bill yellowish to brownish yellow.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 133.1–144.4 (139.2), tail 60.0–68.3 (64.1), culmen from base 17.5–22.2 (19.7), tarsus 24.1–25.9 (25.0) mm.

Females (5 from Costa Rica), wing 122.9–131.1 (127.1), tail 56.4–63.8 (59.5), culmen from base 17.6–20.3 (19.0), tarsus 23.1–24.1 (23.5) mm.

Status not certain. One record for Pedregal, the port of David, Chiriquí; and a sight record near Puerto Armuelles, Chiriquí.

On August 10, 1901, as W. W. Brown, Jr., completed a season's

field work in the mountain area of western Chiriquí and came down to the coast, he shot two males in the scrub at Pedregal. These were the only ones seen, and are the only specimens as yet reported for Panamá (see Bangs, Proc. New Eng. Zoöl. Club, vol. 3, 1902, p. 41.) One is in the Museum of Comparative Zoology, the other was presented to the U.S. National Museum by Mr. Bangs.

At the head of the Río Corotú back of Puerto Arnuelles, Chiriquí, in early morning on February 10, 1966, as I climbed the wooded slope toward the boundary with Costa Rica, half way up in heavy forest I saw a male of this species fly into the top of a tall tree. It moved along through the tree crown before we came near. A female flew past without stopping.

According to Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, pp. 226-227) this species is fairly common at several coastal localities in southwestern Costa Rica, from the Gulf of Nicoya to Golfo Dulce. He notes that "I saw it usually in groups to the size of small flocks, almost invariably in tall trees and typically in the mangroves and contiguous tall woodland. . . . In the mangroves individuals are almost constantly flying about. . . . The bird flies easily and well either in the direct, flowing manner of a pigeon or in long and shallow, tityra-like dips. The note is a dovelike or trogonlike "cah" or "cow," ending in a throaty scrape . . . The birds call seldom."

The nest and eggs are unknown.

Search should be made for this species in the mangroves among the islands and swampy shores on the coast of Chiriquí from below Pedregal eastward.

The type specimen collected in May 1883, presented to the U.S. National Museum by José Zeledón, was taken by his brother Juan. The species was named for their sister, Antonia Zeledón de Araya.

CARPODECTES NITIDUS Salvin: **Snowy Cotinga, Paloma del Espíritu Santo**

FIGURE 23

Carpodectes nitidus Salvin, Proc. Zool. Soc. London, 1864 (February 1865), p. 583, pl. 36. (Tucurrique, Costa Rica.)

Medium size; male white, with black bill; female like that of Antonia's Cotinga, but bill black or slate.

Description.—Length 195-210 mm. Adult male, crown and hind-neck pale bluish gray; back, scapulars, rump, upper tail coverts, tail, alula, greater wing coverts and primaries very pale gray; sides of

head, including lores, and entire under surface, including the under wing coverts, pure white; narrow bare margin of eyelids black.

Adult female, upper surface brownish gray, pileum somewhat blacker; primaries and primary coverts black; secondaries, middle and greater coverts blackish slate, edged with white and grayish white; narrow bare edge of eyelids black; a narrow ring around eye white; rest of side of head brownish gray; chin narrowly white;

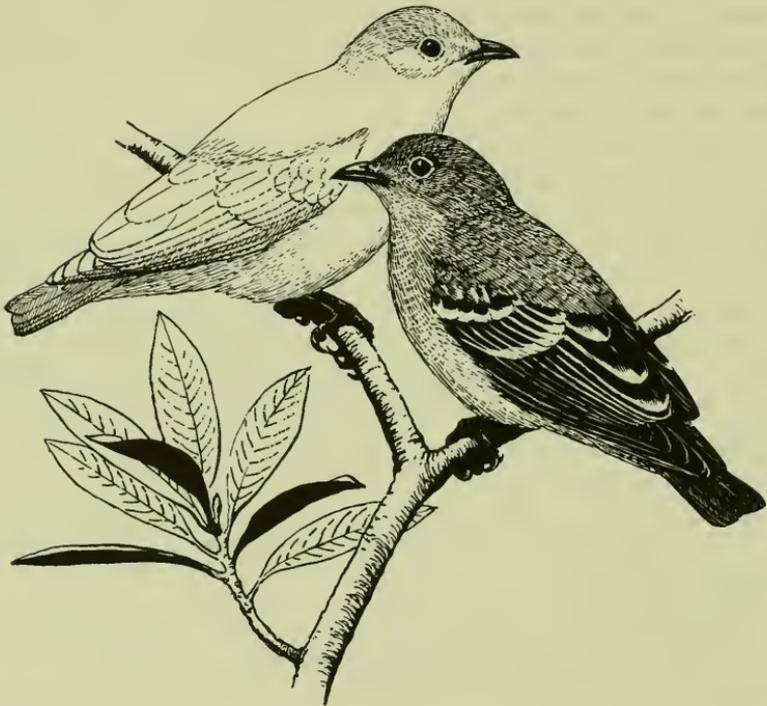


FIGURE 23.—Snowy cotinga, paloma del espíritu santo, *Carpodectes nitidus*, male above, female below.

foreneck, upper breast, and sides pale gray; lower breast, abdomen, flanks, and under tail coverts white; outer under wing coverts blackish gray; axillars, rest of under wing coverts, and edging of inner side of primaries white.

Nestling (Amer. Mus. Nat. Hist. no. 494659, San Carlos, Costa Rica, March 23, 1891), wings and tail about one-third grown; covered closely with soft white down feathers, those on upper surface tipped narrowly with dull grayish brown, most heavily on back of head.

An adult male, taken below Almirante, Bocas del Toro, February 15, 1958, had the iris dark hazel brown; culmen dusky neutral gray; rest of bill pale neutral gray; tarsus and toes fuscous, with the pads on the under surface of the toes dull brown; claws black.

Measurements.—Males (10 from Nicaragua, Costa Rica, Bocas del Toro), wing 134.5–145.3 (139.0), tail 62.2–70.0 (64.4), culmen from base 19.5–21.4 (20.3), tarsus 24.5–26.5 (25.6) mm.

Females (10 from Nicaragua, Costa Rica, Bocas del Toro) wing 129.0–143.5 (133.1); tail 59.2–69.2 (63.1), culmen from base 19.2–20.9 (20.1), tarsus 23.0–26.5 (24.6) mm.

Resident. Uncommon near Almirante, Bocas del Toro.

This cotinga was first recorded from Panamá by F. H. Kennard, who collected a female on the Río Occidente, below Almirante, March 20, 1926. Kennard (in Kennard and Peters, Proc. Boston Soc. Nat. Hist., vol. 38, 1928, p. 458) wrote that it "was uncommon on the Western River near Almirante, where it was found only in the tops of very tall trees, and it was seen also along the Boquete Trail at about 1000 feet." Following this, Wedel collected a series of six males, three females, and another with sex not marked, near Almirante in May and August 1927, and August 1928 (Peters, Bull. Mus. Comp. Zool., vol. 71, 1931, p. 329). Griscom (Amer. Mus. Nov., no. 293, 1928, p. 1) also recorded it from collections made by R. R. Benson near Almirante in the summer of 1927.

In 1958, on the early morning of February 14, I saw a male in a dead tree top near the mouth of Quebrada Pastores south of Almirante, but it flew as I walked toward it and disappeared. The following morning in forest on the lower Río Occidente, when three of these cotingas came to a tall tree, I shot a beautiful adult male. Because of the short legs the birds rest with the feathers of the abdomen against the perch, and the body tilted slightly forward. The shape of the head, with the feathers of the forecrown puffed, gives them a pigeon-like appearance, so that my Panamanian helper thought that the bird taken was a dove. The plumage was dense, with abundant white down slightly greasy like powder down on my fingers. A few days later I saw another male at this point, sitting alertly erect with the neck elongated. It flew as we beached our canoe.

In Costa Rica, according to Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 226) this species "is known from a few localities grouped along the eastern edge of the central highlands. It inhabits virgin forest, especially in broken, hilly terrain, and troops about in groups through or above the canopy. . . . It regularly visits clear-

ings or plantations with tall shade trees adjoining the forest. Here the bird occurs either singly or in small groups of several separated individuals usually in the upper branches of the taller trees."

Nothing is known of the nest and eggs.

CARPODECTES HOPKEI Berlepsch: White Cotinga, Cotinga
Piquinegro

Carpodectes hopkei Berlepsch, Orn. Monatsber., vol. 5, November 1897, p. 174.
(San José, Río Dagua, Valle, Colombia.)

Medium size (slightly larger than the two related species); male whiter above, bill blacker; primaries with black spots at tip; female, darker above, bill larger, black.

Description.—Length, males 235–250 mm., females 220–235 mm. Adult male, white throughout, very faintly duller on crown, back, and tail; five outer primaries with a black spot at tip (some, possibly younger, have black tips on all primaries, and larger spots on the end of the tail); bare narrow edge of eyelids black.

Adult female, upper surface, brownish black; wings and tail dull black; wing coverts, secondaries, and inner primaries edged with white; a faintly indicated whitish ring around eye; bare skin of edge of eyelids black; lores, side of head, and upper throat gray; foreneck, sides, and upper breast slightly darker gray; abdomen, flanks, under tail coverts, axillars, under wing coverts, and edging on inner surface of inner primaries white.

Immature male, similar to adult female, but gray of dorsal surface paler; white edgings on wings somewhat more extensive.

Measurements.—Males (10 from western Colombia and Darién), wing 153.1–169.0 (162.1), tail 80.2–94.7 (89.1), culmen from base 19.9–23.4 (21.9), tarsus 24.4–25.6 (24.9) mm.

Females (8 from western Colombia), wing 137.3–149.9 (144.3), tail 74.8–87.5 (80.9), culmen from base 20.2–22.7 (21.1), tarsus 23.1–25.5 (24.2) mm.

Resident. Fairly common from 300 to 600 meters elevation on the Cerro de Nique, Darién. Reported also by sight records from the lower slopes of the Serranía del Sapo near Garachiné, and above Bahía Piñas.

Thomas Barbour and W. S. Brooks in 1922, in their field study of the birds of Darién (Bangs and Barbour, Bull. Mus. Comp. Zool., vol. 65, 1922, pp. 193, 212) were located during April at a camp on Cerro Sapo in rain forest below 450 meters on the headwaters of Río San Antonio, back of the town of Garachiné. Their account re-

lates that "after this camp was located two long trails were cut leading up two high hogback spurs of the main range. One of these led to the ridge called La Jarcía where trees were cut down until a fine look-out was cleared. . . . We were always looking for white Cotingas and several were seen from our clearing evidently visiting a feeding tree but it stood in an absolutely inaccessible spot."

Recently Dr. Edwin Tyson reported that he and Robert S. Ridgely saw three white cotingas June 21, 1969, in the hills near the mouth of Bahía Piñas, on the coast of Darién, north of Jaqué. The first specimen for Panamá, an adult male, came from Dr. Pedro Galindo, taken March 25, 1972. The species was seen regularly in March and April on the slopes of Nique, but not in the cloud forest of the summit. The birds were wary, but Rudolfo Hinds finally secured one at 600 meters, shot on the wing. The species was named for Gustav Hopke who collected the series from which it was described in November and December 1896.

PACHYRAMPHUS VERSICOLOR COSTARICENSIS Bangs:
Barred Becard, Picogrueso Veteado

Pachyrhamphus versicolor costaricensis Bangs, Proc. New England Zool. Club, vol. 4, March 19, 1908, p. 26. (Irazú, Costa Rica.)

Small; breast and sides barred narrowly with slate; male with side of head olive-yellow; female, breast and foreneck olive-yellow.

Description.—Length 125–130 mm. Male, crown, hindneck, and back black; rump and upper tail coverts slate-gray, spotted indistinctly with black; scapulars white, barred anteriorly with black, posteriorly with slate; wings black; middle coverts tipped with white; secondaries edged broadly, primaries narrowly with white; tail gray, with narrow tips of white, and black shafts; bare edge of eyelids black, forming a distinct ring; lores white, with a few small feathers in front of eye and the abundant rictal bristles, black; a narrow white line above eye; chin white; side of head and neck pale olive-yellow, barred narrowly with slate-gray; rest of under surface white, barred narrowly on foreneck, breast, sides, and under tail coverts with slate-gray; axillars and under wing coverts white, with indistinct mottling of gray; carpal edge black spotted with white; inner webs of primaries and secondaries white.

Female, crown and hindneck slate-gray, darkening laterally to a line of blackish slate on either side; back, scapulars, rump, and upper tail coverts olive-green; outer wing coverts and outer webs of primaries rufous to cinnamon-rufous, side of head and neck olive-

green; lower surface olive-yellow, barred indistinctly with slate-gray; wings, including under surface and tail, as in males.

Immature, middle and greater coverts, outer webs of secondaries, and inner primaries rufous.

Measurements.—Males (8 from Chiriquí and Costa Rica), wing 59.1–65.2 (63.1), tail 37.2–48.5 (43.8), culmen from base 10.6–12.8 (11.7, average of 7), tarsus 15.5–16.4 (15.9) mm.

Females (6 from Chiriquí and Costa Rica), wing 60.2–63.5 (61.1), tail 42.6–46.1 (45.4), culmen from base 11.8–12.7 (12.1, average of 5), tarsus 15.0–16.8 (16.3) mm.

Resident. Local; known from the higher levels of the volcano in Chiriquí, from the Cerro Punta and Bambito area, on the western face at 1580 to 1950 meters, and on the eastern side at Casita Alta and Velo above Boquete, at 1675 to 2135 meters.

The first report of the species for the Republic is a specimen in the American Museum of Natural History, received from J. H. Batty, collected September 13, 1901, marked Boquete. Eisenmann in his notes reports it as not uncommon in the Bambito-Cerro Punta area in humid woodland, usually in pairs in low second growth in ravines. An immature male from Velo, taken at 1675 meters on August 4, 1937, is reported by Blake (*Fieldiana: Zool.*, 1958, p. 534) from the Mönniche collection. Another male in the National Museum was collected by Dr. Frank Hartman at 2135 meters at Casita Alta, February 11, 1949. C. Brooke Worth (*Bird-Lore*, 1939, pp. 279–280) described the song, heard in the valley at Velo, reminiscent of that of the field sparrow of eastern United States, as follows: "I located the singer on a twig near the ground. Its song I wrote down as *soo-soo-wee-hee-hee-hee-heet*, the syllables being clear-cut, with the final ones ascending slightly in pitch. . . . The singing resulted in the arrival of another bird that perched for a moment alongside the first one and then quietly flew away."

Alexander Skutch (*Publ. Nutt. Orn. Club*, no. 7, 1967, pp. 76–80) in Costa Rica found this form in "the cool, mossy mountain forests, often in mixed flocks that include ovenbirds, woodcreepers, flycatchers, wood warblers, vireos and other small birds. . . . It subsists largely on insects which it catches as it darts against the foliage. Its restless activity and the briskness of its movements contrast with the more deliberate actions of its larger relatives." Two nests that he saw were placed in the tops of slender-trunked trees at about 15 and 23 meters above the ground. Both were bulky globular structures made of green moss and bits of other plants. In one that he saw

under construction both male and female brought material. Green moss was added to the exterior, and dried bamboo leaves were placed inside. Both nests, as seen from the ground, appeared to be about a third of a meter in diameter. One was under construction in late June. The second, in which the parents were feeding young, was found at the beginning of May.

An egg in the British Museum (Natural History) attributed to this race is labeled as taken on Volcán Irazú, April 25, 1900, by C. Underwood. It is long oval in form, white without gloss, spotted and lined lightly on the larger half with cinnamon and grayish brown. It measures 20.1×13.9 mm.

PACHYRAMPHUS CINNAMOMEUS Lawrence: Cinnamon
Beard, Picogrueso Acanelado

Small, plain cinnamon; darker above, paler on under surface.

Description.—Length 140–150 mm. Adult male, very short ninth primary with tip sharply pointed; above, including tail, rufous-tawny, in some slightly darker rufous; primaries and secondaries dusky, edged with tawny; outer primary coverts, slightly darker tawny; greater wing coverts faintly paler than adjacent area; narrow bare margin of eyelids black; a narrow buff superciliary stripe extending forward above lores to base of bill, becoming broader at anterior end; lores dull gray; under surface buff to tawny buff, with chin paler; axillars, edge of wing, under wing coverts, and inner margins of wing feathers buff to tawny.

Female, colors as in male, but with ninth primary equal to eighth, not shortened or sharply pointed; somewhat smaller.

Immature male, like female in color and form of ninth primary.

The cinnamon beard is a common species, widely distributed in Tropical Zone woodlands, found singly or in pairs, at times in company with traveling groups of other small forest birds. Often they are seen in the tops of the undergrowth at the borders of forest, or along the banks of streams. They may range also amid the leaves of the higher tree crown. While not shy they may not be noticed as they move quietly.

The species is one of wide range from southern México through Central America and northern South America, where it is found through western and northern Colombia south to western Ecuador and east to western Venezuela. With the series of specimens now available three subspecies may be recognized. A darker form, *P. c. fulvidior*, with characters outlined below, is distributed from Oaxaca,

Tabasco, and Chiapas in southern México, south in British Honduras, and on the Caribbean slope in Guatemala, Honduras, Nicaragua, and Costa Rica to western Bocas del Toro in Panamá. A still darker subspecies *P. c. badius* that is browner, less cinnamon, has been named by the Phelps, father and son, from a limited range in southern Táchira in southwestern Venezuela. The nominate race *cinnamomeus*, found throughout most of Panamá, occupies the vast region between *fulvidior* and *badius*.

PACHYRAMPHUS CINNAMOMEUS FULVIDIOR Griscom

Pachyrhamphus cinnamomeus fulvidior Griscom, Bull. Mus. Comp. Zool., vol. 72, January 1932, p. 357. ("Toledo district" = Toledo Settlement, British Honduras.)

Characters.—Darker; deeper rufous above; more rufescent on under surface; averaging slightly larger.

Measurements.—Males (10 from Bocas del Toro and Veraguas), wing 74.8–80.7 (78.4), tail 50.1–61.0 (55.2), culmen from base 14.2–16.7 (15.7), tarsus 19.0–20.5 (19.5) mm.

Females (10 from Bocas del Toro and Veraguas), wing 74.5–81.0 (77.0), tail 53.8–59.8 (57.4), culmen from base 15.8–18.4 (16.7), tarsus 19.1–21.6 (20.2) mm.

Resident. Locally common in the Tropical Zone in western Bocas del Toro from the Río Sixaola eastward, in the lowlands bordering the Laguna de Chiriquí.

This darker subspecies, like the nominate form, ranges through thickets and forest edge, especially along the borders of pastures. The trees along streams also are suitable habitat. During periods of rain, I found them occasionally in growths of tall weeds at the edge of fields. By the middle of February in 1958 they were mating, and in early March I saw them working at rounded nests placed at the ends of slender branches.

Russell (Orn. Mon. A. O. U., no. 1, 1964, p. 112) states that the "holotype of this race was collected by Peck in Toledo District according to its label" so that Griscom used this, an administrative division of the country, as the type locality. Russell added further that "Peck's notes indicate that the specific locality was Toledo Settlement, in the southern part of the District."

Griscom in his description noted, regarding specimens from Almirante, that "only two or three are obviously more richly colored than the balance. I consequently refer these Almirante birds to

cinnamomeus." I find however that those from western Bocas del Toro agree best with *fulvidior*.

A nest collected by Dr. Pedro Galindo at Almirante May 23, 1962, was a globular structure woven of long barklike fibers, and longer, threadlike rootlets, with small dried leaves mixed through it, especially at the base. The opening, at one end, was concealed beneath a drooping mass of fibers. The cup inside was lined with thin bits of dried leaves. It measured about 120 mm in width by 200 mm long and was 100 mm in height. Another, that Dr. Galindo collected May 26, 1962, made of the same kinds of material, was larger and more substantial, and also more firmly made. The opening was in one side, with the cup of somewhat softer materials. This one measured 170 by 250 mm, with a height of 130 mm.

Skutch (Pac. Coast Avif., no. 35, 1969, pp. 52-55) relates that a nest seen in Costa Rica during construction, was built by the female alone, although the male was regularly present. The three nests examined, placed from 4½ to 15 meters from the ground, were similar to the two found by Galindo. As they were inaccessible, the eggs were not described. Only the female incubated, though later the male gave some assistance in feeding the young.

PACHYRAMPHUS CINNAMOMEUS CINNAMOMEUS Lawrence

Pachyramphus cinnamomeus Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 7, 1862, p. 295. (Lion Hill, Panama Railroad, Canal Zone, Panamá.)

Characters.—Paler, more cinnamon-rufous above and below, variable individually in depth of color; averaging slightly smaller.

Measurements.—Males (10 from Canal Zone, eastern Province of Panamá and western San Blas), wing 76.6-79.5 (78.0), tail 54.0-57.6 (55.1); culmen from base 14.5-17.0 (15.8), tarsus 18.1-20.0 (19.0) mm.

Females (10 from Canal Zone, eastern Province of Panamá and eastern Colón), wing 71.4-75.8 (73.4), tail 49.6-55.0 (52.3), culmen from base 14.3-17.4 (15.5), tarsus 18.4-19.6 (18.9) mm.

In three adult males taken in the Canal Zone and eastern Province of Panamá the iris was wood brown; maxilla dusky neutral gray to black; mandible neutral gray, in two of those examined with the tip and cutting edge of both halves of the bill narrowly dull white; tarsus and toes dusky neutral gray; claws black in one, dusky neutral gray in the others. One female had the cutting edge of the maxilla fuscous-brown, with the rest fuscous-black.

Resident. Widely distributed and locally fairly common; found irregularly on the Pacific slope from eastern Chiriquí (Las Lajas), western Veraguas (Puerto Vidal), and Coclé (Puerto Aguadulce), with one record from the Azuero Peninsula (La Honda, 5 miles east of Los Santos); more commonly in eastern Province of Panamá (Chepo, El Llano, Chimán) eastward through Darién to Colombia; to 900 meters above Cana on Cerro Pirre, and to 1280 meters on Cerro Malí. On the Caribbean side from western Colón (Chilar on the lower Río Indio), and the northern Canal Zone east through San Blas (to Puerto Obaldía).

They are seen most often in isolated trees along larger streams, or in old clearings or second growth, at the borders of mangrove swamps in the lowlands, and in shrubbery in pastures. When they range in true forest, it is usually near the borders, where they will be found among the leaves in the tree crown, not lower down in the undergrowth. Small-leaved trees with foliage spread so that they make lacy shade are a frequent haunt. Always the birds move slowly and methodically, much like vireos. The calls are low, rather weak, a repetition of a single note, rarely somewhat harsher, but never with strong carrying power.

The stomachs of those that I have examined have been filled with the remains of small insects and spiders that they glean from leaves and twigs. Small coleoptera, homoptera, ants, and caterpillars are common items.

The nests are rounded balls of moss and other fibrous material with an entrance in the side, placed at the ends of slender branches from 4 to 20 meters from the ground. One that I thought might contain eggs, but could not examine closely, was placed a meter or so from a large and active nest of wasps. Others were inaccessible, also often with wasp nests near. The birds were usually in breeding condition or active about nests from the latter part of February through April. I have seen no description of the eggs.

The nominate form *cinnamomeus* ranges commonly beyond Panamá into Colombia. With a long series from that country the race *magdalenae*, named by Chapman from the lower Magdalena Valley, does not appear separable as its color variations match those of the bird of Panamá. Size also is similar as the following measurements indicate.

Males (10 from Bolívar, eastern Córdoba, and Magdalena), wing 72.5–79.9 (76.3), tail 50.3–56.2 (53.3), culmen from base 14.0–15.9 (15.1), tarsus 18.0–19.0 (18.6) mm.

Females (10 from Bolívar, eastern Córdoba, and Magdalena), wing 71.3–77.3 (74.5), tail 51.0–54.8 (52.5), culmen from base 14.0–15.9 (15.1), tarsus 18.0–19.0 (18.6) mm.

**PACHYRAMPHUS RUFUS (Boddaert): Cinereous Becard,
Picogrueso Cinéreo**

Muscicapa rufa Boddaert, Tabl. Planch. Enl., 1783, p. 27. (Cayenne.)

Slightly smaller than the Cinnamon Becard; female differs from that species in plain whitish lores; male is gray above with black crown.

Description.—Length 130 to 140 mm. Adult male, crown, post-ocular area and hindneck glossy black; back, scapulars, rump, and upper tail coverts gray, the back in some very faintly mottled with dusky; lesser wing coverts black, the outer ones margined with gray; middle and greater coverts gray, edged with white, with narrow black shaft lines; primaries dull black, edged narrowly with white; alula and primary coverts black; tail gray, shafts black tipped narrowly with white; lores and lateral frontal feathers white; a small spot adjacent to front of eye black; upper throat white; sides of head and neck and of body pale gray; center of breast, abdomen, and under tail coverts white; edge of wing, under wing coverts and axillars white, with the outer under coverts spotted lightly with black; inner margins of primaries white.

Adult female, upper surface, including wings and tail (except as noted) tawny to rufous-tawny; generally similar to the female of *Pachyrampus c. cinnamomeus*, but with loreal area entirely white; the white more extensive across the forehead; a black line on primaries and secondaries external to the shaft (the feathers edged narrowly externally with cinnamon-rufous), and with the inner side of the alula and the primary coverts black.

Juvenile male, crown and hindneck dull brown, mottled slightly with dusky; a tiny black spot adjacent to the anterior end of the eyelids; back, scapulars, rump, upper tail coverts, and tail cinnamon-rufous; under surface white, with a faint band of buff across the breast.

Juvenile female, crown and hindneck slaty gray, mixed lightly and indistinctly with dull cinnamon, otherwise similar to the juvenile male.

Stone (Proc. Acad. Nat. Sci. Philadelphia, vol. 70, 1918, p. 269) recorded colors in a male taken by Jewel at Gatun, Canal Zone, May 26, 1912, as "iris brown, bill blue-gray with black tip, feet light gray."

Measurements.—Males (10 from Province of Panamá, Canal Zone, and northwestern Colombia), wing 64.7–72.9 (69.7), tail 47.7–52.4 (50.4), culmen from base 13.6–15.8 (14.2), tarsus 17.2–18.8 (17.7) mm.

Females (10 from Canal Zone and northern Colombia), wing 65.3–69.2 (67.8), tail 47.3–52.4 (49.0), culmen from base 13.2–15.0 (14.3), tarsus 16.7–18.3 (17.6) mm.

Resident. Rare; recorded in the Canal Zone, and in eastern Province of Panamá.

McLeannan secured the first specimens in his early work on the Atlantic slope in the Canal Zone. Captain Hughes, of the S. S. *Chiriquí*, took this species at Paraiso, and W. W. Brown, Jr., according to Bangs (Proc. New England Zool. Club, vol. 2, 1900, p. 23) secured four at Loma de Leon. Goldman collected a female at Tabernilla, and a pair at Gatun. It was taken by Arcé at Chepo, and by Austin Smith at San Antonio on the lower Río Bayano.

The Penards (Vog. Guyana, pt. 2, 1910, p. 153) described the nest as the rounded ball of grasses and leaves usual in this genus, with two to five eggs, dark grayish brown with darker, chocolate-brown spots and dots over the entire surface, sometimes forming a wreath around the larger end. The average size is recorded as 20.0×15.5 mm. Haverschmidt (Birds of Surinam, 1968, p. 280) recorded the food as insects, including Diptera, Orthoptera, and termites (taken in flight) and berries, including mistletoe and capsicum. He lists egg size, from the Penard collection as 20.1×14.8 mm.

Schönwetter (Handb. Ool., pt. 16, 1969, pp. 131, 137) records the eggs as reddish gray and chocolate-gray, often with a wreath or a cap of these dark colors; ground color in some specimens white, with few markings. The size range in 56 specimens is listed as $18.2\text{--}21.9 \times 13.5\text{--}15.6$ mm. The range in size seems unduly large, raising question as to correct identification in part of the series.

Goldman, at Gatun in the Canal Zone, on January 31, 1911, collected a male "in the branches of a small tree along the edge of . . . dense forest."

The species ranges widely in the tropics of northern South America from Colombia and Venezuela through the Guianas and northern Brazil to eastern Ecuador and eastern Perú. While the male is fairly distinct the female may be confused with that of *Pachyramphus cinnamomeus*. In the few specimens seen from Panamá the male appears grayer on the breast than those at hand from South America. It is probable that the northern group when better known will be found to represent a distinct subspecies.

PACHYRAMPHUS POLYCHOPTERUS SIMILIS Cherrie:
 White-winged Becard, Picogrueso Aliblanco

FIGURE 24

Pachyrhamphus similis Cherrie, Proc. U.S. Nat. Mus., vol. 14, September 4, 1891, p. 343. (Greytown, Nicaragua.)

Small. Male, black above, with prominent white markings on wings; gray underneath. Female, greenish olive above, yellow underneath, cinnamon-buff on wings.

Description.—Length 130–145 mm. Adult male, crown and hind-neck with the individual feathers lined centrally with dark steel blue;



FIGURE 24.—White-winged becard, picogrueso aliblanco, *Pachyrhamphus polychopterus similis*, male.

back, wings, and tail black; rump and upper tail coverts slate-gray; outer rectrix edged distally and tipped with white, the others tipped in diminishing amount with white, until this is nearly or wholly absent on the central pair; scapulars externally white, forming a prominent stripe; middle and greater coverts tipped and edged broadly with white; secondaries and inner primaries edged narrowly with white; under surface slate-gray, mottled very faintly with tiny spots of white; under wing coverts and axillars gray or mixed pale gray and white; inner margins of wings edged with white.

Adult female, crown and hindneck olive to grayish olive; back, rump, and upper tail coverts greenish olive; wings edged with

cinnamon-buff to white; central tail feathers basally greenish olive, becoming black at tips; lateral pairs black, all tipped widely with buff; side of head light olive; lores mixed with white, with a narrow white stripe over eye and a broader one below; under surface light to pale yellow, sides of chest light olive; edge of wing, axillars and under wing coverts pale yellow; inner webs of wing feathers pale buff to yellow.

Immature, like female, but in male changing early to a mixture of gray on the breast and black on the upper surface.

In several males the color of the eye varied from wood brown to very dark brown and reddish brown; tip of maxilla black; rest of bill dark neutral gray, with the base of the mandible in some pale brownish white; tarsus and toes neutral to dusky neutral gray; claws dusky neutral gray to black.

One female, taken January 28, 1962, at Las Palmitas, Los Santos, had the iris mouse brown; maxilla black; mandible pale brownish white, with anterior half of sides dark neutral gray; tarsus, toes, and claws dusky neutral gray.

Measurements.—Males (10 from Panamá), wing 69.6–73.5 (71.3), tail 50.8–57.0 (53.8), culmen from base 14.0–15.7 (14.7), tarsus 18.0–19.1 (18.4) mm.

Females (10 from Veraguas, Los Santos, Province of Panamá, Canal Zone, San Blas, and Costa Rica), wing 64.5–69.1 (67.0), tail 46.8–55.0 (50.1), culmen from base 14.0–15.3 (14.8), tarsus 18.0–18.9 (18.4) mm.

Resident. Locally fairly common wherever there are thickets and trees (but not in heavy forest) in the Tropical Zone; on the Pacific side from western Chiriquí (Volcán, Boquete) east (including Los Santos) to Darién; ranging upward to 900 to 1300 meters on more open mountain slopes and around clearings; on the Caribbean side from western Bocas del Toro (Almirante), Canal Zone (Barro Colorado), Colón (Portobelo), and western San Blas (Mandinga); Isla Cébaco.

These becardas are found singly or in pairs, near the ground in thickets or in trees in the higher branches. In dense forest they frequent the more open areas along the rivers. They appear regularly in scattered trees in pastures, other clearings, and over coffee plantations. Around towns it is common to encounter them in suburban shade trees. They move quietly among the branches, searching for insects, often taking the larger kinds by flying up to seize them from leaves. They also feed on ripening berries, in company with

other birds. The stomach of one taken by Goldman at Portobelo held bits of an earwig and other insects, and a fragment of caterpillar skin, but mainly was crammed with the remains of berries. Males have a pleasant song of a single whistled note, given in rapid repetition.

Skutch (Auk, 1954, pp. 113-129, plate 9) in an interesting account describes the habits of this bird, mainly as observed in Costa Rica. According to his observations both sexes sing, the notes of the male being stronger. During the nesting season from March to September the male has an especially clear dawn-song, that may be repeated steadily for an hour or more. The nest, built by the female alone, is a bulky, rounded mass of fibrous inner bark, palm and banana leaf fibers, and similar stringy material, mixed with leaves, moss, and dried threadlike inflorescences. The entrance is a rounded opening in one side. One nest measured 15×18 centimeters, with the entrance 3.8 centimeters in diameter. During the incubation period the female on return from brief absences usually brings a bit of leaf or other material to add to the structure, either externally or in the lining. The eggs usually are covered with loose leaves during such absences. The male, attentive to his mate on the nest, may perch and sing nearby, often answered by the hidden female. He does not enter the nest however until finally he joins his mate in bringing food to the nestlings.

The eggs, three or four in number are "pale gray, mottled all over with brown, most heavily in a wreath about the larger end." One set of two measured 20.2×15.1 and 19.8×14.3 mm. The newly hatched young have pink skin and are without down. Young were fed on insects alone. Fledglings when grown leave the nest and do not return to use it as a sleeping shelter. Some nests were built in close proximity to hives of stinging wasps, an excellent protection. Regular enemies were toucans that pulled open the nests and ate eggs and young. The parasitic flycatcher (*Legatus leucophaius*) frequently took finished becard nests for their own use, and on occasion the common small black bees also claimed finished nests before the birds could use them.

The species *P. polychopterus* ranges widely in tropical America from Honduras southward through Colombia, Venezuela, and Trinidad to eastern Bolivia, northern Argentina, and Uruguay. Variation geographically is considerable, confused by individual range in depth of color, especially in the males, so that decision as to subspecies to be recognized is difficult. Currently, the birds of Central America and Colombia have been united as a single race under the name

cinereiventris. With the considerable series now available it appears that those from Central America through eastern Panamá are fairly uniform in the shade of gray on the lower surface. In Colombia, depth of this color is highly variable, ranging from pale gray to black, but in the darker shades seldom duplicating those of Central America. With this better understanding, the northern population south through Panamá may be separated under the name *similis*, proposed by Cherrie, with the type locality Greytown, Nicaragua. A specimen from Unguía, extreme northern Chocó, Colombia, is assigned without question to this race. Others across the lowlands of northern Colombia through the Sinú, lower middle Cauca, and Magdalena drainages east to western Guajira (Carriapía), of average darker gray coloration below, are to be recognized as *cinereiventris*. Across the northern Andes in Colombia, through Antioquia and south to Cauca and Huila, at elevations above 1200 meters, slightly larger birds, very pale gray on the lower surface, represent another form, *dorsalis*.

PACHYRAMPHUS ALBOGRISEUS ORNATUS Cherrie: Black-and-white Becard, Picogrueso Blanquinegro

Pachyrhamphus ornatus Cherrie, Proc. U.S. Nat. Mus., vol. 14, September 4, 1891, p. 338. (Barranca, Costa Rica.)

Small; male, generally similar to *Pachyrhamphus rufus*, but larger, with more white in the wings, and distal third of tail black, with white tips. Female, yellow underneath; crown brown, with a broad black border at sides and rear.

Description.—Length, 140–150 mm. Adult male, crown and nape black basally, tipped with dark steel-blue; back, scapulars, and rump gray; upper tail coverts slightly paler; bases of rectrices gray, with narrow shaft lines and distal third black; the individual feathers tipped broadly with white on outer pair, the white decreasing in sequence until on the central pair it becomes a narrow tip; wings black; the terminal row of the lesser coverts tipped narrowly with white; middle coverts tipped broadly, and greater coverts edged and tipped with white; inner wing feathers and the outer primary edged with white; forehead, a line across upper lores extending back above eye, and a narrow line on the lower eyelid, white; loreal area immediately in front of eye black; a narrow, indistinct band on hindneck, foreneck, breast, and sides light gray; abdomen and under tail coverts white; axillars, under wing coverts, and inner margins of wing feathers white.

Female, crown and nape chestnut-brown; forehead, a line extending back above eye, and a line on lower eyelid white; lores black; a narrow black line bordering brown of crown, becoming broad on side of head and across nape, bordered on posterior margin of nape with a wash of light gray; back, scapulars, rump, and upper tail coverts grayish olive-green; tail black, basally becoming grayish brown, the outer rectrix edged and tipped widely with cinnamon-buff, the other tail feathers tipped with the same in decreasing amount; wings black, the lesser coverts edged with brown or olive; middle and greater coverts, and wing feathers edged and tipped broadly with buff to cinnamon-buff; sides of head, neck, and a narrow line across base of hindneck pale yellowish olive; under surface, including flanks, pale yellow; axillars, under wing coverts, and inner border of wing feathers very pale yellow.

Measurements.—Males (8 from Chiriquí, Veraguas, and Costa Rica), wing 69.7–75.1 (73.1), tail 51.5–55.4 (52.9), culmen from base 14.4–16.8 (15.5, average of 7), tarsus 18.0–19.2 (18.6) mm.

Females (6 from Chiriquí and Costa Rica), wing 69.4–72.7 (70.1), tail 50.7–58.8 (54.2), culmen from base 14.2–15.6 (14.8), tarsus 18.1–19.5 (18.9) mm.

Resident. This species, rare and little known in Panamá, has been found mainly in the mountain areas of Chiriquí, where Arcé collected a male at Bugaba. His early records include also two other males marked Calovévora which is on the Caribbean side in northern Veraguas. These, with the one first mentioned, in the British Museum (Natural History), are dated 1868 and 1869. In the American Museum of Natural History there is a female labeled Boquerón, August 26, 1901, and a male from Boquete, April 20, 1903. Mrs. Mary E. Davidson secured a female at Horqueta, above Boquete, February 5, 1934 (specimen in the California Academy of Sciences). Two females in the Mönniche collection (Field Museum) from the latter area were taken at 1675 meters at Velo May 23 and December 12, 1939. Griscom secured male and female on Cerro Flores, eastern Chiriquí, March 9 and 13, 1924. On the Pacific side of Veraguas, Benson collected a male at Chitra, January 13, 1926. These are the definite records to date, all from western Panamá.

A report of this species by Griscom (Auk, 1933, p. 304, cited also in Bull. Mus. Comp. Zool., vol. 78, 1935, p. 346) of a male in the Peabody Museum at Yale, taken by Austin Smith at Puerto Antonio on the Río Bayano, near Chepo, is based on a male *Pachyramphus rufus* that was wrongly identified. Another early record by Salvadori

and Festa (Bol. Mus. Zool. Anat. Comp. Torino, vol. 14, 1899, p. 6) is a female listed as "*Pachyramphus albogriseus*" taken by Festa in July 1895, at Punta de Sabana on the lower Río Tuira, Darién. While the specimen, presumed to be in the museum at the University of Turin, is said to have been identified by Sclater, it should be examined again, as determination of females in this genus is often difficult. Its locality is far distant from that known for any race of *P. albogriseus*.

PLATYPSARIS HOMOCHROUS HOMOCHROUS (Sclater):
One-colored Becard, Picogrueso Gris

Pachyramphus homochrous P. L. Sclater, Proc. Zool. Soc. London, pt. 27, August 1859, p. 142. (Pallatanga, Ecuador.)

Small; male, blackish slate above, gray below; female, chestnut-brown above, paler below (in general, similar to female of *Pachyramphus cinnamomeus* but larger).

Description.—Length 160–175 mm. Adult male, ninth primary sharply pointed, half as long as tenth; crown and nape black; hind-neck, back, and scapulars, blackish slate, changing over the rump and upper tail coverts to slate color; center of back with bases of feathers white, forming a concealed patch; tail blackish slate; wings dull blackish slate, edged with slate-gray; wing coverts mainly slate color; under surface slate-gray, somewhat paler on chin and upper throat; rarely, the lower throat and upper foreneck with a faint wash of pink; carpal edge of wing in some mixed with white; axillars and under wing coverts slate-gray; inner margins of wing feathers white.

Adult female, ninth primary of normal length; entire upper surface, including tail and innermost secondaries, cinnamon to tawny-rufous; center of upper back with feather bases partly white, forming an indefinite concealed patch; primaries and outer secondaries dusky-black, with the outer webs cinnamon; under surface buff to ochraceous, usually paler on throat and abdomen; axillars, under wing coverts, and inner webs of wing feathers ochraceous-buff to tawny-ochraceous.

Immature male, wing with ninth primary normal, like tenth; crown black; back, rump, and upper tail coverts grayish black; wings and tail as in female; under surface grayish white, washed irregularly with buff and gray. (Pattern of coloration varies with change in age.)

A male, taken at the Candelaria Hydrographic Station, on the Río Pequení, eastern Province of Panamá, March 4, 1961, had the

iris wood brown; maxilla black; mandible dark neutral gray; tarsus and toes dark neutral gray; claws black. Another, from Pucro, Darién, January 30, 1964, had the iris dark reddish brown; maxilla and tip of mandible black; rest of mandible neutral gray; tarsus, toes, and claws as in the first. A female, from Pucro, February 1, 1964, had the iris wood brown; maxilla black; mandible neutral gray; tarsus and toes dark neutral gray; claws fuscous.

Measurements.—Males (10 from Province of Panamá, Canal Zone, Darién, and Chocó, Colombia), wing 82.2–88.5 (86.5), tail 58.0–61.5 (59.7), culmen from base 17.0–19.7 (18.5), tarsus 20.0–21.5 (20.5) mm.

Females (8 from Province of Panamá, Canal Zone, Chocó, Colombia, and Ecuador), wing 82.5–89.6 (86.5), tail 56.2–63.5 (60.0), culmen from base 18.2–20.2 (19.3), tarsus 20.0–21.7 (20.6) mm.

Resident. Found rarely on the Pacific slope from the lower Río Bayano, eastern Province of Panamá, eastward to Darién; recorded on the Caribbean side on the Río Pequení, back of Madden Lake, and in older accounts from the northern Canal Zone.

The first report for Panamá was by Lawrence (*Ann. Lyc. Nat. Hist. New York*, vol. 7, 1862, p. 473) who received male and female collected by McLeannan. The locality was not stated, but it is assumed that they were from the Atlantic side of the Canal Zone, as this was the main area of work by this collector. On March 4, 1961, on the Río Pequení, near the Candelaria Hydrographic Station, I collected an adult male in breeding condition from a tree that projected over the river. The bird moved slowly in short flights through the branches. These are the only records known to me for the Caribbean side. From the Pacific slope, there are two males and four females in the Peabody Museum at Yale, taken by Austin Smith near Puerto San Antonio on the lower Río Bayano, in February and March 1927.

Near Charco del Toro, at the head of tidewater on the Río Majé, on March 20, 1950, I collected a female from two that moved quietly in the middle branches of a tree beside the river. In Darién, at the mouth of the Río Paya, on February 24, 1959, I secured a male as it rested in a guarumo adjacent to a clearing, and on March 7, took another from a tree overhanging a playón on the Río Tuira. Near the Indian village of Pucro in this same region I secured a male, feeding in the top of a guarumo on the river bank, January 30, 1964, a female from a group of small birds at a feeding tree, February 1, and another female, on the following day, as it rested in a tree top in

the edge of tall forest. The National Museum also has a male taken by Goldman near Cana on Cerro Pirre June 6, 1912, and another from Dr. Pedro Galindo from the old Tacarcuna village site on the upper Río Tacarcuna, July 11, 1963.

The Goldman specimen had the stomach filled with insect remains, including longicorn beetles, membracids, a caterpillar, and parts of a large moth. Others examined had eaten small berries.

Webster (Condor, 1963, pp. 383, 399) in a detailed study of these becards has included *homochrous* and its races as subspecies of *Platypsaris aglaiae* of México and northern Central America, since males of the two southern forms, *hypophaeus* of the Caribbean slope and *latirostris* of the Pacific side, are closely similar in pattern and color. Two males of typical *homochrous* from eastern Darién, with a faint wash of rose on the throat (collected since Webster's studies), appear to strengthen this resemblance. However, in the series that I have seen, females of the northern forms have a dark crown cap, definitely different from the back, while in the *homochrous* group of Panamá and Colombia the crown is like the rest of the dorsal surface. The two groups obviously are descendants of one stock, but on this difference, clearcut in all specimens seen, appear to have diverged sufficiently to be regarded as two species.

Ames (Peabody Mus. Nat. Hist., Bull. 37, 1971, pp. 40–41, 163) points to "several tyrannid features of the syrinx" in the becards (*Pachyramphus*, *Platypsaris*) not found in other Cotingidae. He suggests a survey of other features to determine their relationship, with the suggestion that they may be "more closely related to the Tyrannidae."

TITYRA SEMIFASCIATA (Spix): Masked Tityra, Borreguito

FIGURE 25

Pachyrhynchus semifasciatus Spix, Av. Spec. Nov., Bras., vol. 2, 1825, p. 31, pl. 44, fig. 1. (Belém, Province of Pará, Brazil.)

Medium size, heavy body; male, grayish white with black on facial mask, wings and tail; female, white below, grayish brown above.

Description.—Length 180–200 mm. Lores and space around eye bare; height of bill equal to width at nostril; nostril separated from frontal feathering; gonys about as long as mandibular rami. Adult male, ninth primary slender, shortened, about half as long as eighth and tenth; forecrown back to middle of eye, side of head and chin black; rest of head white to grayish white; back, scapulars, lesser

and middle wing coverts, rump, and upper tail coverts pale bluish gray; concealed bases of feathers in upper back white; rest of wing, including outermost greater coverts and alula, black; tail with distal half black, basal area and tip white to grayish white; under surface, including axillars, under wing coverts and inner margins of wing feathers, white to pale bluish gray.

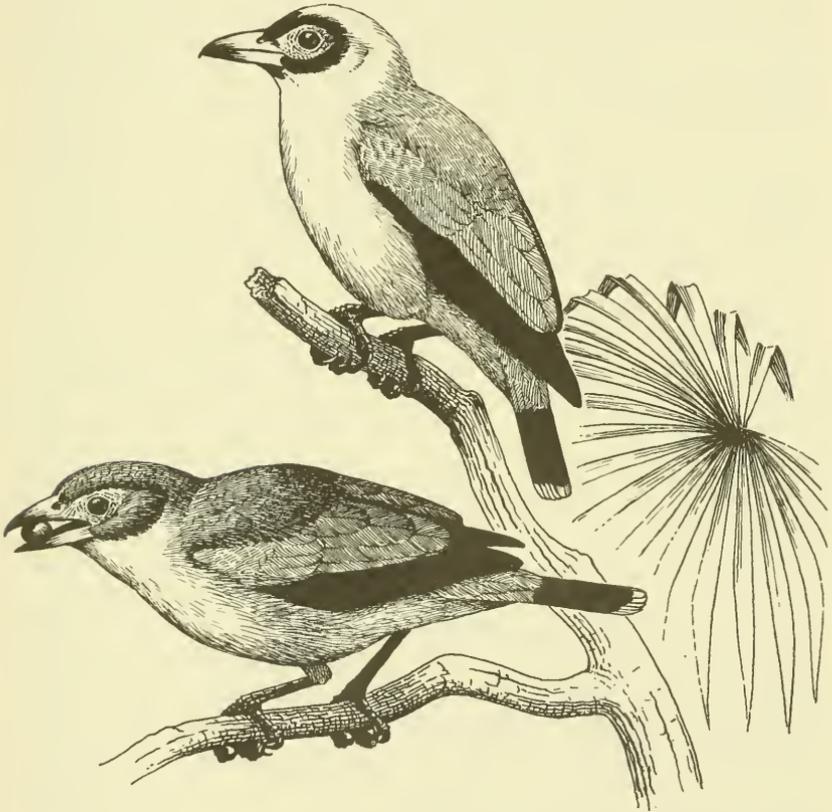


FIGURE 25.—Masked tityra, borreguito, *Tityra semifasciata*, male above, female below.

Adult female, crown, nape, and side of head grayish brown to sooty brown; back, scapulars, and rump more grayish brown; concealed bases of feathers in center of back white to grayish white; lower rump and upper tail coverts usually grayer; wings as in male, but duller colored; tail as in male, but black area more extensive; throat white; rest of under surface grayish to grayish white.

Immature male, in general like female but paler, more grayish brown above; changing by degrees to adult dress.

These wide-ranging birds are common throughout the Republic wherever there is forest cover in lowlands and in hill country bordering the mountains. Though seemingly universally distributed, they are seen mainly about clearings, along the borders of streams, and in open second growth. As they are birds of the tree crown they may be detected only casually in extensive reaches of heavy forest. It is usual to see them in pairs, flying about the skeleton branches of dead trees where there are woodpecker holes or other cavities. They inspect these openings, peering in from the entrance until in the breeding season one is selected for a nest. Then the female may enter while the male remains perched nearby. Where more than two of the birds are found together, usually there is one female accompanied by two or more males that fly and perch in close company intent on mating. I have observed no indication of struggle among them, and the paired status seems finally to be arranged amicably.

The only calls that I have heard from them are curious, grunting notes uttered with little emphasis. From these, they are sometimes known in Spanish as *pájaro chancho*, or *cerdito* in reference to the somewhat piglike sounds. As they fly about openly among dead trees standing in fields and pastures they are well known among country residents. In México I have heard them called *borreguitos*, little lambs, because of their light colors.

The food of these birds is divided between insects of fair size, that they often flutter out to seize from leaves, and the drupes of trees which they visit in company with many other forest birds.

As a species this cotinga is widely distributed from southern México to northern Argentina, Paraguay, and southeastern Brazil. Two of the several geographic races that are recognized are found in Panamá. The species was described originally by Spix as "in Provincia Para." Pinto (Cat. Aves Brasil, pt. 2, 1944, p. 47) has restricted the type locality to the region of Belém.

The species is one of strong flight, seen regularly in passage over forest and across wide open spaces. Though they are present on Isla Coiba, and also on Isla Cébaco off the Pacific Coast, they have not been recorded in the Archipiélago de las Perlas, or on Isla Taboga and the islands adjacent.

TITYRA SEMIFASCIATA COSTARICENSIS Ridgway

Tityra semifasciata costaricensis Ridgway, Proc. Biol. Soc. Washington, vol. 19, September 6, 1906, p. 119. (Bonilla, Costa Rica.)

Characters.—Male, slightly grayer, less clearly white; female, definitely darker, browner on crown, hindneck, and back; rump and upper tail coverts darker gray.

In a male collected near Puerto Armuelles, Chiriquí, February 10, 1966, the iris was brownish red; bare skin on side of head deep red; tip of bill black, rest dull red; inside of mouth brighter red; tarsus and toes brownish gray; claws dusky neutral gray.

Measurements.—Males (10 from Canal Zone, lower Chagres Valley in the eastern Province of Panamá, western Province of Panamá, Coclé, Herrera, and Chiriquí), wing 115.2–123.2 (119.5), tail 64.7–73.7 (68.7), culmen from base 23.6–26.8 (25.4), tarsus 24.4–26.6 (25.5) mm.

Females (10 from Canal Zone, western Province of Panamá, Coclé, Herrera, and Chiriquí), wing 111.5–118.0 (114.5), tail 64.6–69.3 (66.6), culmen from base 25.1–27.2 (26.3), tarsus 24.7–26.5 (25.4) mm.

Resident. Locally common wherever there are trees, on the Pacific slope from western Chiriquí (Puerto Armuelles, Sereno) east through Veraguas (Soná, and western side of the Azuero Peninsula), Los Santos (Tonosí) southern Coclé (El Valle), the Province of Panamá (La Campana, Cerro Azul), and the Canal Zone; on the Caribbean side from western Bocas del Toro (Zegla, Almirante), northern Veraguas (Calovévora), northern Coclé (El Uracillo), Colón (Río Indio), and the northern Canal Zone; mainly in the Tropical Zone, but to 1850 meters in the lower Subtropical Zone in Chiriquí (Cerro Punta); Isla Coiba, Isla Cébaco.

The most eastern records are a female taken April 23, 1949, at the Quebrada Carriaso on the headwaters of the Río Pacora in the Cerro Azul, and a male collected February 18, 1961, on the Province of Panamá side of the Río Boquerón, near the Peluca Hydrographic Station, back of Madden Lake. Both specimens in color are clearly of this western race. There are numerous specimens from both the northern and southern slopes in the Canal Zone. Beyond Panamá *costaricensis* ranges through Costa Rica and Nicaragua to south-eastern Honduras.

The first report of eggs of this race is that of Cherrie (Auk, 1892, p. 322) who recorded a nest with one egg at Térraba, Costa Rica, found March 22, 1892. The female, which he collected, had another egg in the oviduct. The ground color in these eggs was "dark pinkish buff . . . almost completely hidden by irregular markings, lines, and blotches, of chestnut brown, these blotches darkest and most abundant about the larger end. The eggs measure 1.16×

.83 inch" (equivalent to 29×21 mm). He recorded the nest as "in an old woodpecker hole . . . in an old stump. The bottom of the nest . . . was without any lining whatever."

Skutch (Auk, 1946, pp. 327-362) in a detailed account of the habits of this race as observed in Panamá and Costa Rica, described a nest at Barro Colorado Island in a large cavity in a dead trunk, standing in the water of Gatun Lake. This contained two eggs "dark buff or, better, the color of coffee with milk, heavily marbled, especially on the thicker end with brown. A few small, scattered, black spots completed their decoration. They measured 30.2 by 20.6 and 29.8×21.4 millimeters."

He recorded other nests, usually, but not always, in dead trees, frequently in holes made by woodpeckers. In the area of his studies in the mountains of Costa Rica the holes made by the common Golden-naped Woodpecker (*Centurus chrysauchen*) were a usual choice. Rarely he found nests located from 12 to 20 meters above the ground in cavities formed by the attachment of the broad bases of leaf stems to the trunk in feather palms. The nest cavity is filled with fragments of dead leaves, twigs, and dried flowers all gathered in the trees. The birds are never seen on the ground. The female collects this material alone. The male, who follows her back and forth, may carry a leaf or a bit of twig to the entrance but usually lets it fall to the ground. Selection of the nest hole is made by the female, since the male, her regular companion, does not enter until the eggs hatch, when he shares in feeding the young. The female does not sleep in the nest hole until incubation begins, a duty that she carries on alone. During this period she leaves the nest often during the day. Usually on return she brings a bit of leaf to add to the nest material. This is rather loosely arranged. In the only cavity accessible, Dr. Skutch found the eggs completely covered by the leaves and other nest material. A second nesting may follow soon after the young are on the wing.

Cotingas do not seem at all quarrelsome, as at the Barro Colorado Island location mentioned the same tree housed nests of a pair of Blue-headed Parrots, one of the Noble Flycatcher, and one of the Black-winged Palm Tanager. They do, however, annoy woodpeckers by filling their newly excavated nest holes with leaves and other litter, until finally the woodpeckers tire of cleaning this out and leave. The same may happen with holes where the Araçari Toucans sleep. Among their own species the cotingas appear to be territorial, as no other pairs of their own kind locate near them. The nesting period seems to extend from the end of February through May.

I was interested to find them at 1850 meters elevation on the slopes near Cerro Punta and to note that Mönniche recorded them to over 1600 meters above Boquete, in Chiriquí. Possibly they have moved upward as the forests have been cleared, leaving the hill slopes more open, with many dead trees standing that are always an attraction to this species.

TITYRA SEMIFASCIATA COLUMBIANA Ridgway

Tityra semifasciata columbiana Ridgway, Proc. Biol. Soc. Washington, vol. 19, September 6, 1906, p. 119. (La Concepción, 900 meters elevation, north slope, Sierra Nevada de Santa Marta, Magdalena, Colombia.)

Characters.—Male paler, white to grayish white on lower surface, only faintly darker above; female lighter colored, more grayish brown above.

A male, taken at Armila, San Blas, March 7, 1963, had the iris orange-brown; bare area of side of head, and the basal half of the bill, dull wine-red; tip of bill black, changing to neutral gray at the center; tarsus and toes dark neutral gray; claws black. A female, taken at the same time was like the male, except that the black area of the tip of the bill was more extensive so that the neutral gray area at the center was much restricted.

Measurements.—Males (10 from Province of Panamá, Darién, and San Blas), wing 111.2–119.8 (115.7), tail 62.5–69.3 (66.4), culmen from base 25.0–26.4 (25.7), tarsus 24.3–26.8 (25.5) mm.

Females (7 from Darién and San Blas), wing 108.7–119.2 (114.5), tail 62.7–68.5 (65.4), culmen from base 24.2–28.1 (26.4), tarsus 24.2–25.7 (25.0) mm.

Resident. Common in the Tropical Zone on both coasts; on the Pacific side from San Antonio, beyond Chepo, on the lower Río Bayano, through Darién to the Colombian boundary; to 850 meters at Cana on Cerro Pirre. On the Caribbean side recorded to date only in eastern San Blas from Permé eastward to Colombia.

Comparatively little is known in Panamá of this paler race of the species. I found it fairly common along the Río Chimán and the Río Majé in eastern Province of Panamá, but not in the hill country inland. Probably here it may range among the dead stubs that project above the dense foliage of the high tree crown where it is hidden from view from the ground. It was common also in the upper Tuira-Chucunaque Valley near the mouth of the Río Paya and of the Río Tuquesa. It is known also from Santa Fé, Yaviza, and the Río Cupe. Barbour and Brooks took one on the slopes of Cerro Sapo back

of Garachiné. In March 1964, I collected one at the old Tacarcuna village site on the basal slopes of Cerro Tacarcuna. In 1946 it was fairly common at Jaqué, Darién, but the following year I did not find it inland along the upper reaches of the Río Jaqué. On the Caribbean side it has been recorded at Permé and Puerto Obaldía; I found it also farther inland, back of Armila, between these localities.

Their diversity in choice of food is shown by the contents of two stomachs from birds taken by Goldman at Cana, Darién. One was filled with parts of three large drupes and a few seeds. The other held fragments of two large orthoptera and parts of another smaller kind.

Like the western race they are seen in the dead trees standing in clearings, or less often on stubs that rise through the high tree crown, visible in canoe travel along the larger rivers. In general mannerisms the two forms are similar. I have found no record of the nest and eggs of this subspecies. It may be noted that a set of two eggs in the British Museum (Natural History) which are white without markings, with a distinct gloss, collected by T. K. Salmon at Remedios, Antioquia, and attributed to this race, obviously are wrongly identified (see Sclater and Salvin, *Proc. Zool. Soc. London*, 1879, p. 517; and Salvin and Godman, *Biol. Centr.-Amer. Aves*, vol. 2, 1890, p. 119). It is probable that they are from a species of the family Furnariidae.

**ERATOR INQUISITOR (Lichtenstein): Black-crowned Becard,
Bacaco Pequeño**

FIGURE 26

Lanius Inquisitor Lichtenstein, Verz. Doubl. Zool. Mus., 1823, p. 50. (São Paulo, Brazil.)

Medium size; similar to the Masked Tityra but smaller, more slender; male with crown and bill wholly black; female, forehead, and side of head chestnut-brown.

Description.—Length 165–180 mm. Lores and space around eye fully feathered; bill flattened, opening of nostril close to frontal feathering, gonys much longer than mandibular rami. Adult male, ninth primary shortened, narrow, about half as long as eighth and tenth; crown, lores, base of mandible, line on lower eyelid and spot beneath eye black; posterior margin of crown and nape clear white, forming a broad band; lower hindneck, back, scapulars, inner wing coverts, inner secondaries, rump, and upper tail coverts pale gray; basal half of tail pale gray, white to grayish white on inner webs;

distal portion black tipped with white; wing and outer wing coverts black; chin black; rest of under surface, side of head, axillars, under wing coverts, and inner webs of wing feathers white.

Adult female, frontal space, line above eye, and side of head chestnut; lores grayish white; rest of crown black; hindneck mixed gray or grayish brown, spotted with black; back, scapulars, inner wing coverts, secondaries, rump, and upper tail coverts, gray or brown; basal half of tail gray or grayish brown; distal portion black,

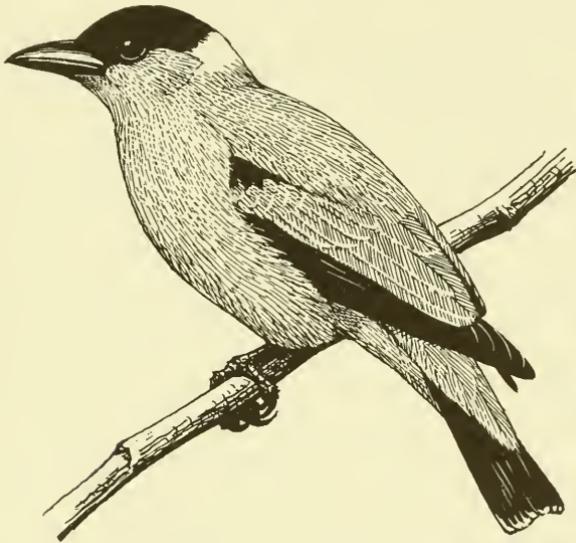


FIGURE 26.—Black-crowned becard, bacaco pequeño, *Erator inquisitor*.

tipped narrowly with white; wing and outer wing coverts black, upper foreneck, abdomen, axillars, under wing coverts, and inner margins of wing feathers white; lower foreneck, breast, and sides pale gray.

Immature male, forehead white; crown feathers basally white that shows irregularly in the black tips; side of head light chestnut; hindneck, back, and secondaries pale brownish gray, edged and spotted indefinitely with white; under surface white, with the foreneck and breast mottled faintly with gray.

Immature female, crown and sides of head light chestnut, becoming paler, mixed with white, on hindneck; posterior half and sides of crown spotted and lined with black; back, scapulars, and upper tail coverts pale brownish gray; rump white; under surface white.

This becard, superficially a miniature of the Masked Tityra in color and pattern of markings, but more slender in body, is found

with that species throughout most of its range. The two, though in general similar, on close scrutiny differ definitely in important details. The distinction was noted early by Kaup, when in 1852 he separated *Erator* as a subgenus in his broader group *Psaris*, which included an assemblage of the smaller cotingas. Ridgway, in his *Birds of North and Middle America* (U.S. Nat. Mus., Bull. 50, pt. 4, 1907, pp. 777 in key, 860–861) noted the “close superficial resemblance to *Tityra*” and gave a clear outline of the external differences for their distinction. In *Erator* these are the normal feathering of the side of the head around the eye and the lores, the relatively flatter, longer bill, in which the gonys is decidedly longer than the mandibular rami, and the form and size of the hook at the end of the maxilla. The outer side of the tarsus also has a row of large, more or less square scutes.

In *Tityra*, a broad space surrounding the eye and the lores is bare except for a few scattered, hairlike bristles; the bill is stout and arched, with a strong hook at the tip of the maxilla, and the mandibular rami are as long as the gonys. The outer side of the tarsus has small hexagonal scutes, similar to those on its back.

Hellmayr (Cat. Birds Amer., pt. 6, 1929, p. 204) apparently did not check these details as he united the two groups under the name *Tityra*, remarking only that he did not “see any practical advantage in subdividing this well-defined group.” The differences are readily apparent. It may be noted in addition that in a series of skulls of *Tityra*, represented by *T. semifasciata* and *T. cayana*, the base supporting the external nares is ossified as a circlet of bone attached to the premaxilla at the front of the nasal opening. In addition, the anterior end of the frontal is considerably expanded at the front of the orbit, and the lachrymal is enlarged. In *Erator inquisitor* the nasal capsule is not ossified, except in the central septum, and the lachrymal is slender. The two species groups, though differing so definitely in structure, have thus an interesting superficial similarity in appearance. In Venezuela both species have the native name *bacaco*.

As recognized currently, *Erator inquisitor* ranges from southern México south through Central America (except El Salvador) and northern South America to western Ecuador, eastern Bolivia, northern Argentina, Paraguay, and southeastern Brazil. Two of the six geographic races recognized are found in Panamá.

It may be noted that the three more southern geographic forms, typical *inquisitor*, *pelzelni*, and *erythrogenys* in the adult male have the side of the head completely black. In the other three, *buckleyi*,

albitorques, and *fraserii*, while the lores and the feathering at the base of the mandibular rami are black, the side of the head below and behind the eye is clear white. From material that I have seen it is not wholly clear that these two groups actually intergrade.

ERATOR INQUISITOR FRASERII (Kaup)

Psaris Fraserii Kaup, Proc. Zool. Soc. London, pt. 19, 1851 (October 28, 1852)
p. 47, pls. 37, 38. (Veracruz, México.)

Characters.—Male, somewhat darker gray on breast and back; female, definitely darker above; basal area of the tail darker gray.

Measurements.—Males (10 from Chiriquí, Herrera, Coclé, and Bocas del Toro), wing 103.9–107.3 (105.3), tail 58.2–65.8 (62.4), culmen from base 23.0–25.7 (23.9), tarsus 20.1–22.1 (21.6) mm.

Females (10 from Costa Rica, Chiriquí, Bocas del Toro, Herrera, Coclé, and San Blas), wing 98.2–103.6 (101.2), tail 57.5–61.8 (59.4), culmen from base 22.7–26.4 (24.8), tarsus 21.0–22.4 (21.6) mm.

Resident. Locally fairly common in forested areas from western Chiriquí and western Bocas del Toro east on both slopes through the Canal Zone; to 1280 meters at the lakes near El Volcán.

Though generally similar to the Masked Tityra, the two are easily distinguished by their head markings, the male in the present species having the bill and the crown wholly black, and the female by the chestnut-brown cheeks and forehead. While the two kinds may range in the same forested areas, *Elator* is found more often lower in the trees, also frequently in smaller groups, with both sexes more or less equally represented. In flight this smaller species shows more of a flash of white on the under surface of the wings. It has grunting calls not unlike those of *Tityra semifasciata*, but these seem more varied and somewhat different in sound. Both kinds are seen regularly in close proximity, and the two associate in this manner with no indication of hostility.

In the only reports relative to nesting in the present species that I have seen, that of Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 232) reports pairs of the subspecies *fraserii* and of the Tityra "perched amicably beside their respective nesting holes in the same forked stub." Skutch (Pac. Coast Avif., no. 35, 1969, pp. 10–19) in a detailed life history in Costa Rica, found *E. i. fraserii* nesting in woodpecker holes that were inaccessible as they ranged from 12 to 30 meters or more above the ground. The eggs remain unknown. Often the holes chosen are in use by the woodpeckers as sleeping quarters. As the female cotinga carries in leaves and other

bits of plant material for her nest, the woodpeckers for a time may throw this out but finally move to other quarters. The female becard incubates alone, but the male in due course assists in feeding the young.

Kaup named this form for Louis Fraser (born 1819), at one time curator at the Zoological Society of London, and later an associate in connection with work on the collection of Lord Derby. According to Hellmayr (Cat. Birds Amer., pt. 6, 1929, p. 223) the type material, now in the Liverpool Museum, includes three specimens. Two of these, male and female from the Derby Museum, without data, are typical of the present race, which also is the bird represented in the plates published with the original description. The third specimen, a male purchased from the dealer Leadbeater, also from the Derby Museum, agrees with the race *albitorques*. Kaup's measurements for the bill apply only to the first male (original number 1868) which was therefore selected as the type. As Kaup indicated no locality, Hellmayr designated Veracruz, México.

In my work in the field I have found these birds in the scanty remaining forests in Chiriquí, in the Burica Peninsula, near El Volcán, and at Las Lajas in the eastern part of the province; also near Almirante, Bocas del Toro. They were fairly common in Herrera, in northern Azuero Peninsula, in 1948. In the northern Canal Zone they are recorded rather regularly on Barro Colorado Island. Two, a male and a female, taken near Mandinga, San Blas, appear somewhat intermediate between this race and *albitorques*.

ERATOR INQUISITOR ALBITORQUES (Du Bus)

Tityra albitorques Du Bus, Bull. Acad. Roy. Belg., vol. 14, pt. 2, 1847, p. 104. (Perú.)

Characters.—Male, lighter colored, paler gray on back and upper tail coverts; female, dark gray above, from upper back to base of tail; usually lighter below.

A male taken at the old Tacarcuna village site on the upper Río Tacarcuna, Darién, March 6, 1964, had the iris wood brown; maxilla, except base, and cutting edge of mandible, except basal one-fourth, black; side of maxilla at base from gape to below nostril, and rest of mandible neutral gray; tarsus and toes somewhat brownish dark neutral gray; claws black.

A female, collected at Pucro, Darién, February 2, 1964, also had the iris wood brown; a line on the side of the maxilla from the gape to below nostril, and mandible, except for tip and anterior half of

cutting edge, neutral gray; rest of maxilla and of mandible dull black; tarsus and toes dark neutral gray; claws fuscous-black.

Measurements.—Males (12 from eastern Province of Panamá, Darién, and northwestern Colombia), wing 101.3–108.2 (105.0), tail 60.2–66.0 (61.9), culmen from base 23.6–26.6 (24.8), tarsus 21.1–21.7 (21.4) mm.

Females (10 from eastern Province of Panamá, Darién, and northern Colombia), wing 97.5–103.7 (100.2), tail 55.9–61.6 (59.0), culmen from base 22.7–24.9 (23.8), tarsus 20.4–21.7 (21.1) mm.

Resident. Fairly common on the Pacific slope in eastern Province of Panamá from near Chepo eastward through Darién to the Colombian boundary; to 575–600 meters on Cerro Tacarcuna and Cerro Pirre; on the Caribbean side at Puerto Obaldía, San Blas.

The only record to date for the Comarca de San Blas is a male in the Field Museum of Natural History, taken May 15, 1931, by Wedel at Puerto Obaldía.

In March and April I saw these birds in pairs, often at holes in dead trees at the border of clearings or pastures. Both male and female examined these cavities, and occasionally both carried nesting material to them. Other than this the birds were noted in the forest, at times high in the tree crown, but also in forest edge in the top of the undergrowth. Once, at Jaqué, one male uttered the usual low calls in a wheezy series that formed a song.

This subspecies ranges through northern Colombia to the Santa Marta region and the Magdalena Valley.

**QUERULA PURPURATA (P. L. S. Müller): Purple-throated
Fruit-crow, Pájaro Toro**

Muscicapa purpurata P. L. S. Müller, *Natursyst. Suppl.*, 1776, p. 169. (Cayenne.)

Large, black; adult male with iridescent purple-red throat.

Description.—Bill broad, depressed; head fully feathered. Length 255–275 mm. Male, glossy black above; somewhat duller on under surface; chin black; foreneck with elongate, narrow, stiffened, square-ended feathers, dark reddish purple in color (with the hidden bases, including this part of the feather shafts, white), expanded shieldlike at sides and on the lower end.

Female, dull black throughout (without the throat shield).

Juvenile, crown, developing wings and tail dull black; rest of body and the wing coverts brownish black, barred faintly and indistinctly with black.

The immature male, when grown, has the throat black like the female.

A male, collected at El Llano, eastern Province of Panamá, February 9, 1962, had the iris dark wood brown; bare rims of eyelids black, the lower lid with a narrow band of white feathers; tip of maxilla black; rest of bill rather light neutral gray; tarsus and toes slate-black; claws black; inside of mouth pale neutral gray. Another, taken near Armila, San Blas, March 7, 1963, had the iris clear brown; tip of bill black, rest neutral gray; tarsus and toes dusky neutral gray; claws black; under side of toe pads, dull honey yellow.

A female accompanying the male of March 7 was similar to it.

Measurements.—Males (10 from Canal Zone, eastern Province of Panamá, and Darién), wing 179.5–187.5 (183.0), tail 106.4–112.4 (110.3), culmen from base 24.0–28.5 (26.3), tarsus 23.7–25.6 (24.7) mm.

Females (10 from Bocas del Toro, Colón, Canal Zone, Darién, and San Blas), wing 172.0–178.0 (174.8), tail 105.2–113.3 (109.1), culmen from base 24.0–27.4 (25.8), tarsus 23.1–24.8 (23.9) mm.

Resident. Common locally in forested areas in the Tropical Zone. On the Pacific side from the southern Canal Zone (K-9 Road, Chiva Chiva, Pedro Miguel) to the Colombian boundary in eastern Darién; on the Caribbean side throughout, from western Bocas del Toro, northern Veraguas and northern Coclé, Colón, northern Canal Zone, and San Blas to Colombia. Recorded in Darién to about 575 meters on the base of Cerro Tacarcuna, and near Cana, on Cerro Pirre. In the Canal Zone they are common in the forests of the Atlantic slope. Wandering groups occasionally appear on the Pacific side in the suburban area of Balboa—more commonly along the valley of the Río Caimitillo.

The fruit-crow in Panamá ranges in pairs or small groups of several individuals in forested areas through the tree crown, where their presence at a distance may be noted from their curious, loud notes. The Cuna Indians from these call them *Toatoa*. Though individuals are not timid they may be difficult to see as they are not active in movement, usually perching quietly among the leaves, or on larger branches. The best views of them come as they fly across open spaces above small plantations cleared in forest, or when they are found feeding with trogons and other forest birds in fruiting trees. They flutter out quickly to seize berries at the ends of branches, returning immediately to more secure perches, where briefly they may remain quiet. At such times males show a flash of color from the

somewhat iridescent purple throat, though usually this is hidden so that they appear as plain black as their mates. On the wing, when crossing rivers or other openings, the flight appears slow and tilting, and the birds seem heavy in body. Occasionally, when I have whistled a rapid imitation of the call, a group has come into branches overhead, where they moved about quickly and excitedly.

In calling, males swell the throat so that the gorget stands out like a shield. And as birds alight after flight they may shake the tail quickly from side to side. Sick (Living Bird, Cornell Lab. Orn., 1967, p. 20) in Brazil suggests that the "courtship, accompanied by loud and continuous calls, resembles the display of manakins in several ways: a moustache display . . . a quivering of flight feathers that recalls *Pipra*; a melodious voice."

On the Rio Chucunaque in Darién, at the end of March I saw two fly across the river, with one carrying a slender spray of nesting material. Eisenmann (Smithsonian Misc. Coll., vol. 117, 1952, p. 38) noted a pair building a nest on Barro Colorado Island on June 28, 1951. Apparently incubation had begun on July 14. Hazel Ellis (Wils. Bull., 1952, pp. 98-100) in further observation at this site noted that the pair came together, with the male carrying most of the nesting material, but with the female arranging it in place. The nest was not accessible. In Surinam, Haverschmidt (Birds of Surinam, 1968, p. 284) reported a nest located in a tree "at that time leafless, at a height of about 20 meters at the edge of a forest." He also saw a male building a nest.

In a detailed study in Guyana, Snow (Living Bird, Cornell Lab. Orn., 1971, pp. 5-17) found fruit-crows associated in groups of three or four individuals that were "closely integrated social groups which not only feed, rest, preen and almost certainly roost together, but also jointly attend a single nest." The two nests that he studied in detail were cup-shaped, loosely built of vegetable fibers on a base of small sticks. They were placed in trees standing in forest. One nest was about 10 meters, the other 20 meters or so above the ground. Each nest tree was closely guarded by its group against intrusion by toucans, jays, caciques, and other birds. At one nest the attendants included two males, a female, and one other, a bird in female dress but with two red feathers on one side of the throat. The other nest was attended by three individuals, a male and two birds in black plumage, one certainly a female, the other probably of that sex.

In the first nest only the female brought building material but one male occasionally sat in the structure, apparently to assist in shaping

the material. The single egg, incubated by the female alone, hatched in 25 days. While the group of four all fed the nestling, one male appeared to do the greatest part. Though the nest was inaccessible, when the egg hatched half of the shell was found on the ground below. It was "exceedingly dark with a deep olive ground color rather thickly covered with blackish brown markings." (This is the only note on egg color seen.) The nestling was "covered in buff-colored down." The second nest mentioned was not successful.

Dr. R. M. Strong (Auk, 1952, pp. 199–200, fig. 1) has described the microscopic structure of the throat feathers in the male as changing in appearance in reflected light from red to orange. "This change takes place in the distal exposed portion . . . the feather structure consists of highly-modified, barbuleless barbs. These barbs are flattened and twisted so as to present a maximum surface area for color reflection. Cross-sections reveal features which are unique in my experience. . . . There is an outer layer that is almost too thin to be called a cortex . . . only two to four microns thick. This cortex or cuticle covers a . . . pigmented, central core which has a maximum thickness of about 20 microns . . . when viewed by transmitted light . . . is orange red in color."

Through the extensive range of this species, from northeastern Costa Rica through Central America, and in northern South America to Perú, Bolivia, the Amazon Valley in northern Brazil, and the Guianas, these birds appear uniform in size and color so that no geographic races have been recognized.

PROCNIAS TRICARUNCULATA (J. and E. Verreaux):
Three-wattled Bellbird, Calandria

FIGURES 27 and 28

Casmarhynchus tricarunculatus J. and E. Verreaux, Rev. Mag. Zool., ser. 2, vol. 5, May 1853, p. 193. (Bocas del Toro, Panamá.)

Size large, body heavy; male, head white, body chestnut-rufous; female, olive-green above; underneath yellow streaked with olive-green.

Description.—Adult male, forehead and loreal region bare except for small scattered bristles and small downy feathers; eyelids also bare except for a line of feathers around edge; bill broad at base, flattened, with the mouth large, the rictus extended back beneath the eye; a slender fleshy wattle attached to the corner of the mouth on each side, with a third arising from the base of the bill adjacent to the forehead, all three dangling, pendant over the neck and breast to a

length of 100 mm or more, soft and flexible, wormlike in form; entire head, neck, and chest pure white; rest of the plumage, including wings and tail, chestnut-rufous; breast feathers white basally.

Female, forehead and lores feathered; upper surface greenish olive, the feathers margined indistinctly with yellowish green; fore-

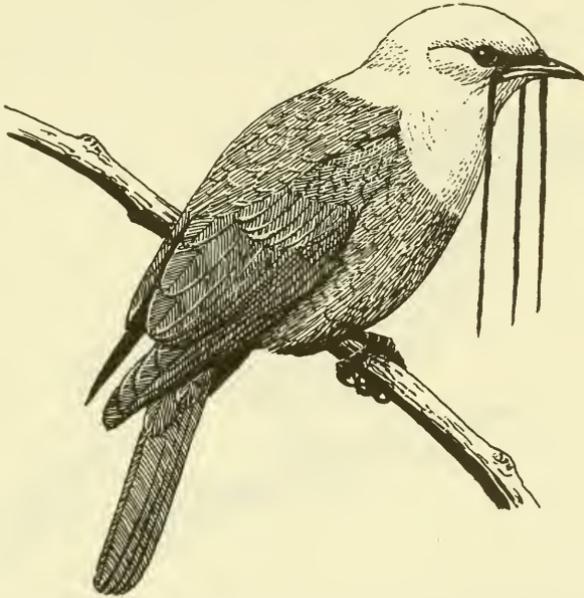


FIGURE 27.—Three-wattled bellbird, calandria, *Procnias tricarunculata*, male.

head, space around eye and sides of head spotted and streaked faintly with dull yellow; under surface yellow, streaked heavily with olive-green, except the under tail coverts; throat and under wing coverts with the darker markings restricted or absent; rarely with one or more chestnut-rufous feathers on the breast.

Immature male, like the female, but with anterior forehead and loreal area mainly bare, and the throat and upper foreneck plain yellow or only faintly streaked. As the bird matures, chestnut-rufous feathers appear scattered over the breast.

An adult male, taken on Isla Cébaco, Veraguas, January 11, 1965, had the iris dark brown; bill black, with the posterior two-thirds of the cutting edges (upper and lower) dull neutral gray; bare skin at base of bill and around eye blackish slate; long pendant wattles dusky neutral gray; inside of mouth, including entire tongue, deep black (this color extending the full length of the gullet to the

stomach); tarsus and toes dark neutral gray; claws brownish gray; basal pads underneath toes yellowish.

A juvenile male, taken at the same time, was similar except that the tarsi, toes, and claws were blackish slate.

A female collected at this locality January 13, had the iris dark wood brown; maxilla, except posterior cutting edge, and tip of mandible black; rest of maxilla and of mandible dull greenish neutral gray, somewhat paler along cutting edge; thickened edge of eyelids



FIGURE 28.—Three-wattled bellbird, calandria, *Procnias tricarunculata*, female.

and partly bare skin on chin, lores, area back of eye, and forehead dull slate; tarsus and toes dusky neutral gray; claws fuscous-black; under side of toes dull yellowish.

Adult females have a very slight development of the lateral wattles at the posterior angles of the mouth. In immature males these and the one of the forehead begin growth early. As these grow, they hang down, swinging freely and casually as the birds move about. Ancient representations of these birds showing the wattles standing stiffened and extended have no basis in fact.

Measurements.—Males (10 from Bocas del Toro, Chiriquí, and Los Santos), wing 163–177 (168), tail 99.8–112.7 (105.0), culmen from base 17.1–19.7 (18.1), tarsus 28.0–30.8 (29.6) mm.

Females (10 from Costa Rica, Chiriquí, Bocas del Toro, and Veraguas), wing 145.7–168.0 (155.5), tail 95.2–109.0 (101.0), culmen from base 17.6–22.5 (19.3), tarsus 25.2–30.5 (27.9) mm.

The measurement of the culmen is taken from the base of the

ramphotheca which is at or slightly behind the level of the posterior edge of the narial opening. (In some specimens it may be necessary to determine this point with the aid of a magnifier.)

Resident. Found widely in areas of heavy forest, from the Costa Rican boundary in western Chiriquí and Bocas del Toro through Veraguas to the mountains in the southern end of the Azuero Peninsula; from sea level to over 2000 meters elevation on Volcán Barú; Isla Cébaco.

The bellbird is still fairly common in the remoter areas of forest, but without question has decreased considerably in number, partly through being hunted, and partly through destruction of its habitat. It ranges mainly in the high tree crown, where its presence remains unknown unless it calls. The birds rest usually on open perches but these often are screened from below by leaves. Where not unduly disturbed by hunters, as on Isla Cébaco, I have found them fairly tame so that they were easily seen as they moved about. But more often they were heard rather than seen as the strident calls came from birds distant in the forest.

Males when calling rest with the body inclined forward, and large mouth wide open. Crandall (Zoologica, 1948, pp. 113-114, pl. 1) noted in an immature male in captivity that in display the bird "brought the body into a stiffly horizontal position, held high on the legs. . . . The mouth is opened widely, until the lower mandible approximates a right angle to the upper. . . . The body is then pumped rapidly up and down for about five seconds. This movement then ceases and with the body, legs and wings rigid, a violent convulsion of the throat and neck is followed by the sharp metallic bell." Skutch (Pac. Coast Avif., no. 35, 1969, pp. 89, 91) noted a form of display in which the male at the end of a call flew forward horizontally for a short distance, reversed in air, and returned to the original perch.

The notes, heard in the forest, may vary somewhat but all have resonance that carries far. Commonly, near at hand, I have heard them utter a high-pitched whistled double note, *whit see*, given rather slowly, followed by the harsher, loud metallic call, uttered with mouth fully open. Also they may begin with a resounding note, followed immediately by two to four others, all of clanging sound but not as loud, and given slowly, spaced one or two seconds apart.

While often they move about rather slowly, they seem more alert and active than others of the family.

As I had found bellbirds on several journeys in the mountain forests of Chiriquí, and had come to associate them with such haunts, it was a surprise in January 1958 to find them in the swampy wood-

land on the shore of Bahía Almirante. Here they moved about freely, paying little attention to me. On my first encounter with them here, at least 20 were seen within a distance of less than a kilometer. On Isla Cébaco a number lived on a wooded hill, moving about from near the beach to an elevation of 200 meters. Here they were feeding on dark-colored drupes, which made an inklike stain in the body cavity of those prepared for specimens.

Older accounts list specimens taken by Arcé from Cordillera de Tolé, Chiriquí; Calobre and Calovévora, Veraguas. Griscom recorded them as common on Cerro Flores, eastern Chiriquí, in 1924.

In 1962 Dr. Charles Handley, Jr., found them on the summit of Cerro Hoya at the southern end of the Azuero Peninsula in Los Santos, the most eastern point at which they are known. In my own work in the field, in addition to the localities mentioned, I noted the species also in the forest at Aguacatón in the upper end of the Burica Peninsula. Whether in Panamá they shift after the nesting season from colder, higher elevations in the mountains to lowland areas, as they are reported to do in Costa Rica, is uncertain from present data.

Ridgway in his outline of records of occurrence (U.S. Nat. Mus. Bull. 50, pt. 4, 1907, p. 883) listed one from "20 miles from City of Panama," quoting the locality from the data on the label of a male. The bird came to the National Museum in a small collection purchased in May 1887 in Panama City. From its appearance it was one prepared by Arcé and without question was taken in western Panamá.

Though the bird, called *calandria*, is widely known, I found no one with knowledge of its nesting.

The species ranges beyond Panamá north through Honduras.

CEPHALOPTERUS GLABRICOLLIS Gould: Bare-necked
Umbrellabird, Pájaro Danta

Cephalopterus glabricollis Gould, Proc. Zool. Soc. London, pt. 18, 1850 (March 14, 1851), p. 92, pl. 20. (Cordillera of Chiriquí, Panamá.)

Very large, wholly black; heavy body, short tail; with elongated feathers on the crown, forming a crest.

Description.—Length 380–450 mm. Adult male, with a large crest, when erected extending from above the bill in front, over the crown and down the back of the neck; throat and upper foreneck feathered; middle and lower neck and upper breast (including the sides of this area) bare except for a narrow central line of rudimentary feathers; an elongate, fleshy appendage on center of lower foreneck, tipped with long, narrow feathers; coloration black throughout, except for

dark grayish under wing coverts and under surface of the wings.

Adult female, crest reduced, short and bushy; bare area of foreneck and upper breast less in extent, with a smaller central wattle, and heavier central feathering; black above, dull slaty black below; wings as in male.

Measurements.—Males (10 from Chiriquí, Veraguas, Bocas del Toro, and Costa Rica), wing 244.0–256.0 (247.1), tail 109.0–127.3 (116.4), culmen from base 27.0–34.3 (30.8), tarsus 43.0–47.2 (44.7) mm.

Females (8 from Chiriquí, Bocas del Toro, and Costa Rica), wing 213.0–240.0 (221.0), tail 100.0–121.0 (108.8), culmen from base 28.5–34.9 (31.3), tarsus 38.5–45.9 (40.8) mm.

Resident. Rare; found locally in high, humid forests of Chiriquí, adjacent Bocas del Toro, and Veraguas.

This species was first brought to attention by Gould at a meeting of the Zoological Society of London on May 14, 1850, when he displayed the type specimen with the statement that it came from the "high Cordillera of Chiriquí in Veragua, at an elevation of 8000 feet." The bird was collected by Warszewicz in 1849 in crossing the Isthmus on the old trail from Laguna de Chiriquí to David, through the mountains above Boquete. While the type locality is listed as in Chiriquí, it is probable that the bird was obtained on the northern slope in what is now Bocas del Toro at an elevation of 1600 meters or less. The species is known in Panamá from relatively few specimens as it seems never to have been common. Arcé in 1866 took two males in the Cordillera de Tolé, one of them now in the British Museum, and the other in the U.S. National Museum, obtained in an exchange with Salvin. Arcé also collected a male at Calovévora (Veraguas) in 1868. The mention by Salvin (*Proc. Zool. Soc. London*, 1870, p. 201) of one from Calobre may have been in error for Calovévora, as this locality is not included in any later account. W. W. Brown, Jr., collected a male and two females above Boquete in March and April 1901. Blake (*Fieldiana: Zool.*, vol. 36, 1958, pp. 534–535) lists two, male and female, in the Mönniche collection, taken July 14, 1933, from 1460 meters at Cedral, Bocas del Toro, on the trail to the north coast. The only recent specimens are a female, given to me by Ratibor Hartmann, that he shot and prepared at the headwaters of the Río Changuena, between Cerro Fabrega and Cerro Róbalo, in Bocas del Toro, July 9, 1960, and one in the Gorgas Laboratory collection taken at Boca del Drago on the coast of Bocas del Toro, August 25, 1960. On July 17, 1964, N. G. Smith saw two on the

Finca Lériða at about 1600 meters above Boquete.

There is little recorded concerning this bird in Panamá, except that it is a forest inhabitant. In Costa Rica, where it is known as the *Pájaro Danta* (tapir bird) or *Pavoncillo* (little peacock), it is found on the Caribbean slope, ranging to the higher levels in the mountains. Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 233) says that it moves lower down after nesting. Carriker (Ann. Carnegie Mus., vol. 6, 1910, p. 661) found a pair near sea level on the Río Sixaola, and collected the female.

Charles Cordier (Anim. King., vol. 46, 1943, pp. 1–10), who captured two males and a female alive for the New York Zoological Society, in observations on the upper Río San Carlos in northern Costa Rica in April and May 1942, found a group of males in daily display. Each had one to three perches for this purpose, some within 5 meters of the ground, others higher. As the birds move about, one may hold several thin twigs in its bill. In calling, the male “fills out his airsack, which is bright scarlet, to the size of a big tomato, the feather-tipped, fleshy wattle attached to the airsack becoming greatly extended and hanging down 3 or 4 inches [75 to 100 millimeters]. When the airsack is distended the boom is produced. Then he suddenly throws his head violently back, far back, and quickly forward again, expelling the air with a swishing sound closely resembling the spitting of a big cat. He immediately fills his airsack again and lets forth another boom, but now he expels the air without going through any contortion or sound.” Cordier saw no eggs or young, but three nests shown to him as of this bird “resembled over-size thrush nests. All were placed 4 to 6 feet from the ground between the trunk of a medium-sized tree and a branch.” The egg is as yet unknown.

Sick (Journ. f. Orn., 1954, pp. 240–243) described the nest of the related *Cephalopterus ornatus* in Brazil as located in a tree 12 meters above the ground. It was made of twigs so loosely placed that when an egg was laid it was visible through the bottom of the nest from the ground. The egg was described as khaki-brown with dark brown and lilac markings, round at the ends of the egg, longer in the middle, fused to cover most of the larger end. The egg measured 56.0×35.8 mm. As shown in a photograph that accompanies the account, it is somewhat pointed subelliptical in form.

The present species has been listed as a geographic race of *Cephalopterus ornatus* of South America which in the male and female has the throat and foreneck entirely feathered. In the Central

American bird the male has only the space on the throat immediately below the bill feathered, the rest of the foreneck and upper breast, with the sides, being completely bare, with the skin brightly colored. The female also has this area partly bare. The two groups are so distinct and so widely separated geographically that subspecific status is not justified.

Family PIPRIDAE: Manakins, Saltarines

This family of South American origin is closely related to the cotingas, with the possibility that the two when more fully known may not be separable at the family level. In present understanding the 56 species recognized are resident in tropical areas, mainly in the southern continent, but with 11 that range into Panamá. Beyond the isthmus to the north they diminish rapidly in variety, with six kinds recorded in Honduras, and finally only four that reach southern México. Size in most is small, with males marked by contrasting patterns of brilliant color, and the females by plain, dull coloration.

Manakins are inhabitants of thickets and forested lands, living partly on berries, and partly on a variety of insects. The smaller kinds do not form pairs, but in the nesting season males gather in assemblages spread through the forest cover. Here each has a small, open display area where the ground is cleared of leaves and other debris. For part of the day, especially in morning, they rest on branches above or at the side. When females appear the males with low calls and a variety of explosive noises move quickly over the space for display. The sounds that mark their movements are not vocal, but are produced mechanically by abrupt activities of the wings in which some of the feathers are thickened or otherwise specialized.

After mating, females seek suitable cover in which to build nests, lay their eggs, and begin incubation. Males have no part in this, nor do they assist in feeding the young. The mating displays readily attract attention, and with patience may be observed without especial difficulty. The nests in the dense cover of forest are less easily located as the females move and live quietly so that they are little noticed. Nests and eggs of a number of kinds remain unknown.

Early specimens of the family came to European naturalists from Surinam where in the Dutch of that day they were called "Manneken," meaning male birds. From this Brisson proposed for these early specimens the genus *Manacus* which remains the name for a group of the better known kinds.

Schiffornis turdinus, with its anatomy understood only in part, is

an aberrant entity in this family, especially in its larger size. Another is *Sapayoa aenigma*, as yet also little known. It is probable that both may prove to be allied to the cotingid group of species.

KEY TO SPECIES OF PIPRIDAE

1. Two central tail feathers longer than those on either side; with tips narrowed and pointed.
 - Lance-tailed Manakin, *Chiroxiphia lanceolata*, p. 331
 - Central tail feathers normal; not elongated or sharply pointed..... 2
2. Larger, 135–165 mm long; with tail longer (tail 56–70, wing 80–93 mm). 17
 - Smaller, 75–125 mm long; with tail shorter (tail 17–48, wing 45–75 mm) 3
3. Rictal bristles more evident; those over nostril longer.
 - Green Manakin, *Chloropipo holochlora litae*, p. 324
 - Rictal bristles not prominent, only slightly evident..... 4
4. Back, wings, and tail black or blue-black (males)..... 5
 - Dorsal surface greenish olive to dull buffy brown (females and immature males) 6
5. Upper surface, including crown, uniform blue-black.
 - White-ruffed Manakin, *Corapipo altera*, p. 325
 - Upper surface not uniformly black..... 7
6. Crown and hindneck dull brownish gray; back and rump dull green.
 - White-crowned Manakin, *Pipra pipra anthracina*, females and immature males, p. 322
 - Crown, back and rump uniformly colored..... 12
7. Crown black like back (males)..... 8
 - Crown differing from back in color (males)..... 9
8. Hindneck, side of head, and throat yellow to light orange; larger.
 - Golden-collared Manakin, *Manacus vitellinus*, p. 334
 - Hindneck, side of head, and throat bright orange; smaller.
 - Orange-collared Manakin, *Manacus aurantiacus*, p. 343
9. Loes and side of head black (bright coloration restricted to crown).. 10
 - Crown, side of head, and hindneck all brightly colored..... 11
10. Crown and somewhat elongated crest white.
 - White-crowned Manakin, *Pipra pipra anthracina*, p. 322
 - Crown and slightly elongated crest bright blue.
 - Blue-crowned Manakin, *Pipra coronata*, p. 311
11. Head, hindneck, and side of head bright red.
 - Red-capped Manakin, *Pipra mentalis ignifera*, p. 314
 - Head, hindneck, and side of head orange.
 - Golden-headed Manakin, *Pipra e. erythrocephala*, p. 319
12. Upper surface uniform, somewhat dull green.
 - Blue-crowned Manakin, *Pipra coronata*, female and immature, p. 311
 - Upper surface dull brownish buff..... 13
13. Lower surface brighter, more buff..... 14
 - Lower surface duller, more grayish..... 15
14. Larger, wing more than 50 mm; slightly duller colored.
 - Golden-collared Manakin, *Manacus vitellinus*, female and immature, p. 334

15. Throat pale gray; darker, greener above.
 White-ruffed Manakin, *Corapipo altera*, female and immature, p. 325
 Throat yellowish to greenish; dorsal surface duller, buffier..... 16
16. Paler on lower surface, especially on abdomen.
 Golden-headed Manakin, *Pipra e. erythrocephala*, female and
 immature, p. 319
 Duller, grayer on lower surface; darker above.
 Red-capped Manakin, *Pipra mentalis ignifera*, female and immature, p. 314
17. Dull brown to olive-brown above; grayish olive with a rusty brown
 band on breast..... Thrushlike Manakin, *Schiffornis turdinus*, p. 346
 Olive-green above; greenish yellow below; male with a concealed yellow
 streak in the crown.... Broad-billed Manakin, *Sapayoa aenigma*, p. 353

**PIPRA CORONATA Spix: Blue-crowned Manakin, Saltarín
 Corona Azul**

Pipra coronata Spix, Av. Spec. Nov. Bras., vol. 2, 1825, p. 5, pl. 7, fig. 1. (São Paulo de Olivença, Rio Solimões, Amazonas, Brazil.)

Small; adult male, black with bright blue crown; female green above, with grayish green breast.

Description.—Length 80–90 mm. Adult male, crown, bright blue; forehead, side of head, body, wings, and tail black.

Adult female, forehead grayish white basally, tipped with rather dull green; rest of crown, hindneck, back, scapulars, inner wing coverts, rump, and upper tail coverts dull green; primaries, secondaries, and outer wing coverts dusky edged with dull green; tail dusky, edged with dull green; chin grayish, edged indistinctly with dull green; foreneck, breast, sides, and flanks dull green; abdomen and under tail coverts somewhat dull olive-yellow; axillars and under wing coverts pale greenish white.

Juvenile male, in general like female, usually duller green above, and more grayish underneath; rarely with a bluish shade on back and rump. Young males change rapidly to the black adult plumage.

The Blue-crowned Manakin ranges widely from southern Costa Rica southward through Panamá and Colombia to Ecuador, eastern Perú, western Brazil, and southern Venezuela. Two subspecies, differing slightly in size, and depth of color in the males, are found in Panamá. The race of the eastern area of the Isthmus is the more common and widely spread form.

One of the older records of this species by Salvin (Proc. Zool. Soc. London, 1867, p. 149) for "Santiago de Veragua," cited also by Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 2, 1890, p. 110) as "Santiago de Veraguas," appears to be in error, as the bird has not been recorded otherwise in that area, and I have found no specimen with that locality data in the Salvin-Godman collections.

PIPRA CORONATA VELUTINA Berlepsch

Pipra velutina Berlepsch, Ibis, ser. 5, vol. 1, no. 4, October 1883, p. 492.
("Veragua" = western Chiriquí, Panamá.)

Characters.—Slightly larger; male, less solidly black; female slightly lighter green.

A female collected February 25, 1966, at Punta Balsa, Chiriquí, at the lower end of the Burica Peninsula, had the iris dark reddish brown; maxilla black; mandible bluish neutral gray; tarsus, toes, and claws dusky neutral gray.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 59.4–63.8 (61.6), tail 24.4–27.7 (26.3), culmen from base 9.6–11.3 (10.4), tarsus 13.5–14.4 (14.0) mm.

Females (10 from Chiriquí and Costa Rica), wing 58.7–62.8 (60.4), tail 24.9–27.7 (26.4), culmen from base 9.9–11.5 (10.9), tarsus 12.6–14.6 (13.6) mm.

Resident. Locally in western Chiriquí and western Bocas del Toro.

The western subspecies is little known in Panamá. Arcé sent specimens to Salvin from Bugaba in western Chiriquí. W. W. Brown, Jr., found it in numbers at Divalá, from October to December 1900, and collected 18 specimens. Apparently it now is rare in that area, as in my own field work I found it only on three occasions. I collected a female, March 2, 1960, in a small tract of woodland on the Río Gariché, 15 kilometers west of Concepción; on February 25, 1966, another in undergrowth at Punta Balsa, 5 kilometers north of Punta Burica; and March 12, 1966, a third at Olivo, north of Puerto Armuelles. In western Bocas del Toro Peters (Bull. Mus. Comp. Zool., vol. 71, 1931, p. 327) recorded male and female from Cricamola, taken by von Wedel, August 19 and 21, 1928.

Skutch (Pac. Coast Avif., no. 35, 1969, pp. 97–109) has found several males grouped near one another in undergrowth in courtship assemblies. The individuals range 25 meters or so apart, each with its own display area 5 to 10 meters in diameter. Here they spend much of their time calling and singing as they rest on small, horizontal branches, 3 or 4 meters above the ground. Occasionally one flits his wings or makes short flights to other perches. Periodically he drops down in the undergrowth where he flies back and forth irregularly, finally stopping on a special low perch "where with depressed head and beating wings he emits a harsh, grating note." Here the female comes and mates.

The nest, built by the female alone, is a shallow cup made of light-colored fibers, attached by the rim in a small fork, from half a meter to 2 meters above the ground. Tufts of dead leaves and green

moss hang from the bottom. The two eggs are dull white to pale gray, marked with light and dark brown, varied in some to rufous-brown, most heavily in a band around the large end. Measurements from 23 eggs ranged from 18.3×12.7 to 21.0×15.7 mm. The female remained alone during incubation and the care of the young. The scanty down on the young at hatching is light or dark flesh color, but quickly becomes darker. The nestlings were fed insects and the pulp of berries, the standard food of the adult.

PIPRA CORONATA MINUSCULA Todd

Pipra velutina minuscula Todd, Proc. Biol. Soc. Washington, vol. 32, June 27, 1919, p. 115. (Quibdó, Chocó, Colombia.)

Characters.—Slightly smaller; male, deeper black; female slightly more green.

An adult male, collected on the Río Boquerón, near the Peluca Hydrographic Station, Panamá, February 23, 1961, had the iris bright reddish brown; mandible and a narrow line on the cutting edge of the maxilla neutral gray; rest of maxilla black; tarsus, toes, and claws black. An immature male (in plumage stage like the female), taken at the same place and date, had the iris wood brown, with other markings as in the adult. At Armila, San Blas, February 21, 1963, an adult male, had the iris reddish brown; maxilla black; mandible dark neutral gray; tarsus and toes dusky neutral gray; claws black. An immature male in green dress (resembling the female) taken there February 23 was similar to the adult.

Measurements.—Males (10 from western Province of Panamá, Darién, and San Blas), wing 56.6–58.8 (57.7), tail 24.2–26.2 (25.5), culmen from base 8.8–10.0 (9.4), tarsus 13.0–14.6 (13.8) mm.

Females (10 from Darién and San Blas), wing 54.0–58.2 (56.2), tail 23.8–26.6 (25.0), culmen from base 9.4–10.6 (10.0), tarsus 13.0–14.1 (13.4) mm.

Resident. Locally common from western Colón and the Canal Zone, east in the eastern Provinces of Panamá and Colón through Darién and San Blas.

In early collecting McLeannan secured several specimens, apparently from near his station at Lion Hill. Stone (Proc. Acad. Nat. Sci. Philadelphia, vol. 70, 1918, p. 268) recorded a female taken by Jewel at Gatun, July 30, 1911. In 1952, I found several on the Río Indio, in western Colón from near the mouth inland to El Uracillo in extreme northern Coclé. A male in the Museum of Vertebrate Zoology at Berkeley was taken at Piña, western Colón by R. W. Noyes, September 5, 1947. To the east I secured one on the eastern

end of Cerro Azul, April 23, 1949, and others at Mandinga, San Blas, January 25, 1957. Goldman in 1911 collected a male June 3 near the Río Cascajal east of Portobelo, and a female June 7 on Cerro Bruja. Eastward, to the Colombian boundary the form is more common on both slopes. I found it near Mandinga in January 1957, and in the Chagres Valley back of Madden Lake in 1961. Thomas Barbour collected it on Cerro Sapo, and at Jesucito in 1922. It was common at Jaqué in 1946, and on the upper Río Jaqué in 1947, in eastern Darién. It is recorded at several localities on the Río Tuira and the Chucunaque to 575 meters on the Río Tacarcuna.

Commonly, I have found these birds in undergrowth in forest, often resting quietly. Also at times they have been in small groups in, or immediately below, the high tree crown. As they move they often flit the wings quickly, and then fly rapidly. While not noisy, I heard them give rattling calls and also a faint, trilling song. At Armila, San Blas, males displayed by flying with fully spread wings through dark, heavily shaded undergrowth, an action that made them appear twice their usual size. These evidently were on their mating assemblies.

PIPRA MENTALIS IGNIFERA Bangs: Red-capped Manakin,
Saltarín Cabecicolorado

FIGURE 29

Pipra mentalis ignifera Bangs, *Auk*, vol. 18, no. 4, October 1901, p. 363. (Divalá, Chiriquí, Panamá.)

Small; male, crown and hindneck bright red, body black; female and immature male, greenish olive above, somewhat paler on lower surface, with foreneck and abdomen yellowish olive.

Description.—Length 90–100 mm. Adult male, inner secondaries stiffened, with the shafts somewhat enlarged for two-thirds of the length, compressed laterally, projecting slightly in the center on the lower side. Chin yellow, or yellowish white; rest of head and hindneck bright red, the feathers white to pale yellow basally; axillars and inner under wing coverts pale yellow; inner webs of primaries grayish brown, of secondaries pale yellow; rest of plumage black.

Adult female, upper surface greenish olive; lower foreneck and breast paler olive; throat, abdomen, tibia, and under tail coverts dull greenish yellow; axillars and under wing coverts pale yellow; inner margins of wing feathers pale grayish brown.

Immature male, like female, often with a trace of red in the crown.

In adult males, the iris in several specimens varied from ivory-

white to yellowish white or pale yellow; maxilla and usually the tip of the mandible light to dark brown or fuscous, often darker at the tip; tip of mandible in most dark like the maxilla, shading to brownish white at the base; tarsus light brown to dull brown, with the toes similar, or in some fuscous; claws grayish brown to wood brown.

Female, iris dark brown to mouse brown, occasionally pale yellow; maxilla and tip of mandible dull wood brown to fuscous, in some with the cutting edge of maxilla and mandible paler; tarsus and toes dull brown to dull neutral gray; in some the gape dull orange.

Measurements.—Males (16 from Chiriquí, Bocas del Toro, Canal Zone, Province of Panamá, and western San Blas), wing 54.5–59.6 (56.2), tail 23.2–26.9 (23.6), culmen from base 9.9–12.0 (10.7), tarsus 13.4–15.9 (14.3, average of 15) mm.

Females (18 from Chiriquí, Bocas del Toro, Province of Panamá, Canal Zone, and western San Blas), wing 55.4–61.2 (58.0), tail 24.0–28.5 (26.1), culmen from base 10.0–12.6 (11.4), tarsus 13.3–15.8 (14.3) mm.

Weights 13.4–14.7 grams in three females, recorded by R. S. Crossin near Gamboa.

Resident. Locally common in the Tropical Zone; from the Costa Rican boundary, on the Pacific slope in Chiriquí, and southern Veraguas east locally to the base of Cerro Chucantí, in the Serranía de Majé. (It is not known from the eastern side of the Azuero Peninsula and the savanna area, in Coclé and western Province of Panamá.) On the Caribbean side, locally east from the Costa Rican boundary in Bocas del Toro through northern Veraguas and Coclé, and western Comarca de San Blas (Mandinga); to 600 meters elevation in the Cerro Azul.

The race was named by Bangs from a series of specimens taken by W. W. Brown, Jr., near Divalá in the final months of 1900. Earlier, Arcé had collected specimens at Bugaba in this same region, and at Mina de Chorchá near David. As the Red-crowned Manakin primarily is a forest inhabitant it is now greatly restricted in abundance in this area in Chiriquí due to clearing for agriculture. On June 1, 1953, I collected an adult female in low second growth at La Isleta on the Río San Pablo, below Soná, Veraguas, in an area where there were many *Manacus aurantiacus*. Dr. John Aldrich (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, pp. 92–93) found this manakin common near Paracoté, where the Río Angulo enters the northwestern shore of Bahía Montijo. There is no record beyond this point through the southern and eastern side of the Azuero Peninsula

and across the open savannas of southern Coclé. The National Museum has a male from Chorrera, eastern Province of Panamá and others from northern Canal Zone (K-6 Road). Beyond this I have found it on the Cerro Azul, near Chepo (in the San Antonio area on the eastern side of the Río Mamoní), at El Llano, Cañita, Chimán, and at 300 meters elevation on Cerro Chucantí, near the base of the Serranía de Majé. From near Chepo to Cerro Chucantí the range overlaps that of *Pipra e. erythrocephala* for a distance of 100 kilometers.

On the Caribbean slope it is found from near the Costa Rican boundary in Bocas del Toro east through northern Veraguas, northern Coclé, western Colón, the lower Chagres Valley in the Canal Zone, and the eastern Province of Panamá, eastern Colón (Frijolito, Puerto Pílon, Portobelo), and western Comarca de San Blas (Mandinga). Record of a female from Cana, Darién, by Griscom (Bull. Mus. Comp. Zool., vol. 69, 1929, p. 179; idem, vol. 78, p. 343) was in error, as the specimen which I have examined is *Pipra e. erythrocephala*.

The birds of central Panamá have been listed previously as *minor* but may not be separated from *ignifera*. As noted below true *minor* differs in bill size and other characters.

In western Panamá the males are called *aji*, because of the head which has the color of a ripe hot pepper.

This mainly is a forest species, ranging in the upper level of the undergrowth, but seems adaptable to some degree as at times it is found also in open areas in thickets and second growth. The food consists of berries and a variety of insects, including small caterpillars. The birds may come at times to the taller feeding trees, but more usually find their food at lower levels. They flutter out among the leaves to seize a berry or some insect prey, and then return to a perch. Larger insects are beaten to prepare them to be swallowed. During the nesting season, males, females, and fully grown young males in immature plumage may gather in scattered company. In the breeding season, from December to May, adult males choose display perches in forest, elevated from 5 to 10 meters above the ground. Such vantage points are occupied for much of the day. Several males may locate within sight of one another. Here the females visit them, as these birds do not join in pairs. While the visit of a female may stimulate display activity in other males nearby, these remain on their individual perches, the choice of mate apparently being that of the female.



FIGURE 29.—Red-capped manakin, saltarín cabecicolorado, *Pipra mentalis ignifera*.

My observations of mating display are closely similar to those recorded by others. Near Mandinga, eastern San Blas, on February 7, 1957, I found a group in high forest where the males alternately moved actively about, or rested motionless for a minute or two until roused again to activity. Certain branches from 15 to 25 millimeters in diameter that grew transversely to the ground were chosen for display. A male would dash in suddenly to alight on one of them, stiffen with the body posed at a 45° angle with the perch, and then with rapid, mincing steps slide back and forth for a short distance as though on a wire. At intervals a female alighted on one of these display branches and rested quietly. Suddenly a male would dash up, make a rapid turn or two barely missing her back, uttering a high-pitched sound like that made by tearing cloth, and then rest with his body turned away, with the feathers of the abdomen closely compressed to display fully the bright yellow of his legs, while he quivered both wings slightly. He would then dart away, and instantly on returning repeat the action. Occasionally when he relaxed briefly to normal perching position the female sidled over until the two rested side by side, with wings nearly in contact. During the entire display there was a steady background of crackling, popping sounds, produced, I assumed, by rattling the stiffened secondaries and rectrices.

Alexander Skutch (Auk, 1949, pp. 1-24, plate) in detailed studies

of this race at El General in Costa Rica, and on Barro Colorado Island, Canal Zone, found that nest-building, incubation, and the care of the young falls to the female alone. He describes the nest as "a very slight, frail structure suspended between the arms of a fork of a thin, horizontal branch. It is too shallow to be called a cup; perhaps 'hammock' is the term that best describes it. The delicate fabric is composed chiefly of fine vegetable fibers, usually brown in color, sometimes lighter." Small leaves, or fragments of them, are attached to the outer surface, including the bottom which may be so flimsy that the eggs are seen from below. One nest measured about 45 mm in diameter by 16 mm deep, so small that the body of the female as she sat on the eggs was almost entirely exposed. The nest location usually was above a meter and a half from the ground. The eggs were two in a set "dark grayish-buff, heavily mottled with brown, especially in a wreath around the thicker end." Measurements of eight ranged from $21.5\text{--}22.2 \times 14.3\text{--}15.9$ mm. The main breeding season is from March through May, but may continue until July.

A set of two eggs, nearly fresh, in the U.S. National Museum collected by Storrs Olson and J. Wiese, May 8, 1966, at mile 12 on the Gamboa Highway, between Summit and Gamboa, Canal Zone, were in a nest placed in a low bush, elevated about two meters from the ground. They are pinkish white, with heavy, partly longitudinal blotches of rather dull brown that form an indefinite band at the large end. They measure 21.1×15.3 and 22.8×15.2 mm.

In this species the secondaries are large and stiffened nearly to the tips. The shaft, which bears the feather structure, swells where it joins the bare base, the calamus, being considerably enlarged both above and below the web for two-thirds its length. It then decreases in diameter but remains definitely stiffened nearly to the tip. The rectrices, or tail feathers, have a similar form. This enlargement is found also in females but less in size and form.

With this stiffened structure, in flight, or by vibrating the wings when perched, the male manakin produces loud snapping sounds, sometimes singly, sometimes so rapidly as to make a whirring noise. In this, as the wings may vibrate so quickly that their movement may not be detected, some observers have mistakenly believed that the noise was vocal, or was produced by the bill.

In a heavily forested area near Almirante I watched an attractive display by one male as it rested at the side of a little circle of sun that came down through the leaves like a tiny spotlight. Periodically the bird elongated the body, puffed out the red head feathers, and

then, bending forward, swung back and forth with the head glowing in the reflected light.

The nominate race, *Pipra mentalis mentalis*, in which the male has the head paler, more orange-red, the yellowish chin spot larger, and the body duller black, and the female is duller, darker olive-green with foreneck and abdomen less yellow, is found from southern Veracruz, México, south in Central America (except El Salvador) to Nicaragua. The race *ignifera*, averaging slightly smaller, has the tail shorter, the head in the adult male dark red; tibia slightly darker yellow, often tinged with orange to orange-red, chin marking usually less in extent, and the body deeper black. Females are somewhat brighter green and more yellow on the lower breast and abdomen. The range covers Costa Rica and western and central Panamá. Specimens from northwestern Costa Rica (e.g., a male in the American Museum of Natural History from Guacimo) may have the head slightly orange, thus showing an approach to typical *mentalis*, but the majority seen, including both Pacific and Caribbean slopes, are to be placed with *mentalis*.

PIPRA ERYTHROCEPHALA ERYTHROCEPHALA (Linnaeus):
Golden-headed Manakin, Saltarín Cabecidorado

Parus erythrocephalus Linnaeus, Syst. Nat., ed. 10, 1758, p. 191. (*America australis* = Surinam.)

Pipra erythrocephala actinosa Bangs and Barbour, Bull. Mus. Comp. Zool., vol. 65, September 1922, p. 214. (Cerro Sapo, Darién, Panamá.)

Small; adult male black, with head orange; female, similar to that of the Red-headed Manakin, but slightly lighter colored and tail shorter.

Description.—Length, 75–85 mm. Adult male, crown, hindneck, and side of head bright orange-yellow, darkest on side of head and across hindneck, the latter in some with a narrow line of orange-red; tibia white, with the lower area of the outer side scarlet; axillars and under wing coverts grayish black; under surface of wing feathers dusky; rest of plumage glossy black.

Adult female, upper surface dull olive-green; wings and tail dusky-gray, edged narrowly with olive-green; foreneck, and lower breast pale olive, shading to yellowish olive on abdomen and under tail coverts; axillars, under wing coverts and inner webs of primaries and secondaries yellowish white. (Adult females rarely may have a few bright yellow feathers on the back of the head.)

Immature male, in general like female, but often duller colored;

occasionally with the black feathers of the adult body plumage present.

An adult male, taken at Armila, San Blas, March 5, 1963, had the iris white; maxilla light mouse brown; mandible dull buffy white; tarsus, toes, and claws pale brown. In some males seen the eye was light yellow, possibly immature birds recently molted to adult stage. An adult female from Armila, collected March 4, had the iris mouse brown, maxilla fuscous-black; mandible dull white; gape dull honey yellow, tarsus brownish neutral gray; feet dark neutral gray; claws, light neutral gray. Another female, taken March 11, had the iris light mouse brown; maxilla fuscous-brown; tarsus and toes pale dull reddish brown; claws dark mouse brown.

Measurements.—Males (10 from Province of Panamá, Darién, and San Blas), wing 55.9–58.6 (57.4), tail 17.0–19.7 (18.2), culmen from base 9.9–11.3 (10.8), tarsus 13.5–14.9 (14.0) mm.

Females (10 from Province of Panamá, Darién, and San Blas), wing 57.4–59.5 (58.3), tail 19.5–21.1 (20.3), culmen from base 10.0–12.0 (10.8), tarsus 14.0–15.0 (14.2) mm.

Resident. Common in Tropical Zone forests, on the Pacific slope from Chepo (Río Mamóni), Chimán, Charco del Toro, and Cerro Chucantí, eastern Province of Panamá, through Darién; to 600 meters on Cerro Pirre, 875 meters on Cerro Tacarcuna; on the Caribbean side through eastern San Blas (Bahía Caledonia, Armila, Puerto Obaldía.)

Though the total area occupied by this species in Panamá is considerably less in linear extent than that of the related Red-capped Manakin it is probable that the total population of the present species numerically is greater. The Golden-headed Manakin, like its relative, is a forest species, but one able to adapt to older second growth. It differs in ranging higher in the trees, usually from 5 to 15 meters, among the leaves of the taller undergrowth and the lower tree crown. Also from ten to twenty or more may be found associated in loose company. Each adult male in these groups has his special perch, usually a slender horizontal branch without leaves, less often a length of vine. D. W. Snow who has studied this species especially in Trinidad (Zool., New York Zool. Soc., vol. 47, 1962, pp. 185–186) says of it, "In resting posture, it sits hunched, with body-feathers fluffed and legs concealed. When it begins to display its appearance changes markedly; it sleeks its plumage and stretches its legs, so that the red and white thigh feathers appear. . . . With the legs stretched . . . and the body held rather horizontally, the bird makes rapid

flights to and fro. . . . the wings make a brisk humming sound. . . . Between bouts of darting back and forth, a very short sharp 'zit, zit' is often uttered. . . . with the legs stretched, the head held low and the tail elevated, the bird 'slides' backwards along its perch. . . ." Display flights are accompanied by sharp notes, and finally a buzzing sound as the birds alight.

In my own observations I have believed that this buzzing sound is made by rapid vibration of the wing feathers and tail. The secondaries and the rectrices are stiff as in the red-capped species, but the enlarged basal area of the shaft is smaller, as wings and tail are appreciably shorter. In the present species I have never heard the sharp popping and tearing sounds that accompany the displays of *Pipra mentalis*. On the whole the Golden-headed Manakin assembles in larger groups in which the activity as the birds shift about is considerable.

Snow (loc. cit., p. 191) describes the nest as a "small, shallow cup slung in the fork between the two horizontal twigs of a sapling or shrub, or the lower branches of a tree. It is thinly woven of brownish fibers and rootlets, and often has a few dead leaves bound into the bottom of the cup or hanging from the under side. The cup is usually so thin that the contents are partly visible from below. . . . the breeding season extends from January to August." Belcher and Smooker (*Ibis*, 1937, pp. 225-226) in Trinidad describe two eggs in a set as elongated blunt ovals to regular ovals "pale greenish-yellow. . . . smooth, slightly glossy shell is thickly spotted and longitudinally streaked with umber-brown so as to form a wreath about the larger end; over these markings a few black hairlines appear, and under them some of lilac-grey." They measure 19.5×14.5 and 19.1×15 mm.

This species feeds mainly on small-sized berries, supplemented by insects and spiders. The birds are quite vocal, frequently uttering quick calls that increase and become more varied during the excitement of their displays. My attention often has been attracted to them by their chirping followed by a few notes of sibilant song. Males in plain immature dress of the first year regularly sing and display like those fully adult. *Pipra erythrocephala* seems to be one of the most abundant numerically of its family with a vast distribution in forested areas from eastern Panamá through northern South America. Throughout this range there is some variation in the depth of head color in males, and in body color in females and immature males, and also differences in size. A race *berlepschi*, in which the head in the male is paler yellow, with no orange-red line

across the base of the neck, appears distinct with a range from the eastern slope of the Andes in Colombia through eastern Ecuador, northern Perú, and western Brazil. The form *rubrocapilla* Temminck found from northern Bolivia across Brazil south of the Amazon is specifically distinct because of its longer, less stiffened tail, red head color, and differences in display, as described by Helmut Sick (Journ. f. Orn., 1959, pp. 275–277). A supposed race *flammiceps* requires further study since apparently it is known from Colombia only from two rather highly colored specimens collected in the valley of the Río Lebrija, a small tributary of the Río Magdalena in northwestern Department of Santander. From examination of a long series I see nothing to justify the race *actinosa* described from eastern Panamá. The race *flavissima* named by Junge and Mees (Zool. Verh. Rijksm. Leiden, no. 37, 1958, p. 93) from Trinidad also appears doubtful. Under present information the Panamanian population is assigned to typical *erythrocephala*, which therefore is given a range across northern South America through Colombia and Venezuela to Surinam.

PIPRA PIPRA ANTHRACINA Ridgway: White-crowned Manakin,
Saltarín Cabeciblanco

Pipra pipra anthracina Ridgway, Proc. Biol. Soc. Washington, vol. 19, September 6, 1906, p. 117. (Moravia, Limón, Costa Rica.)

Small, with short tail; male black, except for long white crest; female dull grayish green, with yellowish breast and abdomen.

Description.—Length 85–95 mm. Adult male, with a prominent crest. Crown, hindneck, and the pointed crest white; remaining body plumage, including the lores, bristles over the nostril, side of the head, and innermost axillars black; outer axillars, under wing coverts and tibia dark gray; under tail coverts tipped narrowly with dark gray; wings and tail brownish black.

Adult female and immature male, crown, hindneck, and sides of head and neck slate color; back, scapulars, and outer webs of secondaries and inner primaries olive-green; wing coverts, upper tail coverts and central tail feathers grayish olive-green; inner webs of wing feathers and of tail dull brownish black; chin and upper foreneck grayish olive-green; lower foreneck and upper breast dull olive-green; lower breast, abdomen, and under tail coverts dull yellowish white; axillars and under wing coverts pale grayish white; tibia dull, dark brownish gray.

A male in immature dress (with a few white feathers appearing adjacent to the left nostril) taken February 27, 1962, at the head of

the Río Guabal, Coclé, had the iris bright reddish brown; maxilla fuscous-black, mandible neutral gray, paler on the cutting edge and gonys; tarsus, toes, and claws dusky neutral gray.

Measurements.—Males (10 from Chiriquí, Veraguas, Coclé, and Costa Rica), wing 59.0–62.5 (60.9), tail 23.9–26.6 (25.4), culmen from base 9.0–11.8 (10.9), tarsus 14.0–15.4 (14.6) mm.

Females (5 from Veraguas and Costa Rica), wing 57.9–61.1 (59.3), tail 25.4–28.5 (27.1), culmen from base 9.3–11.9 (11.2), tarsus 14.9–16.3 (15.3) mm.

Resident. Rare and little known in Tropical and lower Upper Tropical Zone forests on the Pacific slope of eastern Chiriquí and Veraguas; recorded on the Caribbean slope in northern Veraguas and Coclé.

To date this species has been known in Panamá from early records of specimens collected by Enrique Arcé on the Cordillera de Tolé in eastern Chiriquí, and at Santa Fé and Chitra on the Pacific slope of Veraguas. Salvin (Proc. Zool. Soc. London, 1870, p. 200) reports it also from Calovévora on the Caribbean slope of Veraguas. On February 27, 1962, I caught one in a mist net set in a locality known as Tigre at 475 meters elevation on the head of the Río Guabal, a tributary of the Río San Juan, which joins the western side of the Río Coclé del Norte, on the Caribbean slope of western Coclé. This was the only one seen during a week's collecting at this locality.

The race *anthracina* ranges north beyond Panamá on the Caribbean slope to central Costa Rica, but is reported there only from a few localities. The species as a whole has a wide distribution in South America from Colombia and Venezuela south to Perú and Brazil. Throughout this extensive range minor differences have suggested recognition of a dozen geographic races.

The life history of the species as a whole is little known. Snow (Ibis, 1961, pp. 110–111) in Guyana, found males of the typical race *Pipra pipra pipra* "distributed thinly through the forest, each bird apparently keeping to a limited area. The advertising call, a thin, insectlike *chrrrrr* lasting about 1½ seconds, is uttered rather regularly at intervals of about half a minute. . . . A single male . . . was present within a limited area . . . which included a small clearing where a tree had fallen. Here, round the edges of the clearing, it had four or five main calling perches . . . but it also called elsewhere. . . . The male fed intermittently in its territory, picking insects from the leaves in flight. Occasionally he performed more or less stereotyped actions . . . of three sorts: (1) to-and-fro flights

between adjacent perches at the same level. . . . During these flights a soft flip-er flip, probably a wing noise, could sometimes be heard. . . . (2) Occasionally the bird would quickly turn about on its perch, so as to face the other way, without any lateral movement along the perch. (3) When flying from one perch to another . . . the bird would sometimes end its flight in a rapid swoop down below the level of the new perch, then rise up above it and down on it, so that the trajectory was a shallow S-curve. A quite different display, directed toward a female was seen once." In this the male "began flying round her with a slow flapping flight during which the wing-beat was deep and so slow that the wings were easily visible. The appearance in fact was very like that of a large black and white butterfly."

CHLOROPIPO HOLOCHLORA LITAE Hellmayr: Green Manakin,
Saltarín Verde

Chloropipo holochlora litae Hellmayr, Nov. Zool., vol. 13, July 10, 1906, p. 325.
(Lita, Imbabura, northwest Ecuador.)

Chloropipo holochlora suffusa Griscom, Bull. Mus. Comp. Zool., vol. 72, January 1932, p. 354. (Puerto Obaldía, Comarca de San Blas, Panamá.)

Small; tail of normal length; dark green above; an indistinct dusky band on breast.

Description.—Length 115–125 mm. Adult (sexes alike), upper surface, including central tail feathers, rather dull olive-green; wings and tail dusky with the outer webs of the feathers dull olive-green like back; throat and upper foreneck dull grayish white; a band of somewhat greenish olive across lower foreneck and upper breast; side of head and of neck similar but somewhat darker; lower breast and abdomen dull yellow; flanks pale dull yellowish olive; under tail coverts more olive; axillars, and under wing coverts grayish olive.

Immature, somewhat duller colored.

Measurements.—Males (10 from Darién and Colombia), wing 69.1–74.5 (71.9), tail 43.7–48.7 (45.9), culmen from base 12.4–14.0 (13.0, average of 9), tarsus 13.8–14.9 (14.3) mm.

Females (10 from Darién, Colombia, and Ecuador), wing 64.0–69.9 (67.9), tail 40.1–43.9 (42.1), culmen from base 11.5–12.7 (12.3), tarsus 13.5–14.8 (14.1) mm.

A male, from 1250 meters on Cerro Tacarcuna, Darién, February 28, 1964, had the iris dark brown; maxilla black; mandible dark neutral gray; tarsus, toes, and claws dark neutral gray. Another of this sex, from the old village site at 575 meters on the upper Río

Tacarcuna, March 6, 1964, was similar, except that the maxilla and tip of mandible were black, with the base of the mandible dull neutral gray.

Resident. Found locally in Tropical Zone forests in eastern Darién and eastern San Blas.

Though Chapman (Bull. Amer. Mus. Nat. Hist., vol. 55, 1926, p. 555) in writing of this bird in Ecuador listed it as ranging to "eastern Panamá" he does not give the basis for this statement. The first specimen record for Panamá is by Griscom (Bull. Mus. Comp. Zool., vol. 69, 1929, p. 178) of a male taken by Benson at Cana, on Cerro Pirre, March 22, 1928. When Hasso von Wedel forwarded two additional males from Ranchón and Puerto Obaldía, San Blas, Griscom (cit. supra) described the bird of Panamá as a distinct subspecies, *C. h. suffusa*. Feinstein collected a male at the old village site on the upper Río Tacarcuna, February 11, 1959. Galindo secured a male there June 24, 1963, and I obtained another March 6, 1964. Others were taken by Galindo at La Laguna, and by me on the north fork of the upper Río Pucro, higher on the slopes of Cerro Tacarcuna, at 1250 meters. Galindo also collected a male February 28, 1971, at 730 meters on Cerro Quia. The recent specimens were captured in mist nets set in undergrowth.

The series now available from Panamá compared to specimens of *litae* from southern Nariño, Colombia, show no differences, so that the proposed race *suffusa* for Panamá is not recognized.

CORAPIPO ALTERA Hellmayr: White-ruffed Manakin,
Saltarín Gorgueriblanco

FIGURE 30

Small, short-tailed; male black, with pure white throat; female dull green above, pale gray on foreneck.

Description.—Tenth primary narrow, about half the width of the ninth, shorter than first; nostril rounded and open, without an operculum. Adult male, crown, hindneck, back, rump, wing coverts, inner secondaries, and under wing coverts somewhat glossy bluish black; primaries and inner webs of secondaries dusky; tail dusky, the feathers edged with bluish black, except on the outer pair; edge of wing lined with white; upper throat, sides of head from below rictus and side of neck white.

Adult female, upper surface olive-green; chin and throat pale gray to grayish olive-green; breast, sides, and flanks pale olive-

green; abdomen and under tail coverts light, somewhat greenish, yellow; under wing coverts pale gray.

Immature male, like female, but with white of throat appearing early.

In several males the iris was dark brown to reddish brown; maxilla black; mandible neutral gray; tarsus fuscous to dark brown or dull reddish brown; toes fuscous to dark or dusky neutral gray. A female had the iris dark brown; maxilla and tip of mandible black; base of mandible dull neutral gray; tarsus and toes dusky neutral gray.

In early accounts based on few specimens, *Corapipo altera* and *heteroleuca* of Panamá and Costa Rica were listed as races under *Corapipo leucorrhoea*, because of their close similarity in color and in pattern of markings. The considerable series of all three now avail-



FIGURE 30.—White-ruffed manakin, saltarín gorgueriblanco, *Corapipo altera*, head in males to illustrate throat pattern. Left, *C. a. altera*; right, *C. a. heteroleuca*.

able demonstrates two groups that logically should be treated as species. In *leucorrhoea*, found from Guyana and southeastern Venezuela (with that part of Brazil immediately adjacent) through northern Colombia, the tenth (outermost) primary is slender, very narrow and only 14 to 17 mm long. In *altera* and *heteroleuca* of Central America, while the tenth primary is slender, it is broad enough to be an appreciable element in the wing, with a length of 25 to 30 mm. The two groups, definitely distinct in this character, do not show any indication of intergradation, and from available records are not in contact. *C. leucorrhoea* in northern Colombia has not been found west of the highlands above the eastern side of the valley of the Río Sinú. Typical *altera* ranges south from Darién in eastern Panamá west of the Atrato Valley to the Serranía de Baudó in central Chocó. Blake (Fieldiana: Zool., vol. 36, 1958, p. 535) recognized the specific difference of the birds of western Panamá, which is clearly evident from the series that I have examined.

CORAPIPO ALTERA HETEROLEUCA Hellmayr

Corapiipo leucorrhoea heteroleuca Hellmayr, Bull. Brit. Orn. Club, vol. 25, March 31, 1910, p. 87. (Boquete, 1065 meters, Chiriquí, Panamá.)

Characters.—Adult male with the black in the neck pattern making a conspicuous V-shaped indentation at the center of the posterior border of the white throat (evident in immature males early, as they begin to assume adult dress). Female, closely similar to nominate *altera* in color, averaging very slightly darker on abdomen but not always certainly separable from *C. a. altera*.

An adult male at Palo Santo, west of El Volcán, Chiriquí, on March 17, 1965, had the iris chestnut; maxilla black; mandible dark neutral gray; tarsus very dark reddish brown; toes blackish slate; claws black. A female at the same locality, March 18, 1965, had the iris chestnut-brown; maxilla slaty black; mandible pale neutral gray; tarsus and toes dark neutral gray; claws fuscous-black.

Measurements.—Males (10 from western Chiriquí), wing 58.2–60.7 (59.2), tail 29.0–30.8 (30.0), culmen from base 9.2–10.3 (9.7), tarsus 15.5–16.5 (16.0) mm.

Females (10 from Chiriquí and Costa Rica), wing 57.6–61.3 (59.4), tail 28.2–31.2 (29.6), culmen from base 9.6–11.0 (10.2), tarsus 15.5–17.0 (16.6) mm.

Resident. Recorded from the Tropical and lower Subtropical Zones to 1585 meters in western Chiriquí, from near the Costa Rican boundary east to Bugaba, Divalá, and Boquete.

As Skutch, in southwestern Costa Rica (Publ. Nuttall Orn. Club, no. 7, 1967, pp. 68–69) found these birds from sea level at Golfo Dulce to 1524 meters, but breeding only above a thousand meters, it is possible that across the border in Chiriquí they may also appear at lower levels during post-breeding movements.

The first record for the species in Panamá is that of Salvin (Proc. Zool. Soc. London, 1870, p. 200) from Bugaba, where a specimen (in the British Museum) was taken by Arcé in 1869. Bangs (Auk, 1901, p. 364) recorded three males taken by W. W. Brown, Jr., at Divalá in November and December, 1900, and (Proc. New England Zoöl. Club, vol. 3, 1902, p. 40) others at Boquete from March to May 1901. Specimens in the California Academy of Sciences were collected by Mrs. Davidson on the llano beyond El Volcán December 20, 1929, at Barriles January 21 and 27, 1931, and at El Banco on the southern slope of the volcano December 16, 1930.

In my own observations from near El Volcán west to near Sereno on the Costa Rican line in western Chiriquí I have found them regu-

larly, singly, or in small groups of a dozen, both in forest and in more open areas at the borders of gallery forest, or in second growth. They have come regularly to fruiting trees to fly out and seize the berries, sometimes feeding thus in company with honeycreepers. In such activities they are vivacious in movement, often darting quickly through undergrowth and the lower trees, sometimes calling softly. Males at times rested with the body inclined somewhat forward, and the elongated feathers of the white throat patch raised, frequently flitting the wings.

The detailed history by Skutch (cit. supra, pp. 68–75, which refers to the present race of *Corapiipo altera* though headed *Corapiipo leucorrhoea*) describes the males, at times several in company, using moss-covered, fallen logs in their mating displays. They are described as approaching the log, moving in undulating flight with slowly beating wings, with body held upright, tail raised until nearly parallel with the back, and feathers puffed, until the bird “resembles a tiny black balloon with a gleaming white patch on its forward side, just below its top, as he bounces through the air toward his mossy landing platform.” While several males may be present they display independently without interfering with one another. In a different approach the bird may move rapidly, and then the wings may make a sound “hardly a firecracker-like *snap*, such as made by *Manacus* and *Pipra mentalis*, but rather a duller *flap*, which may be roughly imitated by suddenly jerking taut a piece of stout cloth.” Often this is followed by sharp, harsh calls.

A nest seen March 29, 1964, at 1060 meters near Cañas Gordas, Costa Rica, was a shallow structure of plant fibers with a few leaf fragments in the bottom, placed on a fork of a slender branch about $6\frac{1}{2}$ meters from the ground. Two eggs deposited by April 7, seen by means of a small mirror at the end of a slender pole, “appeared dull white, heavily marked with brown, one over its whole surface, the other chiefly on the thicker end.” Further observations terminated when the eggs disappeared. The tiny nest was about 75 mm in diameter by 32 high, with the nest cavity only about 13 mm deep.

Beyond Panamá this race is recorded in southwestern Costa Rica along the Pacific slope of the Cordillera de Talamanca, and north to above the valley of the Río Pirris (at Guaitil), descending in the lowlands to near the coast at Golfo Dulce.

CORAPIPO ALTERA ALTERA Hellmayr

Corapiipo leucorrhoea altera Hellmayr, Bull. Brit. Orn. Club, vol. 16, May 8, 1906, p. 84 (Carrillo, Costa Rica.)

Characters.—Adult male, with lower margin of white of throat straight across the upper foreneck. Female, in some averaging faintly lighter on the lower breast and abdomen, but not always separable from that of *heteroleuca*.

An adult male, taken on Cerro Azul, April 12, 1949, had the iris dark brown; maxilla black; mandible neutral gray; tarsus dark brown; feet dark neutral gray. Another, from Cerro Chucantí, March 8, 1950, was similar, except that the tarsus was dull reddish brown, and the feet fuscous. A third, from the Caribbean slope on the head of Río Guabal, northern Coclé, February 28, 1962, had the iris reddish brown.

In a female, from the head of Río Guabal the iris was dark brown; maxilla and tip of mandible black; base of mandible dull neutral gray; tarsus and toes dusky neutral gray.

Measurements.—Males (10 from Bocas del Toro, Coclé, Province of Panamá, San Blas, and Darién), wing 58.0–61.7 (58.9), tail 27.1–30.2 (28.9), culmen from base 9.0–9.8 (9.4), tarsus 15.6–16.4 (15.9) mm.

Females (10 from Bocas del Toro, Coclé, Province of Panamá, and Darién), wing 59.1–61.4 (60.0), tail 28.2–32.2 (29.4), culmen from base 10.1–11.1 (10.3), tarsus 15.9–16.6 (16.2) mm.

Weight of a male, 11.7 grams; taken by R. S. Crossin on Cerro Azul, August 13, 1968.

Resident. Locally fairly common on the Pacific slope from eastern Chiriquí (Cerro Flores), central Veraguas (Santa Fé, Chitra, Laguna de Castillo), and the central mountains of the Azuero Peninsula (Cerro Viejo, Cavulla, Cerro Hoya) to southern Coclé (El Valle), western Province of Panamá (Cerro Campana), eastern Province of Panamá (Cerro Azul, Cerro Chucantí), and Darién (Cerro Sapó, Cerro Malí, Cerro Tacarcuna, Cerro Pirre, Jaqué). On the Caribbean slope from western Bocas del Toro, through northern Veraguas, and northern Coclé; and in eastern San Blas to the Colombian boundary.

The bird is not found in the lowland area of the Canal Zone (its listing there by Aldrich, before the full range was known, being an oversight).

E. A. Goldman in his work on Cerro Pirre in 1912 collected a male and three females between 1060 and 1375 meters elevation above Cana from May 2 to June 7, the first record for Panamá. In the western area of its range Aldrich (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, pp. 94–95) in February and March 1932, found the

bird common in the northern end of the mountain forests of the Azuero Peninsula, where it ranged from 450 to 900 meters. Farther south in this mountain area C. O. Handley, Jr., collected a male, February 13, 1962, at 1200 meters on Cerro Hoya. Salvin received specimens in the early collections of Arcé from Laguna de Castillo and Santa Fé on the Pacific side of Veraguas. In March 1951, I found these birds fairly common at 750 meters on the slopes of La India Dormida above El Valle, and also in the higher forests of the southern side of Cerro Campana at 850 meters. East of the Canal Zone we found them in March 1949, on Cerro Azul, and in 1950 on Cerro Chucantí, where they ranged lower at 200 to 300 meters elevation. On Cerro Malí and Cerro Tacarcuna they were common. Females collected here on March 18, 1950, were about to lay.

On the Caribbean side in Bocas del Toro, Dr. Galindo collected several at 725 meters in the mountain forests on the head of the Río Changuena in September 1961. Others were taken earlier by Kennard in 1926 and by Wedel in 1928 on the mountain trail leading from the Chiriquí Lagoon toward Boquete. In the early collections of Arcé specimens came from Calovévora in northern Veraguas. In February 1962, I found them common at 475 meters on the head of Río Guabal in northern Coclé.

There is no further report at present on this slope west of eastern Comarca de San Blas, where Wedel collected specimens at Permé and Puerto Obaldía, and I secured an adult male at Armila and an immature on the ridge southeast of Puerto Obaldía in February 1963.

Beyond Panamá this race ranges through the Caribbean slope of Costa Rica and Nicaragua to eastern Honduras. Those of the Isthmus agree in size and color with those of Costa Rica, the type locality.

Aldrich recorded males of this form in display flight "moving very slowly and evenly through the air with rapidly vibrating wings which produced a distinct humming sound, and with white throat-patch puffed." On one occasion this slow display flight continued for a distance of 15 meters, accompanied by small explosive sounds assumed to have been made by the wings.

I have found them indifferent to the usual sounds used to attract other birds. Occasionally I have seen them moving with groups of forest birds, but usually they are alone and may be rather secretive. Stomachs examined held seeds, bits of fruit skin, and in one, two small drupes.

As yet there is no record of nesting of this race.

**CHIROXIPHIA LANCEOLATA (Wagler): Lance-tailed Manakin,
Toledo**

FIGURE 31

Pipra lanceolata J. Wagler, Isis (of Oken), 1830, col. 931. (Cerro Turumiquire, Sucre, Venezuela.)

Small; two central tail feathers with elongated, narrow, pointed tips; male, black with blue back; female green above, grayish below.

Description.—Length 115–125 mm.; tibio-metatarsal joint bare;



FIGURE 31.—Lance-tailed manakin, toledo, *Chiroxiphia lanceolata*, male.

central pair of rectrices long and narrowly pointed. Adult male, feathers of forehead short, stiffened, erect, extending forward to base of nostril; a flattened crest of red feathers growing from center of crown; central rectrices elongated, finely acuminate, 11 to 16 mm longer than the lateral pairs; rest of head, neck, tail, wings, and entire under surface, including the under wing coverts, black, varying

in some to dull black on undersurface of body; rump and upper tail coverts slate, with a slight olive cast; back feathers (which are somewhat elongated) and scapulars grayish blue.

Adult female, feathers of forehead shorter, the anterior ones only slightly erect; central rectrices elongated, but usually somewhat less so than in males, with tips less narrowly pointed; head normally not crested, but occasional individuals with a flattened red crest, narrower than that of the male; above plain olive-green; under surface paler and grayer, with the breast and foreneck somewhat darker than the sides and rest of the lower surface; abdomen centrally faintly olive-yellow to grayish white; axillars and inner under wing coverts grayish white; outer under wing coverts grayish olive-green.

Immature male in color like female, but with stiffened, erect feathers on the forehead, and a flattened red crest as in the adult.

Notes from a series of males record the iris as varying from dark brown to reddish brown and dark reddish brown; bill fuscous-black to black; tarsus and toes light to rather dull orange; claws mouse brown, fuscous or black. Females, iris reddish brown; maxilla dull black; mandible fuscous, occasionally dull brown at the base; tarsus and toes light to dull orange; claws mouse brown to fuscous-brown.

Measurements.—Males (10 from Panamá), wing 70.4–73.5 (71.7), tail 47.0–52.7 (49.0), culmen from base 11.3–12.5 (11.8), tarsus 18.2–19.7 (19.1) mm.

Females (10 from Panamá), wing 67.9–73.7 (70.3), tail 42.0–45.7 (44.5), culmen from base 11.5–12.9 (12.2), tarsus 17.9–18.9 (18.2) mm.

Resident. Locally common in Tropical Zone thickets and low open forest on the Pacific slope of western and central Panamá, from San Félix and Las Lajas in the lowlands of east central Chiriquí, to Boquete and El Volcán in the highlands, east through Veraguas, both sides of the Azuero Peninsula, Coclé, western Province of Panamá, the southern Canal Zone, and eastern Province of Panamá to the lower Río Bayano at Chepo; a colony recorded at Garachiné, Darién; casual on the Caribbean slope in the lower Chagres Valley, on Barro Colorado Island, and near Gamboa; to 1640 meters on the mountain slopes above Boquete; recorded off the Pacific coast on islas Parida, Coiba, Canal de Afuera, Afuerita, Gobernadora, and Cébaco. Beyond Chiriquí the species ranges for a short distance into south-western Costa Rica from the Gofito area in the lowlands and Cañas Gordas at a higher elevation in the interior.

The birds are found usually in small groups in undergrowth in

more open stands of trees, or in thickets through abandoned fields and pastures. As human settlement has cleared heavy forest this manakin has spread into newer areas where thickets and second growth are allowed to develop. While the species ranges widely and may be encountered singly, it is found usually in small groups, often separated by a considerable distance from others. Or individuals may come from some distance to berry-bearing trees as these ripen. While this manakin is absent in areas that seem suited to it, it is encountered widely east to the Río Mamoní and the lower Río Bayano near Chepo. The only report to date for Darién is from near Garachiné. In extensive travel through the great valley of the Río Tuira and its tributaries from 1959 to 1964 I did not record it, nor did I find it earlier near the Río Jaqué and the coastal area adjacent. On the Caribbean slope it has been reported casually in the Canal Zone near Gamboa and the Navy Pipeline area. On Barro Colorado Island in March 1946, I found one female, and E. O. Willis recorded a male in February and March 1964. E. S. Morton collected a male near Gamboa July 10, 1966 (specimen in the Northern Illinois University Museum).

Usually the birds remain under cover, except for an occasional male that may appear briefly on some open perch. More rarely, in display, two males may rest side by side with bodies horizontal, the head extended, and wings quivering, so that frequently they make the branch shake. Again, they posture with tail cocked up, or call and drive at one another with flitting wings in harmless threats of combat. In these displays often the skin across the back of the neck is distended through an air sac that fills the space between the shoulders and the back of the head, so that this area appears greatly enlarged. At such times of excitement a whistled imitation of their musical notes may call them out to open view.

The birds feed regularly on berries, which they flutter out to seize, and swallow entire.

Through its musical calls the species is widely known among country residents, who call it *toledo* from imitation of its notes, *torero* or *soldado* from the colorful pattern of the males, or more rarely *pasa monte* or *cantimplora* (the latter of uncertain derivation).

Beyond Panamá this species has a wide range along the Caribbean coast across northern Colombia, and an even more extensive distribution through northern Venezuela, including Isla Margarita. Occasional trade skins in older collections were labeled Trinidad in error as the species is not found on that island. The uniformity in size and

coloration found in the extensive series of specimens available throughout the vast area of its occurrence is unusual.

Eugene Eisenmann, in an area of thickets at Playa Coronado, in mid-May found males in display, with the throat puffed and the wings shivering and hanging below the tail, while they uttered their musical calls, interspersed with nasal, growling sounds. At times two males rested near one another on the same branch, calling steadily. Other pairs of males in alternation leaped a few centimeters in the air usually landing on the same perch.

Hallinan (Auk, 1924, p. 319) described a nest found September 13, 1907, on Sosa Hill, Canal Zone, in a low bush nearly a meter from the ground, as shallow, made of "fine dried twigs and dried leaves hung loosely on the sides and bottom." The two eggs were brownish white, with spots of reddish brown mainly in a ring around the larger end. Measurements (transposed from inches) were 21.8×15.7 and 21.8×15.2 mm. Another nest from Panamá Viejo, August 11, 1907, was shallow of "fibrous grass bound with spider webs." The two eggs were identical in color, marking, and size to those described above.

**MANACUS VITELLINUS (Gould): Golden-collared Manakin,
Doctorcito**

FIGURE 32

Small; male with crown, wings, and tail black, foreneck and upper breast yellow to faintly orange-yellow; female dull green, paler on lower surface.

Description.—Length 100–120 mm. Adult male, wing feathers strongly stiffened, outer primaries bowed, tips narrowed; feathers of throat elongated to form an erectile tuft; crown, including lores, center of back, scapulars, wings (except anterior lesser coverts) and tail black; hindneck, upper back, sides of head, neck, and upper breast bright orange-yellow; rump and upper tail coverts olive-green; lesser wing coverts mixed yellow and black; lower breast, sides, and under tail coverts pale olive-green; abdomen yellowish; axillars and under wing coverts pale yellow; edge of wing dusky-olive.

Adult female, upper surface olive-green; lower surface paler, olive-yellow on breast and abdomen.

Immature male, like adult female.

Details of the range of the nominate form *vitellinus* in Panamá are given below. In northwestern Colombia this race continues beyond the Comarca de San Blas into northern Chocó near the lower

Río Atrato, to Unguía, along the Golfo de Urabá through Acandí on the western side, and to Necoclí, Antioquia, on the east. Another subspecies, *milleri*, inhabits the rest of northwestern Colombia in the departments of Antioquia, Córdoba and Bolívar from the valley of the Río Sinú to the lower Río Cauca and the middle Río Magdalena. A third, *viridiventris*, is found along the west coast from



FIGURE 32.—Golden-collared manakin, doctorcito, *Manacus vitellinus vitellinus*, male.

central Chocó and northwestern Antioquia (Villa Artiaga) in the upper Río Cauca Valley south to the Río Dagua in western Valle.

An allied species, *Manacus manacus* with several races, ranges widely to the east and south of these limits in Colombia, east through Venezuela to Trinidad and the Guianas, south to eastern Perú and much of Brazil to eastern Paraguay and Misiones in northeastern Argentina. The male in this form is similar in color pattern to *vitellinus* but has the head, breast, and band across the upper breast

pure white, and the rest of the under surface and rump gray. The subspecies *Manacus manacus abditivus* meets and to some degree overlaps the range of *Manacus vitellinus milleri* along the lower and middle Cauca Valley.

On the Caribbean slope in Costa Rica beyond Bocas del Toro there is a third bird of this group, *Manacus candei*, in which the male, except for the black crown, has the entire anterior half of the body, including most of the upper and lower wing coverts and the axillars, pure white, and the remainder of the lower surface bright yellow. This ranges north without appreciable variation to southeastern México. It is recorded as common in the northern part of Caribbean Costa Rica but uncommon in the south toward Panamá. Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, pp. 238–239) in outlining the Costa Rican distribution, adds parenthetically “and almost certainly adjacent Panamá.” But of its occurrence on the Panamanian side of the boundary at the Río Sixaola as yet there has been no record.

The relationship of these three entities is a matter of interest. It may be postulated that the original stock was of South American origin that has spread north through the Isthmus of Panamá, perhaps since the close of Pleistocene time. That the three as they are now present are allied is evident, but opinion as to the type of this relationship may vary. Males of all three reproduce through a method in which from one to several are resident in a limited area where each has a small bare territory cleared on the ground. To this they attract females through active displays, accompanied by peculiar calls and mechanical sounds. After mating and fertilization, the labor of nest construction, incubation, and rearing of young is the function of the female alone. Recently, Dr. Haffer, familiar in the field with those of Colombia, (Amer. Mus. Nov., no. 2294, 1967, pp. 12–17) suggests that the three “have not reached full species status, still replacing each other geographically and hybridizing along narrow zones of secondary contact,” so that they are to be treated as a group or “semi-species within the species unit *Manacus manacus* (Linnaeus).” As argument, he cites highly interesting observations by E. O. Willis in the middle Cauca Valley near Caucasia, Antioquia, where males of *M. m. abditivus* and *M. v. milleri* both were displaying in “an isolated woodlot . . . no more than ten meters apart. . . . Out of some ten males displaying in this small dancing ground, two at the north end were white [*abditivus*], one or two at the south end were yellow [*milleri*] and six or so in between were pale yellow hybrid [*abditivus* × *milleri*].” He collected one pale yellow and one white bird as specimens.

The question is one of definite interest that merits study. Merely as discussion, it may be noted that in examination of several hundred specimens of the three forms concerned throughout their range I have seen no hybrids of any nature. To anyone familiar with the geographic areas concerned, it is obvious that forest destruction, through human activities, with resultant restriction in the original habitat, has been extensive. Because of this, the two forms found together by Dr. Willis, presumed formerly to have been separated, now may be mingled, a circumstance possible but less probable under the normal condition. Dr. Willis in personal discussion has informed me that the woodlot where his observations were made was a forest remnant, isolated in pasturelands. The result might be interpreted as similar in a sense to the hybridization well known among ducks, as between males of the mallard and females of a variety of species.

Lowe (*Ibis*, 1942, pp. 50-83) in an account of the anatomy of the Golden-collared Manakin (made from specimens of nominate *vitellinus*, but applying to the species as a whole) noted the considerable development of muscles in the breast, shoulder regions, and the upper leg. This he attributed to the special display in jumping and flight of males. He mentioned also the thickened secondaries, in which the quills are not fastened firmly to the ulna as usual in birds, but are attached loosely to a tendon with large muscle slips that allow unusual mobility. They thus control the loud snapping and other mechanical sounds made by the wings. The muscular development he described is clearly evident during preparation of specimens.

MANACUS VITELLINUS VITELLINUS (Gould)

Pipra vitellina Gould, in Hinds, R. B. (editor), *Zoology of the Voyage of H. M. S. Sulphur, under the command of Sir Edward Belcher, R.N., F. R. G. S., etc., during the years 1836-1842, vol. 1, pt. 3 (Birds, pt. 1), October 1843, p. 41, pl. 21.* (Panama = Panama City, Panamá.)

Characters.—Male, foreneck, sides of head, and band across hindneck more orange; posterior under surface greenish; rump and upper tail coverts somewhat darker, duller, more grayish green.

Female, above lighter, brighter olive-green; lighter, more yellowish on breast and abdomen; tail and wings faintly duller.

An adult male from Juan Mina, Canal Zone, January 12, 1961, had the iris dark brown; maxilla and tip of mandible black; base of mandible dusky neutral gray; tarsus and toes dark orange; claws dusky neutral gray. In another, from Cañita, Panamá, February 6, 1962, the iris was dark wood brown; base of mandible dark neutral gray; rest of bill black; tarsus and toes dark orange; claws black. One

from El Copé, Coclé, February 23, 1962, had the iris dark mouse brown, and the bill black, except for the central line of the gonyes, which was dusky neutral gray. A male in immature plumage from the Candelaria Hydrographic Station, Panamá, March 3, 1961, was like adults, except that the tarsus and toes were yellowish brown.

A female from La Jagua, Panamá, January 13, 1962, had the iris dark brown; maxilla black; base and sides of mandible dark neutral gray; base of gonyes dull neutral gray; tarsus and toes light orange; claws black. One from El Copé, Coclé, February 23, 1962, had the iris dark mouse brown; maxilla and tip of mandible black, base of mandible neutral gray; tarsus and toes orange; claws black. Another female, from Pucro, Darién, February 1, 1964, was similar. In addition, inside the mouth in this bird, the tip of the tongue was neutral gray; the lining of the maxilla and extreme tip of the mandible black, with the rest below and at the sides of the tongue dark neutral gray.

Measurements.—Males (47 from Province of Panamá, Coclé, Colón, Canal Zone, Darién, and San Blas), wing 50.4–55.7 (52.3), tail 25.8–31.5 (28.3), culmen from base 11.0–13.0 (11.8), tarsus 20.4–22.4 (21.4) mm.

Females (46 from Province of Panamá, Coclé, Colón, Canal Zone, Darién, and San Blas), wing 50.7–54.9 (53.2), tail 27.3–31.7 (29.3), culmen from base 11.1–12.7 (12.0), tarsus 18.3–20.7 (19.4) mm.

Weights, ♂ adult, 19.0 grams; ♂ immature, 16.5 grams; 3 ♀ 15.5, 16.4, 16.4 grams (from R. S. Crossin).

Resident. Locally common in wooded areas in the Tropical Zone. On the Pacific slope from the foothills of eastern Veraguas (Santa Fé), east through the western sector of the Province of Panamá (La Campana, Chorrera), the Canal Zone, the eastern sector of the Province of Panamá, and Darién (Río Jaqué, Jaqué); on the Caribbean slope from the eastern end of Laguna de Chiriquí (Cricamola), Bocas del Toro, through northern Veraguas (Guabal, on Río Calovévora), northern Coclé (El Uracillo), both eastern and western sectors of Colón (Chilar, Portobelo), the northern Canal Zone, the Chagres Valley, eastern Province of Panamá, and the Comarca de San Blas (Mandinga, Permé, Armila, Puerto Obaldía).

Sclater (Cat. Birds Brit. Mus., vol. 14, 1888, p. 315) lists an adult male from "Veragua (Arcé)" from the Salvin-Godman collection, a specimen which apparently is the basis for the record "Veraguas," by Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 2, 1890, p. 115). This bird, which I have seen, has no other data except

Arcé's number 1075. Possibly it came from Arcé's work near Santa Fé, as there are no modern records for Veraguas except in that area. A female (no. 106535) in the American Museum of Natural History labeled "Coiba, J. H. Batty, June 23, 1901, ♀" is without question one with erroneous data.

Gould, in the original description says that his type, which he had figured in two positions, "was procured by Mr. Hinds at Panama, and is the only one I have seen." Panama in this instance is taken to mean Panama City, where the *Sulphur*, the ship on which Hinds traveled, must have docked or anchored. It is therefore a probable locality. "Lion Hill, Canal Zone," suggested by Griscom (Bull. Mus. Comp. Zool., vol. 69, 1929, p. 180), a station on the Panama Railroad, not established until much later, was a remote point distant in the jungle when the type was collected.

At the western end of the range there are specimens from Cricamola on the Laguna de Chiriquí in the Museum of Comparative Zoology and in the University of California at Los Angeles (taken by Loye Miller along the western side of the Valiente Peninsula). Others were collected by Benson at Cocoplum on the base of the Valiente Peninsula on the seaward side.

The small *doctorcito*, long known as Gould's Manakin, common throughout much of its range, is widely distributed in open forest through the Tropical Zone. While it may be found among higher branches, particularly where attracted by the berries that are its staple food, it is more frequently noted in the lower undergrowth of the forests that form its haunts. Its presence usually is indicated by the calls of males, and the explosive sounds made by their wings during their displays. When these are heard one may be seen by watching for a few minutes, when its bright colors may be detected among the leaves. During the long breeding season from late February to August they are definitely sedentary, moving about mainly to secure food. This may include small spiders or insects, but is composed mainly of berries of the common melastomes, or small figs. It is the males that are seen most often because of their bright plumage and active movements. The quieter, dull-colored females, which must be equally common, attract the eye less often.

Information on mating and habits in general comes largely through studies made on Barro Colorado Island, particularly those of Dr. Frank M. Chapman (Bull. Amer. Mus. Nat. Hist., vol. 68, 1935, pp. 471-525; Life in an Air Castle, 1938, pp. 133-149). The usual calls, high-pitched in tone, are *chee poóh* and *peé yu*, the latter

subject to considerable variation. Coupled with these are whirring sounds made by rapid movements of the wings and a snap, somewhat variable in explosiveness, made by abrupt contact of the stiffened shafts of the wing feathers, especially of the secondaries.

Males, during the prolonged breeding season, congregate in small groups of three to eight or more in rather open undergrowth in forest. Here, each male prepares a "court," a level space on the ground in the undergrowth, roughly elliptical, in size approximately 50 by 80 centimeters. This is completely cleared of leaves or other cover, and is the definite territory of one individual male. The courts of a group of males may be separated by 3 to 60 meters, but, regardless of distance, each with a varying amount of surrounding space is the territory of a single male. At the approach of a female the male begins to call and produce whirring and snapping sounds, until in final climax he may be resting on the ground in his court with his "beard" fully extended and the areas of yellow feathers expanded, while he "assumes a rigid gaze-pose and holds it from several seconds to a minute or more. After this rest . . . he may jump rapidly forward and backward across court, and no matter how short the distance, in some invisible way, he turns in the air to alight, facing the point of departure." Snow (*Zoologica*, vol. 47, 1962, pp. 100-101) describes another action, seen only in part by Chapman, a slide in which the male flies to a perpendicular branch where he clings head down, with beating wings, and slides down turning as he goes to a horizontal position. This is "a culminating phase of a courtship display" preceding actual mating which may take place in the court or may follow a mating flight.

The female alone builds her nest, in which two eggs are deposited, incubates, and feeds the young until they are grown. The nesting season extends from February to August.

The nest is a frail, shallow cup made, according to Jewel (in Stone, *Proc. Acad. Nat. Sci. Philadelphia*, vol. 70, 1918, p. 268) of "strips of plant bark, hairlike rootlets and grass stalks." The two eggs are "grayish, heavily streaked longitudinally with varying shades of brown." They measure 15.5×20.8 mm. In two collected on the upper Río Trinidad, Canal Zone, March 30, 1912, by August Busck, the ground color is pale buff. One is heavily marked with narrow longitudinal lines of dull reddish brown, intensified somewhat to form an indefinite circle around the large end. It is somewhat damaged so that it may not be measured accurately. The other has heavy longitudinal lines, and blotches of dull reddish brown forming a band

around the large end, and scattered narrower lines, partly brown and partly grayish brown on the lower half. It measures 15.1×21.1 mm. Schönwetter (Handb. Ool., pt. 16, 1969, p. 129) lists two sets of two from eastern Panamá as $14.8-15.1 \times 20.8-21.1$ mm. In a set of two of the related race *Manacus vitellinus milleri* of northwestern Colombia, in the British Museum (Natural History), collected near Remedios, Antioquia, by T. K. Salmon, one is elliptical in form, the other long elliptical. In color, one is faintly buffy white, marked heavily on the larger half with more or less confluent lines of cinnamon-brown, in part verging toward chocolate and grayish brown. The other egg has these markings covering most of its surface, with the basal color showing only in part. They measure 20.1×14.9 and 21.6×15.3 mm.

MANACUS VITELLINUS CERRITUS Peters

Manacus cerritus Peters, Proc. New England Zoöl. Club, vol. 10, September 22, 1927, p. 9. (Almirante, Bocas del Toro, Panamá.)

Characters.—Male, with forepart of body and upper back yellow, or only slightly orange; lower surface more greenish yellow; rump and upper tail coverts brighter green.

Female and immature male, darker green throughout.

Measurements.—Males (10 from Bocas del Toro), wing 51.8–55.0 (53.5), tail 31.2–36.8 (34.4), culmen from base 11.1–12.8 (11.9), tarsus 20.0–22.6 (21.6) mm.

Females (10 from Bocas del Toro), wing 52.9–56.3 (54.6), tail 32.1–35.7 (33.9), culmen from base 11.8–12.5 (12.1), tarsus 19.7–21.4 (20.7) mm.

Resident. Locally, fairly common in western Bocas del Toro, near Changuinola and Almirante; Isla Bastimentos.

This interesting form was named by Peters from a series of eight specimens collected by Hasso von Wedel near Almirante. Later this collector secured others, part of them from Changuinola. In January and February 1958, I found it frequently along the shores of the southern arm of Bahía de Almirante on the slightly elevated land back of the mangroves, and also along Quebrada Nigua, but in lesser number. It was seen especially on the low elevations above the small streams flowing into Ensenada de Ambrosio (the southern arm of the bay) to the west of Isla Pastores. Among those who spoke English the area was known as "Water Valley." Specimens in the collections of the Gorgas Memorial Laboratory were taken during banding operations near Almirante, on October 10 and November 12,

1960, and January 10 and 12, 1961. In 1963, Dr. C. O. Handley, Jr., found this race common on Isla Bastimentos, and collected two males near Punta Vieja on February 8 and 10. In field observation, on January 22, when a small group of males were displaying I found that the sibilant call, the buzzing rattle, and the sudden snap seemed exactly like those of the nominate form of central and eastern Panamá. On one occasion several females were gathered separately on a shaded slope where small berries were ripening in the shrubbery.

Due to extensive clearing near Changuinola, suitable habitat for manakins has been largely eliminated so that I did not record it there. It should be found, however, toward the hill region inland. The valley of the Río Sixaola should be checked for possible occurrence from Sibube to Guabito.

MANACUS VITELLINUS AMITINUS Wetmore

Manacus vitellinus amitinus Wetmore, Smithsonian Misc. Coll., vol. 139, no. 2, July 8, 1959, p. 7. (Isla Escudo de Veraguas, Bocas del Toro, Panamá.)

Characters.—Similar to *M. v. vitellinus* but larger; bill, tarsi, and toes heavier.

Adult male with lower back, rump, sides, and under wing coverts darker green. Female and immature male somewhat darker green, with the abdomen less yellowish.

Measurements.—Males (3 specimens), wing 59.3–61.4 (60.6), tail 39.2–42.0 (40.2), culmen from base 14.0–14.8 (14.5), tarsus 23.8–24.5 (24.1) mm.

Females (2 specimens), wing 59.5, 60.0; tail 38.2, 38.3; culmen from base 14.7, 14.7; tarsus 21.0, 21.5 mm.

Resident. Common on Isla Escudo de Veraguas, Bocas del Toro.

Larger size in this island race, compared to other subspecies of this manakin, evident when I first saw the bird in the field, is verified by comparison with the measurements of the other forms. They were among the more common of the small birds resident on the island, more so than the Golden Warbler, and standing next to the Bay Wren, the one found in greatest number. At the beginning of March 1958, males were not noted in display, nor did I hear them calling. They were found among the branches of the smaller trees, moving about rather slowly, and remaining motionless for several minutes at a time. On March 22, 1963, Charles O. Handley, Jr., secured four caught in mist nets set for bats. These were preserved entire in alcohol.

Small manakins are birds of such weak flight that it seems prob-

able that the ancestral stock populated what is now Isla Escudo de Veraguas when it was part of the mainland during a low sea level period in the Pleistocene.

**MANACUS AURANTIACUS (Salvin): Orange-collared Manakin,
Candelero**

Chromochaeris aurantiaca Salvin, Proc. Zool. Soc. London, November 1870, p. 200. (Bugaba, Chiriquí, Panamá.)

Manacus aurantiacus flaviventris Aldrich, Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, August 11, 1937, p. 95. (Río Mariato, 10 miles east of Bahía Montijo, Veraguas, Panamá.)

Like the Golden-collared Manakin, but smaller; male with upper back, foreneck, and upper breast bright orange; lower breast and abdomen yellow.

Female with under surface washed with orange.

Description.—Length 93–98 mm. Adult male, wing structure and elongated throat feathers as in *Manacus vitellinus*. Crown, including lores and lower back, black; rump olive-green; upper tail coverts slightly yellowish olive-green; inner lesser and middle wing coverts black basally, tipped with pale yellow and orange; outer lesser coverts, alula, greater coverts, primaries, and secondaries black, the greater coverts tipped and the central area of the flight feathers edged lightly with olive-green; sides of head, hindneck, foreneck, and upper breast bright orange, the feathers white basally; rest of lower surface yellow, with sides and flanks washed with olive; outermost under wing coverts dusky, tipped lightly with olive-yellow; axillars and inner under wing coverts pale yellow; inner webs of wing feathers grayish brown.

Female, above, including side of head, olive-green, faintly darker on crown, changing to yellowish olive-green on lower rump and upper tail coverts; wings and tail dusky edged with olive-green; chin and throat yellowish olive-green, chest somewhat darker; lower breast, abdomen, and under tail coverts wax yellow, changing to yellowish olive-green on flanks; under wing coverts and axillars as in male, but duller colored.

Immature male, like female.

Juvenile, duller, more grayish green underneath.

An adult male, taken near Soná, Veraguas, May 21, 1953, had the iris dull reddish brown; maxilla black; mandible slaty-black; tarsus and toes orange, claws light brown. Another male, at Aguacatón, Puerto Armuelles, Chiriquí, February 7, 1966, had the iris

dark wood brown; maxilla black; acute tip of mandible light brown; sides of the rami dusky neutral gray, rest of mandible dark neutral gray; tarsus and toes somewhat dark orange; claws grayish brown. A female, February 17, 1966, from the same locality had eye, bill, and feet like the male.

Measurements.—Males (26 from Costa Rica, Chiriquí, Veraguas, and Los Santos), wing 44.8–47.9 (46.3), tail 26.0–30.2 (28.7), culmen from base 11.2–12.2 (11.7), tarsus 19.3–21.1 (20.1) mm.

Females (22 from Chiriquí, Veraguas, Herrera, and Los Santos), wing 47.8–50.0 (48.7), tail 27.6–30.9 (30.3), culmen from base 11.3–12.3 (11.8), tarsus 18.2–20.5 (19.1) mm.

Resident. Locally common in Tropical Zone thickets and open forests of the Pacific slope from the Costa Rican line in southwestern Chiriquí, east through southern Veraguas, and both sides of the Azuero Peninsula; to 700 meters elevation (Buena Vista, Chiriquí; Cerro Montuosa, on the boundary between Veraguas and Herrera).

In general habits and notes these birds are a counterpart of *Manacus v. vitellinus*. On several occasions I have found males gathered in small groups, located through their low notes and the usual snapping sounds that accompany their displays. Always they have been shy and difficult to see in the rather dense low undergrowth and thickets that are their haunts. Aldrich (cit. supra, p. 97) describes a male in display "hopping around and around a triangular course on the floor of the thicket. Each hop carried the bird over one side of an equilateral triangle, approximately two feet on a side. Each hop occurred at rhythmic intervals of about one second and was accompanied by a flit of the wings and a loud snap."

In a small area of original forest on the Río Cobre, near Soná, on June 13, 1953, these birds were common. A female flushed from a bush in undergrowth came from a nest about a meter above the ground. The frail little cup made of plant fibers, light brown in color, was placed rather precariously in a small fork. It contained two nestlings three or four days old. I noted that they had down on the dorsal surface. Meise (in Schönwetter, Handb. Ool., pt. 15, 1968, p. 124, and pt. 16, 1969, p. 129) cites notes from Skutch that describe the two eggs in a set as dull white to pale bluish gray, heavily marked with brown, often uniformly over the entire surface, in a wreath on the larger end, or in a wreath with only slight markings at the ends; measurements are 19.4–23.0 × 14.3–15.9 mm.

I found these birds in small number on the eastern side of the Azuero Peninsula, in Herrera (La Cabuya, Santa María) and Los

Santos (Pedasí, Tonosí). Aldrich (in 1932) found them common on the northwestern shore of Bahía Montijo, at Paracoté, and farther down on the Río Mariato. They were common in 1953 in the general area of Soná, Veraguas, and in 1956 in eastern Chiriquí near San Félix and Las Lajas. In 1960, I found one male at Buena Vista, above Concepción, at 700 meters elevation on the Río Escárrea, and in 1966 there were a number at Aguacatón and Olivo, northeast of Puerto Armuelles. In early collections Mrs. Davidson recorded them at El Banco; Arcé collected them at Bugaba and Mina de Chorchá. In 1900 Brown secured a series at Divalá. Extensive clearing of open forests and thickets to make pastures and cultivated fields has removed so much of the original cover that the Orange-collared Manakin now is reduced in number over wide areas of former range.

As indicated, *M. aurantiacus* is a miniature representative of the widely distributed *M. v. vitellinus*, similar in pattern of markings but brighter in color and definitely smaller in size. The two are not known to meet, the smaller form ranging in the lowland areas of the Pacific slope to the west of the other form. It has been suggested that the smaller bird is a race of the larger one, but this seems uncertain from present information. Beyond Panamá *aurantiacus* continues in the lowlands of the Pacific slope of Costa Rica where it is found northward to the Gulf of Nicoya.

In museum specimens the orange and yellow colors of these birds slowly fade and become paler so that there is apparent a difference between the older preparations from western Chiriquí and Costa Rica and freshly taken examples. These differences, when Dr. John Aldrich made comparison with his fresh material from Veraguas, led to his description of a separate race *flaviventris*, from the eastern area of the range. While this seemed justified at the time, when I secured fresh specimens near the type locality of true *aurantiacus* these proved to be as bright in color as recently collected Veraguas birds. In 1958, on examination of the type female of *flaviventris* and others of the Aldrich collection, now in the Museum of Zoology at the University of Michigan, I found that through post mortem fading they did not differ now from other older skins from southwestern Costa Rica. It appeared from this that there is no basis for recognition of two subspecies.

From a detailed study by Skutch (Pac. Coast Avif. no. 35, 1969, pp. 118-147) it is learned that reproduction in this species is similar to that of its larger relative *Manacus vitellinus*. Males gather in groups in which each individual has, as his display court in under-

growth on the ground, a circular or elliptical space from 30 to 70 centimeters across (smaller than those of *Manacus vitellinus*). These are kept clean of leaves and other loose material through the mating season. The display is accompanied by calls, *chee-yu*, whirring and abrupt snapping sounds made by the wings, and active movements among the upright stems of the shrubbery around and above the court. Females come to mate, then build their nests, incubate, and rear the young without assistance from the males.

Nests may be located in forest or second growth in or near pastures and fields, coffee plantations, or shrubbery near houses, usually not far above the ground. Bits of cobweb and caterpillar silk are stretched to form a support on the twigs of a small crotch. There the female assembles fine strips of bark, rootlets, heads of grasses, and other similar materials to form a shallow cup. Usually the materials chosen are light in color, only rarely dark. The two eggs are "pale gray or pale blue-gray, heavily mottled with shades of brown. On some eggs the dark marks are rather uniformly distributed over the whole surface; on others, they are concentrated in a wreath around the large end . . . or the middle, leaving the two poles only lightly pigmented." Measurements of 55 varied from 21.4×14.3 to 23.0×15.9 mm. Nestlings have scanty gray down, with the interior of the mouth yellow as in other smaller species of the family.

Food is taken from insects and various species of berries. Skutch has found these manakins capturing fleeing insects above raiding ant columns, in company with the various species of ant-birds.

**SCHIFFORNIS TURDINUS (Wied): Thrushlike Manakin,
Saltarín Paralauta**

Muscicapa turdina Wied, Beitr. Naturg. Brasilien, vol. 3, pt. 2, 1831, p. 817.
(Bahia, Brazil.)

Medium size; dull brown to olive-brown above; in the more common pattern of coloration, grayish olive underneath, with a rusty brown band across the breast.

Description.—Length 145–165 mm. Adult male, upper surface dull reddish brown to olive-brown; wings and outer webs of rectrices dull cinnamon-brown; foreneck and upper breast pale dull cinnamon-brown, the throat paler; lower breast and abdomen light olive-gray to dull olive-brown.

Adult female, similar, but usually somewhat duller.

Juvenile, upper surface rather dull reddish brown, brighter on the

crown; lower surface dull reddish brown, grayer on throat and lower abdomen.

This is a forest species, found widely in the Tropical Zone, ranging in mountain areas to subtropical elevations, from southern México through Central America and northern South America to Perú, Bolivia, and central Brazil. Through this vast area, variation in color, although limited in total extent, is so clearly evident that twelve geographic races have been recognized, three of them found in Panamá.

These birds live in undergrowth in forest in pairs or as scattered individuals. While encountered regularly they are never abundant. Usually they are not wild, but through their dull coloration and quiet habits may remain unnoticed, as they rest on low perches, often partly hidden among leaves. When flushed they fly rather quickly through or above the undergrowth and disappear, seldom going higher into the taller trees. Flight is direct and fairly rapid. Their food is partly of insects, seized as they move among leaves, and partly of berries, found ripening in the undergrowth, or in the feeding trees attractive to many other birds.

As the nests and eggs of the subspecies of Panamá are as yet not known, data from other races may indicate what is probable for those that live in the Republic. Skutch (Pac. Coast Avif. no. 35, 1969, pp. 148-157) in Costa Rica found that *S. t. veraepacis*, the form immediately adjacent to *dumicola* of Chiriquí, builds a bulky nest mainly of large leaves, placed from 1 to 2 meters from the ground amid branches and vines that support it. The deep cup is lined with fine rootlets and similar materials. Three nests held two eggs each, with a single egg in a fourth. These were oval, pale buff in color, with a high gloss. They were "marked with large and small blotches and roundish spots of black and dark brown, or black and pale lilac, which are concentrated in a wreath around the thick end, with a few scattered over the remaining surface." Extreme measurements in the seven seen were 25.4×19.1 , 23.0×17.5 , and 24.2×15.9 mm. The female alone built the nest, incubated, and reared the young. The latter when hatched were covered with long grayish down.

For the race *S.t. veraepacis*, Smithe (Birds of Tikal, 1964, p. 157) lists a nest in a cavity in the top of a palm stump with "two whitish eggs." He cites another, on the authority of E. O. Willis, of similar location in British Honduras, "made of skeletonized dead leaves with a thin lining of fine rootlets" also with two eggs. Alvarez del Toro

(Ateneo, vol. 4, 1952, pp. 14–15, fig. 6) described a nest of this race found in Chiapas in the joint of a fallen palm leaf well hidden by other palm fronds, 50 centimeters above the ground. The nest, made of dead leaves and a few little sticks, lined with fine black rootlets, was a deep, open, rounded cup 150 mm in outside diameter by 60 mm inside. The two eggs were cream colored, with spots and markings of dark coffee color and gray forming an encircling band. They measured 25×19.5 mm.

Eggs of the subspecies *Schiffornis t. olivaceus* that I examined in the British Museum (Natural History), found by T. A. W. Davis, April 22, 1934, on the Mahaicony River, Guyana, were in a nest in a hollow at the bottom of a cavity in a palm stump, on a lining of a layer of dead leaves, with a few fibers. The stump was about a meter and a half tall, with the hole near the top. The two eggs are subelliptical in form, faintly buffy white, spotted boldly with slaty-black and lilac-gray, mainly in a wreath around the larger end, very sparingly elsewhere. They measure 24.7×18.3 and 24.6×18.3 mm.

SCHIFFORNIS TURDINUS DUMICOLA (Bangs)

Scotothorus veraeapacis dumicola Bangs, Proc. New England Zoöl. Club, vol. 3, February 6, 1903, p. 103. (Divalá, Chiriquí, Panamá.)

Scotothorus fuvvus Ridgway, Proc. Biol. Soc. Washington, vol. 19, September 6, 1906, p. 118. ("Boquete de Chitrá" = Chitra, Veraguas, Panamá.)

Characters.—Rufescent, with an olive cast on the upper surface; chin, foreneck, and upper breast rather dull reddish brown; lower breast, and abdomen pale olive-gray; sides, and under tail coverts darker olive-gray; varying to somewhat more reddish brown above, and in the band across the breast; decidedly more olive on lower breast, sides and abdomen. The darker shade of coloration apparently is found in recently mature individuals.

Measurements.—Males (13 from Chiriquí, Veraguas, and Coclé), wing 87.5–92.2 (89.6), tail 63.0–68.6 (65.3), culmen from base 15.8–18.6 (17.1), tarsus 20.6–23.6 (22.3) mm.

Females (5 from Veraguas), wing 84.8–88.7 (87.0), tail 58.4–62.7 (59.8), culmen from base 16.4–17.6 (17.1, average of 3), tarsus 22.0–22.7 (22.3) mm.

Resident. Fairly common in forested areas in Chiriquí, Veraguas, and Coclé; mainly on the Pacific side, but with records from the Caribbean slope from Calovévora, Veraguas, and northern Coclé.

While recorded from numerous localities in Chiriquí, this form seems never to have been common there. Arcé secured it at Bugaba,

and on the southern slope of the great volcano. Brown collected a pair at Divalá in December 1900. I found one at 1300 meters above Santa Clara, Chiriquí, March 19, 1954, and have another received from Dr. Frank Hartman from above Palo Santo, February 26, 1960. Mrs. M. E. Davidson collected three near Barriles—a male December 18, 1929, and two females January 17 and 20, 1931. Farther east, in Veraguas, at Puerto Vidal on the Río Vidal, near the boundary with Chiriquí, on May 30, 1953, I found one in swampy woodland. Another was taken earlier in this area on May 25, at Zapotillo, on the Río Bubí (30 kilometers west of Soná). Specimens in the American Museum of Natural History come from El Villano and La María, south of Santiago. Dr. John Aldrich (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, p. 98) in February and March 1932 collected a series in southeastern Veraguas, at Paracoté, on the western shore of the Golfo de Montijo, and inland along the Río Mariato to 900 meters on Cerro Viejo. He recorded it as "rather common in the undergrowth of the more heavily forested regions at all elevations visited but because of its secretive habits would usually have been overlooked had it not been for its rather musical calls."

This form is recorded also on the Caribbean slope of Veraguas, where Arcé collected it in his early work at Calovévora. I have seen two of his specimens from that locality in the British Museum (Natural History). Others were taken by Benson on the Río Calovévora in 1925. On March 1, 1962, I captured one in a mist net on the head of the Río Guabal on the Caribbean slope of northern Coclé. One in the National Museum was collected at Cascajal, Coclé, March 3, 1889.

When Ridgway described this bird as the race *fervus*, because of its darker coloration compared to *veraepacis*, the population of northern Central America, he overlooked Bangs' earlier name *dumicola* based on the same difference.

SCHIFFORNIS TURDINUS PANAMENSIS Hellmayr

Schiffornis turdinus panamensis Hellmayr, Field Mus. Nat. Hist., Zool. Ser., Publ. 266, vol. 13, pt. 6, November 14, 1929, p. 84. (El Real, Darién, Panamá.)

Characters.—Paler, more reddish brown above; paler also on the under surface, with the foreneck (except the chin) and upper breast brighter reddish brown, compared with the lower breast and abdomen, which are grayish olive.

A female, taken at La Jagua, Panamá, January 14, 1962, had the iris wood brown; cutting edge of both maxilla and mandible, and

the gape dull honey yellow; rest of maxilla and tip of mandible dull black; rest of mandible neutral gray, becoming paler at base; tarsus and toes neutral gray, with a faint brownish cast.

Measurements.—Males (10 from Canal Zone, eastern Province of Panamá, and Darién), wing 89.0–93.1 (91.0), tail 61.0–66.5 (64.5), culmen from base 16.0–17.7 (16.6), tarsus 21.0–22.8 (22.0) mm.

Females (10 from Canal Zone, eastern Province of Panamá, and Darién), wing 87.0–90.0 (88.6), tail 56.8–62.0 (60.5), culmen from base 15.3–17.7 (16.8), tarsus 21.4–22.9 (21.8) mm.

Resident. Widely distributed in lowland areas from the western edge of the Canal Zone eastward on the Pacific slope through eastern Province of Panamá and Darién to Colombia; on the Caribbean side, from Barro Colorado Island and eastern Province of Colón (Portobelo) to eastern San Blas (Permé).

Dr. Eisenmann informs me that years ago he examined one caught in a mist net on Cerro Campana, western Province of Panamá, but did not make full notes on it as the current understanding of subspecies in this bird was then unknown. It is probable that this may have been the race *panamensis* near its western boundary, but this needs verification. While these birds are not common, there are numerous records from the lower Chagres Valley, near Gamboa, Juan Mina, and Frijoles, and on Barro Colorado Island. Goldman collected a male at Portobelo, Colón, on May 30, 1911. Griscom (Bull. Mus. Comp. Zool., vol. 72, 1932, p. 355) recorded one taken by von Wedel at Permé, San Blas. These two are the only records at present for the eastern Caribbean seaboard. From the adjacent northern end of Chocó, Colombia, the National Museum has specimens collected by M. A. Carriker, Jr., in 1949 at Acandí, and in 1950 at Unguía.

In Darién these birds are widely distributed in the valleys of the Chucunaque and Tuira Rivers, also near the coast at Jaqué, and inland on the Río Jaqué. In late January and early February 1961, I found them fairly common at about 475 meters on the base of Cerro Pirre. The race *panamensis* continues in northwestern Colombia through the valleys of the Río Sinú and the Río Cauca (with its tributary the Río Nechí). A paler race *S.t. stenorhynchus* replaces it farther east along the lower Río Magdalena.

Eisenmann and others have recorded the loud, emphatic call, heard in the Canal Zone, as of four notes, *wéyoo*, *whit-whit*, *wé-o-o-o*, the two in the middle short and the last prolonged.

From examination of stomachs I have found the food to be caterpillars, cicadas, and small berries.

SCHIFFORNIS TURDINUS ACROLOPHITES subsp. nov.

Characters.—Similar to *Schiffornis turdinus dunicola* but darker, decidedly more olive in general coloration; both chin and throat chestnut-brown.

Description.—Holotype, U.S. National Museum no. 484592, ♂ from 1425 meters elevation on Cerro Malí, Darién, collected February 22, 1964, by A. Wetmore (original no. 25941). Crown, hindneck, back, and scapulars between deep olive and dark olive, changing on rump and upper tail coverts to deep olive; shorter feathers of forehead with grayish bases, faintly visible beneath the darker tips; wings basally fuscous-black, with the outer webs of wing coverts and secondaries olive-brown; outer webs of primaries narrowly edged with buffy olive-brown; tail fuscous-black, with the outer webs dull olive-brown; side of head deep olive; chin and upper foreneck buffy brown; lower foreneck, breast, and sides deep olive; center of abdomen and under tail coverts between citrine drab and dark olive; axillars and under wing coverts light grayish olive.

A male from Cerro Malí, Darién, February 22, 1964, had the iris brown; cutting edge of maxilla at base pale neutral gray; rest of maxilla and anterior half of mandible black; rest of mandible dark neutral gray; tarsus, toes, and claws dark neutral gray.

Measurements.—Males (11 from Cerro Malí and Cerro Tacarcuna, Darién), wing 91.0–93.4 (92.3), tail 64.0–70.3 (68.7), culmen from base 16.6–19.5 (17.7), tarsus 21.3–23.3 (22.3) mm.

Females (2 from Cerro Malí, Darién), wing 85.0, 85.6; tail 58.8, 63.1; culmen from base 17.0, 18.1; tarsus 22.4, 22.4 mm.

Resident. Fairly common in the upper Tropical and lower Subtropical Zones across the higher levels of Cerro Malí and Cerro Tacarcuna, Darién, extending beyond the international boundary into northern Department of Chocó, Colombia.

This is a darker, more olive population, found in the higher mountains in eastern Darién. In early collections from this area specimens were labeled "Tacarcuna" without regard to the elevation at which they were collected. Part, taken near the old Tacarcuna village site (at 600 meters elevation or less) are the paler *panamensis*. Others from the top of the ridge, at above 1400 meters, are definitely different in darker coloration. Early attempts were made to identify these with *S.t. "furvus"* (= *dunicola*) of the Subtropical Zone of Chiriquí, which is more rufescent, and from which they differ in more olive hue. The highland form here described continues in Chocó, western Colombia, apparently to the Serranía de Baudó. *S.t. rosen-*

bergi of southwestern Colombia (Nariño) and northern Ecuador, also is dark, but has wings and tail more olive-gray, less rufescent, the throat paler, less rufescent, and is somewhat smaller.

On Cerro Malí and the adjacent slopes of Cerro Tacarcuna these birds were fairly common, often in or near areas of cloud forest. They ranged in fairly dense undergrowth, perching amid the lower stands, but well above the ground. Several were captured in mist nets. Their call was a three-noted *tsick-sweet-tsee*, given slowly with a 2-second interval between the separate notes.

One had eaten a large orthopteran. The stomach of another held finely ground insect remains that I did not identify.

The considerable change in color in museum specimens of *Schiffornis turdinus*, through which the birds become darker, apparently has been responsible, in part at least, for confusion in understanding the variation found in this species through the Isthmus of Panamá. The difficulty began when Hellmayr, in his review (Cat. Birds Amer., Part 6, 1929, p. 85), listed the subspecies *dumicola*, described by Bangs in 1903, as not separable from the population *veraepacis* of farther north in Central America. He then used the next available name *furvus*, a synonym of *dumicola*, named in 1906 by Ridgway, for the birds of western Panamá and of the eastern mountains. At the same time he described the paler lowland form of the eastern lowlands as a separate race *panamensis*.

When the first collections from Darién including this species came to hand, it was not recognized that the series from that area included both the lowland *panamensis* from the foothill area, and a darker form from the higher levels, so that all were labeled as identical with the birds of the western Panamanian highlands.

The name for this race has been taken from the Greek *acrolophites*, a mountaineer.

SPECIMENS EXAMINED IN COMPARISONS:

Schiffornis turdinus veraepacis. Guatemala—Petén: Remate, ♂; Santa Rita, ♂; Laguna Sos, 2 ♂. Honduras—Chamelicón, ♀; Santa Ana, ♀; San Pedro Sula, ♂. Costa Rica—Jiménez, ♂, ♀; Angostura, ♀; Cervantes, ♂.

Schiffornis turdinus dumicola. Panamá—Chiriquí: Santa Clara, ♂; El Volcán, 2 ♂. Veraguas: Río Calovévora, 3♀; Puerto Vidal, ♂; Soná, ♀; Santa Fé, 3♂, ♀; Chitra, ♂ (type of *furvus* Ridgway). Coclé: Head of Río Guabal, ♂; Cascajal, ♂.

Schiffornis turdinus panamensis. Panamá—Canal Zone: Juan Mina, ♂, ♀. Province of Panamá: La Jagua, ♂, ♀; Cañita, ♂; Chepo, 2♀; Chimán, ♀; Charco del Toro, ♂, ♀. Colón: Portobelo, ♂. Darién: Yaviza, ♂; Boca de

Paya, ♀; old Tacarcuna village site, 2♂, ♀; lower slopes of Cerro Pirre, 2♂, 4♀; Jaqué, ♀.

Schiffornis turdinus rosenbergi. Colombia—Serranía de Baudó, 2♂; Novita Trail, ♂; Buena Vista, ♀; Barbaocoas, ♀. Ecuador—Alamor, ♂; Lita, ♂, ♀; Chimbo, ♂; Esmeraldas, ♂, ♀; Paramba ♂; Cachyjacú, ♂, ♀.

**SAPAYOA AENIGMA Hartert: Broad-billed Manakin,
Verdón de Montaña**

FIGURE 33

Sapayoa aenigma Hartert, Nov. Zool., vol. 10, April 20, 1903, p. 117. (Río Sapayo = Río Zapallo Grande, northern Ecuador.)

Rather small; olive-green above; greenish yellow below; male with a concealed yellow streak in the crown; otherwise unmarked.

Description.—Length 135–150 mm. Adult male, olive-green on upper surface; a broad longitudinal streak of yellow in center of crown, with the feathers tipped and edged with olive-green so that the brighter color is nearly or wholly concealed; wings and tail dusky, edged with yellowish green and olive-green; under surface, including under tail coverts, yellowish centrally, with side and flanks washed with olive.

Female somewhat duller, without a crown patch.

A male taken on Cerro Pirre, February 1, 1961, had the iris reddish brown; maxilla black; mandible neutral gray; upper half of tarsus fuscous; lower half and toes neutral gray.

A female, at Armila, San Blas, March 3, 1963, had the iris auburn; tarsus and toes dark neutral gray; claws black; inside of mouth and tongue honey yellow.

Measurements.—Males (10 from eastern Province of Panamá, Darién, and San Blas), wing 80.0–83.8 (82.1), tail 56.1–61.0 (58.4), culmen from base 16.8–18.3 (17.3), tarsus 14.0–15.2 (14.4) mm.

Females (10 from eastern Province of Panamá, Darién, San Blas, and Chocó, Colombia), wing 77.4–83.1 (80.3), tail 54.5–59.0 (57.0), culmen from base 15.3–18.7 (16.7), tarsus 14.2–15.2 (14.7) mm.

Resident. Found locally in forested areas in the Tropical Zone from the northern Canal Zone (Gamboa), and the lower Chagres Valley eastward in Colón and San Blas to Colombia, and from the Cerro Azul through Darién; to 1370 meters on Cerro Pirre in the lower edge of the Subtropical Zone.

The first specimens known from the Republic were a male and a female collected by E. A. Goldman on Cerro Pirre, Darién, near the head of the Río Limon, on April 29 and May 2, 1912. Four males

in the American Museum of Natural History were taken by W. B. Richardson in 1915, in eastern Darién, near Tapalisa, March 14, at the old village site on the base of Cerro Tacarcuna April 7 and 9, and at Cituro on the Río Cupe, May 13. Barbour (Bull. Mus. Comp. Zool., vol. 65, 1922, p. 215) in April 1922 found it abundant along the streams on the base of Cerro Sapo, Darién, and secured eight



FIGURE 33.—Broad-billed manakin, verdón de montaña, *Sapayoa aenigma*.

adults. Benson sent a male taken at Cana in 1928, to Griscom; and in 1931 and subsequently, H. von Wedel forwarded others from Permé, Ranchón, and Puerto Obaldía on the Caribbean coast of San Blas. April 4, 1949, W. M. Perrygo and I collected male and female at Jaqué, Darién, near the Colombian border, and April 23, 1949, I took a female on Cerro Azul. In recent years they have been found rather regularly along the pipeline road back of Gamboa, Canal Zone, where several have been caught in mist nets and banded by E. Tyson,

F. Chapman, and James Karr. R. S. Ridgely banded one at Río Piedras, eastern Colón, February 22, 1969. It appears that the species ranges locally in Panamá from the Canal Zone eastward. In Colombia it now is known from the upper Sinú Valley in Córdoba westward, along the Pacific slope from the Serranía de Baudó (Ríos Jurubidá and Nuquí) south to Nariño, continuing south into northern Ecuador.

This interesting bird, like a flycatcher in general appearance and habits, I have found mainly in hill country, usually near small streams that flow through forest. The birds range through the tops of the undergrowth and the lower branches of the trees, where the subdued light so masks their soft shades of color that close scrutiny may be required to distinguish them from a common dull-colored flycatcher of equal size and somewhat similar in its actions, the Olivaceous Flat-bill (*Rhynchocyclus olivaceus*). The shorter legs of *Sapayoa* that give it a somewhat different stance, with the body a little lower against the twigs on which it rests, may attract the eye, and its duller coloration and unmarked wings serve to identify it. The birds may range in pairs, singly, or with moving bands of other small forest birds. Occasionally I found them among chattering flocks of Olive Tanagers (*Chlorothraupis carmioli*). In the latter case, while they suggest the tanagers in dull color, they differ in posture and smaller form. *Sapayoa* may move quickly, but then pauses with tail hanging down while it peers about, suggesting then the duller colored *Schiffornis turdinus*. Those that I have seen have been silent. Karr describes their calls as resembling somewhat those of the Blue-crowned Manakin but less musical.

In the hand, the short legs and the large wings, broad for the size of the body, attract attention, as does the rather long and fairly dense body plumage. In preparing specimens I have noted in the pterylosis a narrow, elongated apertion in the lower half of the expanded dorsal tract that continues down into the narrowed distal line on the upper rump. In the skull the cranium is rounded, elevated, and firm. The nest and eggs have not been recorded, except that Hartert in the original description (p. 118) wrote that the bird collector had two eggs, which however were not forwarded with the specimen.

The small series here in Washington from the base of the Serranía de Baudó in central Chocó, Colombia, averages very faintly more olive than that from Panamá, a difference that appears too slight to warrant a name.

The true family relationship of this species is still to be established.

Hartert, in the original description, placed the bird tentatively in the Pipridae, an allocation that has been followed with some uncertainty by others. Skeletons are now available, but no specimens in alcohol, so that other detailed anatomical data still are lacking. Current treatment is followed here in default of firm decision. It seems probable that the true relationship is with the Cotingidae, though allocation in the Tyrannidae also has been suggested.

Family TYRANNIDAE: Tyrant Flycatchers, Atrapamoscas

This family, found only in the Americas, one of evident South American affinity, has 88 species recorded in Panamá. These are distributed most abundantly throughout the Tropical Zone, but with certain kinds adapted for life in the mountain areas where suitable cover exists for them. Fourteen kinds are winter migrants from the north, the others residents. The family as a whole may number more individuals than any other in this avifauna.

One species, the Pied Water-tyrant, or *Pozera*, is a ground inhabitant found only in a limited area of swamplands near the coast, east of Panama City. A number of kinds seek perches where they have open view in their watch for insect food, a habitat that some find along the highways, in pastures, marshes, and savanna lands. In careful watching it is found also that some find these open spaces in the sun across the top of the leaf crown on the high summit of extensive forests.

Where a species is resident throughout the Isthmus, it is common to find slightly differing geographic races in the west and in the east. Some also, with more northern distribution, especially in highland areas, are restricted to the western section, near Costa Rica. Others in the east, especially on Cerro Tacarcuna and Cerro Pirre, may have affinity with species of the western Andes of Colombia.

Many in the family are of medium or small size. The smaller ones include one of the smallest of the Passeriform group, the tiny Black-capped Pygmy-tyrant (*Perisotriccus atricapillus*). Nests in the main are cup shaped, placed on the branches of shrubs or trees. Others are varied to pendant, suspended globes that suggest masses of waste vegetation. A few use cavities in tree trunks. One species, the Piratic Fly-catcher, (*Legatus leucophaeus*), usurps nests made by other birds, often of species of much larger size. The eggs in a few may be plain white, but those of the majority are spotted lightly or heavily with shades of brown, which varies to gray when the color is overlaid by a deposit of shell material.

The group has close allies in the cotinga family, also of American origin. Though detailed anatomy of many is still unknown, it seems probable that as information develops these two assemblages, as treated at present, may be united under subfamily headings. Other than this, the closest alliance is with the Manakins, the family Pipridae.

KEY TO SPECIES OF TYRANNIDAE: TYRANT FLYCATCHERS

1. One pair of the tail feathers much elongated, projecting definitely beyond those adjacent. 2
Tail feathers all of equal or nearly equal length. 4
2. The two central rectrices elongated.
Long-tailed tyrant, *Colonia colonus leuconota*, p. 367
The two lateral feathers, one on either side, elongated. 3
3. Crown black; under surface white.
Fork-tailed flycatcher, *Muscivora tyrannus monachus*, p. 375
Crown light gray; sides and under tail coverts pink to red.
Scissor-tailed flycatcher, *Muscivora forficata*, p. 373
4. Dull black above and below, except for white abdomen and slight wing markings. Black phoebe, *Sayornis nigricans*, p. 364
Not extensively dull black above and below. 5
5. White, or faintly grayish white on lower surface, without markings; size medium, length more than 100 mm. 6
Not white, or grayish white as above, or length less than 100 mm. 9
6. Under surface, forecrown, back, and rump pure white.
Pied water-tyrant, *Fluvicola pica pica*, p. 370
Under surface white, with breast faintly grayish; no white in crown. 7
7. Crown wholly black; back light gray.
Sirystes, *Sirystes sibilator albogriseus*, p. 433
Crown with a central area of scarlet or red; back darker. 8
8. Crown and back gray; tail dusky.
Gray kingbird, *Tyrannus dominicensis dominicensis*, p. 382
Crown black; back blackish slate; tail black with white tip.
Eastern kingbird, *Tyrannus tyrannus*, p. 379
9. Under surface bright red (male), or flanks, under tail coverts, pink to light red (female). . . . Vermilion flycatcher, *Pyrocephalus rubinus*, p. 372
Under surface not red. 10
10. A large, broad crest of orange to red.
Royal flycatcher, *Onychorhynchus mexicanus fraterculus*, p. 496
Not broadly or brightly crested. 11
11. Medium to large size, length 180–200 mm; breast and throat buff, lightly streaked; or entire under surface heavily streaked. 12
Size and markings not as above. 14
12. Breast and throat buff, lightly streaked; back and hindneck greenish gray, without markings.
Golden-crowned flycatcher, *Myiodynastes chrysocephalus minor*, p. 401
Heavily streaked above and below; tail rufous, with a dark shaft line. . . 13

13. Chin dusky, this color extended along the jaw on either side.
Sulphur-bellied flycatcher, *Myiodynastes luteiventris*, p. 392
Chin white.....Streaked flycatcher, *Myiodynastes maculatus*, p. 395
14. Body color brown to rufous-brown throughout, darker above, lighter below. 15
Body color not uniformly light or rufous-brown throughout..... 17
15. Wing coverts dusky or barred with dusky.
Speckled mourner, *Laniocera rufescens rufescens*, p. 441
Wing coverts rufous-brown, like back..... 16
16. Larger, wing 120 mm or more.
Rufous piha, *Lipaugus unirufus unirufus*, p. 446
Smaller, wing less than 105 mm.
Rufous mourner, *Rhytipterna holerythra holerythra*, p. 444
17. With a white, yellow, or buffy yellow patch on the rump and upper tail coverts. 18
With no light-colored patch on the rump..... 21
18. Larger, total length 160–180 mm; body robust; breast distinctly streaked with gray.....Bright-rumped attila, *Attila spadiceus*, p. 436
Smaller, total length 140 mm or less; body slender, breast without distinct streaks. 19
19. Breast and foreneck grayish brown.
Lesser black-tailed flycatcher, *Myiobius atricaudus*, p. 491
Breast, lower foreneck, and sides distinctly reddish brown..... 20
20. Darker, duller-colored; abdomen paler, whiter; larger, length 130–140 mm.
Greater black-tailed flycatcher, *Myiobius villosus villosus*, p. 490
Brighter colored, more reddish brown on sides; lower breast and abdomen brighter yellow; smaller, length 115–125 mm.
Sulphur-rumped flycatcher, *Myiobius sulphureipygius aureatus*, p. 487
21. Throat white; rest of under surface yellow..... 22
Color of under surface not as above..... 29
22. Larger; length more than 190 mm; body heavier, bill stronger..... 23
Smaller; length less than 170 mm; body slender, bill smaller..... 25
23. Bill large, heavy, with culmen elevated and strongly ridged; back paler, grayer....Boat-billed flycatcher, *Megarynchus pitangua mexicanus*, p. 403
Bill of moderate size and form; back darker..... 24
24. Wing coverts, wings, and tail dusky, a white line on black jaw area.
Golden-bellied flycatcher, *Myiodynastes hemichrysus*, p. 400
Wing coverts, wings, and tail strongly rufescent; no white line on jaw area.
Great kiskadee, *Pitangus sulphuratus guatemalensis*, p. 417
25. Without a prominent white superciliary line.
Gray-capped flycatcher, *Myiozetetes granadensis*, p. 413
With a prominent white superciliary line..... 26
26. White superciliary lines confluent across forehead, and broadly across hindneck.¹

¹ In immature *Pitangus lictor* there is a narrow white band across the hindneck that is not present in the adult. Birds of this species in the immature stage may be identified by the paler, browner back, and the longer, narrower bill, 21.7–25 mm long. In *Coryphotricus* the back is blacker, and the bill 19–20 mm.

- White-ringed flycatcher, *Coryphotriccus parvus albovittatus*, p. 406
 Hindneck without white (except as noted in footnote 1)..... 27
27. Bill long, narrow throughout, length 21.7–25.0 mm; feathers of hind crown somewhat elongated... Lesser kiskadee, *Pitangus lictor panamensis*, p. 420
 Bill short, broader at base..... 28
28. Darker above, more dusky; crown black; with inner webs of wings rufescent.
 Rusty-margined flycatcher, *Myiozetetes cayanensis harterti*, p. 408
 Grayer above, including the crown; inner webs of wings not strongly rufescent.
 Vermilion-crowned flycatcher, *Myiozetetes similis columbianus*, p. 410
29. Upper breast and foreneck gray in adult (varied to whitish in part in juvenile dress); lower breast, sides and under tail coverts yellow; bill broad, heavy, in color dark to dusky..... 30
 Not as in the above..... 33
30. Smaller; wing not more than 80 mm; crown black.
 Dusky-capped flycatcher, *Myiarchus tuberculifer*, p. 429
 Larger; wing more than 85 mm..... 31
31. Paler, grayer above with crown and hindneck lighter-colored; an indistinct dark line through eye... Tropical kingbird, *Tyrannus melancholicus*, p. 383
 Darker, more dusky above, crown and back mainly similar in color... 32
32. Tail feathers with inner webs entirely rufous; brighter yellow below.
 Great crested flycatcher, *Myiarchus crinitus*, p. 422
 Tail without rufous (or if present in juvenile, the rufous reduced to a narrow margin around the web); paler yellow on abdomen.
 Short-crested flycatcher, *Myiarchus ferox panamensis*, p. 426
33. Bill short, broad at base, the basal width more than three-fourths the length. 34
 Bill not much broadened basally in proportion to its length..... 38
34. Larger, tail longer, two-thirds or more the length of wing..... 35
 Smaller, tail shorter, less than half the length of wing..... 37
35. Upper surface dusky; breast and sides streaked with dusky.
 Piratic flycatcher, *Legatus leucophaius*, p. 388
 Upper surface grayish green..... 36
36. Darker grayish green; more heavily marked on breast and sides; a narrow white ring around eye.
 Eye-ringed flatbill, *Rhynchocyclus brevirostris*, p. 514
 Lighter grayish green; less heavily marked on breast and sides; white ring around eye narrower, less evident.
 Olivaceous flatbill, *Rhynchocyclus olivaceus bardus*, p. 512
37. Throat white; darker, more reddish brown above.
 White-throated spade-bill, *Platyrinchus mystaccus neglectus*, p. 504
 Throat pale yellow; greener on the back.
 Golden-crowned spade-bill, *Platyrinchus coronatus superciliaris*, p. 501
38. Breast band, under tail coverts, and tail dull brown; size medium.
 Brown flycatcher, *Cnipodectes subbrunneus panamensis*, p. 506
 Not as above..... 39

39. A concealed but well-marked tuft of white feathers at either side of lower back; ² medium size, length 155–180 mm..... 40
Without concealed white tufts on the sides of the lower back..... 41
40. Sides dusky; throat, center of breast, and abdomen white.
Olive-sided flycatcher, *Nuttallornis borealis*, p. 448
Throat, breast, and sides wholly dusky, without white.
Dark pewee, *Contopus lugubris*, p. 449
41. Under surface wholly or partly pale cinnamon to rufous-brown..... 42
Under surface without rufous-brown ³..... 44
42. Lower breast and abdomen pale cinnamon-brown; foreneck dark gray, with paler shaft lines.
Ochre-bellied flycatcher, *Pipromorpha oleaginea*, p. 595
Breast and foreneck rufous-brown..... 43
43. Rump, wings, tail, and lower surface rufous-brown; size very small.
Ruddy-tailed flycatcher, *Terenotriccus erythrurus fulvigularis*, p. 483
Wings and tail dusky, breast and foreneck rufous-brown, abdomen and under tail coverts similar, or yellow.
Tufted flycatcher, *Mitrephanes phacocercus*, p. 479
44. Above greenish olive; foreneck, breast, and sides light olive, with narrow yellowish and whitish shaft-line streaks.
Olive-striped flycatcher, *Mionectes olivaceus*, p. 592
Colors and pattern not as above..... 45
45. A prominent central crown patch of orange, yellow, or white..... 46
Without central crown patch, or if present, white and partly or wholly concealed. 49
46. Crown patch white..... Gray elaenia, *Myiopagis caniceps absitta*, p. 565
Crown patch yellow or orange..... 47
47. No definite wing bars.. Greenish elaenia, *Myiopagis viridicata accola*, p. 560
With two white or whitish wing bars..... 48
48. Larger, length 112–125 mm.
Forest elaenia, *Myiopagis gaimardii macilvainii*, p. 563
Small, length 92–100 m.
Yellow-crowned tyrannulet, *Tyrannulus elatus panamensis*, p. 578
49. Throat, foreneck, and upper breast gray to greenish gray; abdomen white to pale yellowish white; back somewhat greenish gray; bill more slender. 50
Throat white; lower foreneck, upper breast, and more or less of sides light or dark gray, usually with a somewhat olive cast; mandible paler, at least at base; bill averaging broader..... 53
50. Throat, foreneck, and upper breast, crown and back clearer, plainer gray; abdomen faintly paler, clearer yellow; bill slightly broader at the tip, and blacker on mandible.
Scrub flycatcher, *Sublegatus arenarum arenarum*, p. 570
Throat, foreneck, and upper surface definitely more greenish gray; bill more slender at tip, with mandible paler, at least at base..... 51

² Found also in *Mitrephanes phacocercus*, which differs in smaller size, wing 125 mm or less, and has the entire foreneck and breast rufous-brown.

³ Juvenile *Empidonax atriceps* may have a reddish brown band across the breast (not found in the adult).

51. Crest more prominent, pointed, with a definite white stripe in center; abdomen somewhat brighter yellow.
 Yellow-bellied elaenia, *Elaenia flavogaster*, p. 555
 Crest less evident, with white restricted in amount or absent; somewhat duller yellow on the abdomen..... 52
52. Slightly larger (average male, wing 80.9, tail 71.2; female, wing 75.1, tail 66.1 mm.); white on tertials somewhat more extensive; no white in crown, or if present, much reduced.
 Mountain elaenia, *Elaenia frantzii frantzii*, p. 549
 Slightly smaller, more slender (average male, wing 74.2, tail 62.3; female, wing 67.8, tail 56.6 mm.); white in tertials less in amount; white in crown reduced, usually completely hidden.
 Lesser elaenia, *Elaenia chiriquensis chiriquensis*, p. 552
53. Darker, dusky above, with crown and tail averaging blacker than back; throat and abdomen white, somewhat grayish white to faintly yellowish white, or slightly buffy..... 54
 Slightly brownish to faintly greenish olive above, with crown and tail generally similar, but in some these areas slightly darker than the back; throat and abdomen white to grayish white, or in some yellowish.... 57
54. Averaging larger, length 135-145 mm; dorsal surface less blackish, with crown, back, and tail more uniform in hue..... 55
 Averaging smaller, more slender, length 120-135 mm, with crown and tail distinctly blacker than back..... 56
55. Above more greenish olive; axillars and under wing coverts white to pale grayish brown edged with white; longest upper tail covert shorter, with distance from its tip to end of tail greater, in males 33.9-36.8; in females 32.0-35.5 mm; mandible dull white to pale buff, with only the tip darker..... Eastern wood pewee, *Contopus virens*, p. 452
 Above darker, more olive; axillars and under wing coverts gray to brown, varying in shade but without white; distance from tip of longest upper tail coverts to end of tail less, in males 29.9-32.6, in females 27.8-32.6 mm; most of mandible darker, blacker.
 Western wood pewee, *Contopus sordidulus*, p. 455
56. Loral area grayish white; white eye-ring indistinct; throat and abdomen white to very pale yellowish; larger, length 120-135 mm.
 Tropical pewee, *Contopus cinereus*, p. 459
 Loral area indistinctly grayish; white eye-ring wider, especially around back of eye; much smaller, length 105-115 mm.
 Black-capped flycatcher, *Empidonax atriceps*, p. 466
57. Axillars and under wing coverts distinctly buff to cinnamon-buff.⁴.... 58
 Axillars and under wing coverts white to pale yellow, not buff..... 59
58. Distinctly reddish brown to buffy brown above; breast and sides heavily streaked with dusky.
 Bran-colored flycatcher, *Myiophobus fasciatus furfurosus*, p. 494
 Olive-brown above; breast and sides not heavily streaked.
 White-throated flycatcher, *Empidonax albigularis australis*, p. 471

⁴ Some juvenile *Empidonax minimus* have the carpal edge of the wing and the axillars pale buff, in addition to this color on the wing bands.

59. Lower surface white to very faintly yellow..... 60
 Lower surface wholly or partly light yellow to strongly yellow..... 63
60. Sixth primary with outer web definitely narrowed, sinuated on outer end; slightly smaller; wing 59-67 mm.
 Least flycatcher, *Empidonax minimus*, p. 468
 Sixth primary with outer web slightly if at all narrowed or sinuated; larger wing, more than 70 mm..... 61
61. Distinctly greenish gray above; with a prominent white eye-ring; breast band less strongly marked.
 Acadian flycatcher, *Empidonax virescens*, p. 465
 Browner, less greenish, more olive above; band on breast more definitely marked. 62
62. Dorsal surface dark olive-green, with a distinct greenish cast.
 Alder flycatcher, *Empidonax alorum*, p. 473
 Dorsal surface browner, with little or no greenish cast.
 Traill's flycatcher, *Empidonax traillii*, p. 475
63. Larger, length more than 115 mm..... 64
 Smaller to very small, length 110 mm or less..... 70
64. Above yellowish green; lower surface deep yellow, more or less buffy across breast; a prominent white eye-ring.
 Yellowish flycatcher, *Empidonax flavescens flavescens*, p. 469
 Above duller, less yellowish green; breast and abdomen lighter yellow; eye-ring absent or less prominent; larger, length 120 mm..... 65
65. Darker, more olive-green above; edgings on wings nearly or entirely white; throat more yellowish white.
 Yellow-bellied flycatcher, *Empidonax flaviventris*, p. 463
 Lighter green on back; wing edgings buff or greenish white..... 66
66. Back and crown closely similar, somewhat more buffy green; lower sides and flanks yellow, with the dark breast band sharply different from yellow lower breast..... Black-billed flycatcher, *Pracdo audax*, p. 485
 Crown of different shade than the back; chin in general similar to foreneck. 67
67. Bill broader, with mandible lighter in color; crown grayer; back and tail edgings lighter green..... 68
 Bill slender, blacker; crown blacker than back..... 69
68. Light greenish gray above, and on breast; especially on the head, and edging on tail; tail slightly shorter.
 Yellow-margined flycatcher, *Tolmomyias assimilis flavotectus*, p. 510
 Darker green above; breast and foreneck slightly greenish gray; tail slightly longer.
 Yellow-olive flycatcher, *Tolmomyias sulphurescens flavo-olivaceus*, p. 508
69. Crown blackish brown; forehead, lores, and auricular region duller, browner.
 Sepia-capped flycatcher, *Leptopogon amaurocephalus*, p. 585
 Crown somewhat greenish black; side of forehead, lores, and auricular region mixed dull black and white.
 Slaty-capped flycatcher, *Leptopogon superciliaris*, p. 589
70. Very dark, blackish brown on upper surface; sides, under tail coverts, and prominent breast band dark brown.
 Olive-crowned pygmy-tyrant, *Pseudotriccus pelzelni berlepschi*, p. 537
 Dorsal surface lighter colored, gray or greenish to light brown..... 71

71. Crown to back uniform dull drab-brown.
 Mouse-colored tyrannulet, *Phaenopygia murina eremonoma*, p. 547
 Back greenish, yellowish, or gray..... 72
72. Distinctly crested; crown reddish cinnamon spotted with black.
 Scale-crested pygmy-tyrant, *Lophotriccus pileatus luteiventris*, p. 529
 Head not crested; and not spotted with black..... 73
73. Back light gray; under surface white to very pale grayish white without markings..... Torrent tyrannulet, *Scelopophaga cinerea grisea*, p. 544
 Bill relatively large and strongly decurved, especially on the line of the culmen (Genus *Oncostoma*)..... 74
 Bill straight, not strongly decurved..... 75
74. Throat and upper breast yellowish, lined indistinctly with olive-gray.
 Southern bentbill, *Oncostoma olivaceum*, p. 527
 Throat and upper breast gray, lined with dull white.
 Northern bentbill, *Oncostoma cinereigulare*, p. 525
75. Bill relatively long, broad, and flat..... 76
 Bill short, with sharply pointed tip..... 78
76. Breast gray, streaked lightly with white; abdomen and under tail coverts white to pale yellow.
 Slaty-headed tody-flycatcher, *Todirostrum sylvia schistaceiceps*, p. 523
 Breast, abdomen, and under tail coverts bright yellow..... 77
77. Crown and hindneck deep black, upper back bright yellowish green, throat white..... Black-headed tody-flycatcher, *Todirostrum nigriceps*, p. 517
 Only the forecrown black; rest of upper surface gray to yellowish green; throat bright yellow.
 Common tody-flycatcher, *Todirostrum cinereum finitimum*, p. 519
78. Lores and narrow line over eye chestnut-brown.
 Rufous-browed tyrannulet, *Phylloscartes superciliaris*, p. 540
 Lores and line over eye not chestnut-brown..... 79
79. Foreneck and breast white, streaked with dark gray.
 Light-eyed pygmy-tyrant, *Atalotriccus pilaris wilcoxi*, p. 532
 Foreneck not white streaked with dark gray..... 80
80. Very small; tail very short, slightly more than half as long as wing.. 81
 Slightly larger; tail of normal length, three-fourths or more as long as wing. 82
81. Foreneck and breast white to grayish white; crown black.
 Black-capped pygmy-tyrant, *Perisotriccus atricapillus*, p. 534
 Under surface yellow, except for grayish wash on breast.
 Yellow-bellied tyrannulet, *Microtriccus brunneicapillus*
brunneicapillus, p. 582
82. Lower surface yellow to yellowish white, without definite darker markings on breast..... 83
 Lower surface with slight to heavy grayish wash on breast..... 84
83. Lower surface bright yellow; crown and back olive-green.
 Yellow tyrannulet, *Capsiempis flavicola semiflava*, p. 542
 Lower surface white to yellowish white, above dull grayish green, with crown darker.
 Southern beardless flycatcher, *Camptostoma obsolctum*, p. 567

84. Upper surface bright olive-green, with crown only faintly, if at all, grayer than back; foreneck and breast only faintly grayish.

Yellow-green tyrannulet, *Phylloscartes flavovirens*, p. 539

Upper surface somewhat duller olive-green with crown definitely darker than back; breast distinctly grayish..... 85

85. Crown light greenish gray; mandible flesh color; scutes on lower end of tarsus roughened.

White-fronted tyrannulet, *Acrochordopus zeledoni zeledoni*, p. 580

Darker, duller in color above, with crown blacker; entire bill dark colored; scutes on lower end of tarsus smooth..... 86

86. Wing coverts and secondaries edged with greenish yellow; back and tail edgings dull greenish; breast and abdomen whitish.

Paltry tyrannulet, *Tyranniscus vilissimus parvus*, p. 575

Wing coverts and secondaries tipped and edged with brownish white to white; back and wings duller, less greenish; lower breast and abdomen yellow.....Crested tyrannulet, *Phyllomyias griseiceps cristatus*, p. 573

SAYORNIS NIGRICANS (Swainson): Black Phoebe, Tiguín de Agua

Tyrannula nigricans Swainson, Phil. Mag., n.s., vol. 1, May 1827, p. 367. (Tableland of México.)

Medium size; in life, appearing black; usually perching on rocks along streams.

Description.—Length 155–170 mm. Adult (sexes alike), head and neck dull black; rest of body sooty slate to dull slate; wing coverts, wing feathers, and outer rectrix edged with white (varying from slight to extensive, according to the subspecies); abdomen with more or less white; axillars and under wing coverts varying from white to dull gray.

The black phoebe is found along rock-strewn stream beds, mainly in the upper Tropical and Subtropical zones, but also at lower levels in areas suited to its needs. While it ranges in the open it is not conspicuous, as it rests quietly on stones and other low perches in trees and bushes usually near water. The tilting flight from one resting place to another is low, near the water or stream bed. When perched, the tail is twitched and the bird turns the head about, watching for insects which it captures on the wing or follows to the ground.

The call is a single low note, *chip* or *tsip* uttered as the birds rest. The song is a continued repetition of two low notes uttered together: *pee wee*, often with the pair of sounds repeated alternately with rising and with falling inflection. Occasionally the birds circle in air while singing.

The nest is a strongly made cup, built with fine bits of dry grass and other similar material, held in place by a plaster of mud. This

may now be under the eaves of a building or attached to beams beneath a bridge. In its primitive condition it was attached to some sheltered crevice under cover of a huge stone. Skutch in his account of this bird in the tropics (Pac. Coast Avif. no. 34, 1960, pp. 365-373) records two or three eggs in a set, sometimes plain white, sometimes white dotted with small reddish spots. Nests are built by the female, who also incubates and cares for the young. The northern subspecies *S. n. semiatra*, resident from California, southwestern Utah, and central Texas, southward to northern México, appears subject to greater annual stresses as its eggs vary in number from three to six, usually four or five, in a set.

SAYORNIS NIGRICANS AMNICOLA Bangs

Sayornis amnicola Bangs, Proc. New Engl. Zoöl. Club, vol. 3, January 30, 1902, p. 37. (Boquete, 1220 meters elevation, Chiriquí, Panamá.)

Characters.—White edgings on wings and outer tail feathers much reduced, in some nearly absent; less white on abdomen.

A male, taken at Palo Santo, Chiriquí, March 2, 1965, had the iris very dark brown; thickened edge of the eyelids dull black; tarsus, toes, and claws black.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 83.5-91.0 (88.0), tail 70.9-79.0 (75.9), culmen from base 15.7-17.6 (17.0), tarsus 17.2-18.8 (18.1) mm.

Females (7 from Chiriquí and Costa Rica), wing 77.7-83.5 (80.9), tail 67.0-73.7 (70.5), culmen from base 16.0-17.6 (16.5), tarsus 16.5-17.6 (17.2) mm.

Resident. Found locally along mountain streams in the upper Tropical and lower Subtropical zones in western Chiriquí; to 1625 meters above Boquete; Bocas del Toro, on the Río Changuinola, between Boca del Río Risco and Punta Blanca.

While not abundant, this flycatcher is widely distributed in the more open valleys of the larger foothill and mountain streams in western Chiriquí. I have seen it especially along the Río Chiriquí Viejo from Barriles to Cerro Punta, and in other tributary rivers westward toward Costa Rica. It was not recorded here by Arcé or others prior to 1900, so that it seems probable that it has grown in number, following the clearing of forests which has greatly increased suitable habitat along the major rivers. On March 2, 1960, Charles O. Handley, Jr., recorded it on the Río Changuinola, in Bocas del Toro, the only record for that province. The locality is within the foothills.

Along the Río Chiriquí Viejo, beginning in 1955, I have seen them regularly at the bridge over the main highway leading west toward Costa Rica, as well as near the river. At the bridge they nested underneath, on the timbers that supported the flooring. Later, below Cerro Punta, at Glen Lewis' house beside the river, I saw a nest built beneath the eaves of a small building. At Palo Santo, phoebes came regularly from the main river to the pond fed by a small stream near our house. Here in early March they examined the eaves of the buildings for nest sites. They were noticed also in this general area at the Río Colorado farther west.

SAYORNIS NIGRICANS ANGUSTIROSTRIS Berlepsch and Stolzmann

Sayornis cineracea angustirostris Berlepsch and Stolzmann, Proc. Zool. Soc. London, no. 23, part 2, August 1, 1896, p. 357. (La Merced, Perú.)

Characters.—White edging on wings and tail extensive; more white on abdomen.

A female, collected on the Río Boquerón, back of Madden Lake, February 23, 1961, had the iris dark brown; bill, tarsi, and feet black. Another of this sex at the old Tacarcuna village site, March 12, 1964, had the iris brown; maxilla black; tip of mandible fuscous, base dull brownish white; gape and inside of mouth honey yellow; tarsus, toes, and claws black.

Measurements.—Males (10 from Colón, Darién and Colombia), wing 83.0–89.0 (86.5), tail 73.1–78.9 (76.2, average of 9), culmen from base 17.7–20.0 (18.7), tarsus 18.2–19.5 (18.8) mm.

Females (10 from Colón, Province of Panamá, Darién, and Colombia), wing 78.6–83.6 (80.9), tail 67.6–72.8 (70.1), culmen from base 16.5–18.9 (17.5), tarsus 16.5–17.8 (17.3) mm.

Resident. Found locally from Cerro Bruja, eastern Province of Colón, Río Boquerón, in the lower Chagres Valley, and Cerro Chucantí, eastern Panamá, east to Cerro Pirre, and the base of Cerro Tacarcuna, Darién.

This bird, more heavily marked with white on wings and tail than the race of the west, was taken by Goldman on June 9, 1911, on the Río Cascajal, on the north base of Cerro Bruja, Colón. On the Río Boquerón, Colón, north of the Peluca Hydrographic Station, on February 23, 1961, I collected a female and on the following day a male. These are the most western records in the Republic for this subspecies. On March 15, 1950, we saw two and secured a fully grown immature on the Quebrada Chucantí, on the south base of this

mountain ridge. At the old Tacarcuna village site on the upper Río Tacarcuna there were several in March 1964, along the rough, open stream bed. A male was collected here on February 15, 1959, by B. Feinstein. We secured others March 12 and 14, 1964, two of them caught in a mist net set across the river. Charles O. Handley, Jr., found newly hatched young here January 29, 1959, in a nest at the base of a cliff, a meter above the water. On March 18, 1912, E. A. Goldman took a pair on the Río Seteganti, near Cana.

Stomachs of those that I have examined have held miscellaneous small insects, among which I have identified small dragonflies, a small vespid wasp, ants, a parasitic hymenopteron, fragments of elaterids, cerambycids, and others, with gerrids and coreids. They seem to feed rather regularly on dragonflies.

COLONIA COLONUS LEUCONOTA (Lafresnaye): Long-tailed Tyrant, Maestro

FIGURE 34

Copurus leuconotus Lafresnaye, Rev. Zool., vol. 5, November 1842, p. 335. (Bogotá, Colombia.)

Small; mainly black; with two long, slender central feathers projecting in the tail.

Description.—Length to end of normal lateral rectrices 115–130 mm. Adult male, two central rectrices much elongated; crown sooty gray centrally, edged narrowly with grayish brown; a continuous band of white on forehead, lores, side of head above eyes, and across hindneck, encircling the upper part of the head; body mainly dull black, changing to sooty gray on lower surface; center of back streaked broadly with light gray to grayish white; rump white; abdomen faintly whitish in some; wings and tail brownish black.

Adult female, elongated central rectrices shorter than in male; body plumage somewhat duller colored; crown often grayer; light streak around head usually grayer on hindneck; center of abdomen usually whiter.

Juvenile, dull brownish black; grayish on lower breast, abdomen, and flanks; central rectrices broader, the tips projecting only a few millimeters.

In male and female the iris is dark brown; bill and feet black.

Measurements.—Males (10 from Bocas del Toro, Coclé, Canal Zone, eastern Province of Panamá, Darién, and San Blas), wing 68.1–73.8 (71.4), normal tail 49.8–56.0 (52.0), long central rectrices

144.0–194.0 (168.8), culmen from base 9.9–11.1 (10.4), tarsus 12.5–13.7 (13.3) mm.

Females (10 from Coclé, Canal Zone, San Blas, and Darién), wing 63.5–69.9 (67.5), normal tail 44.7–52.8 (49.0), elongated central

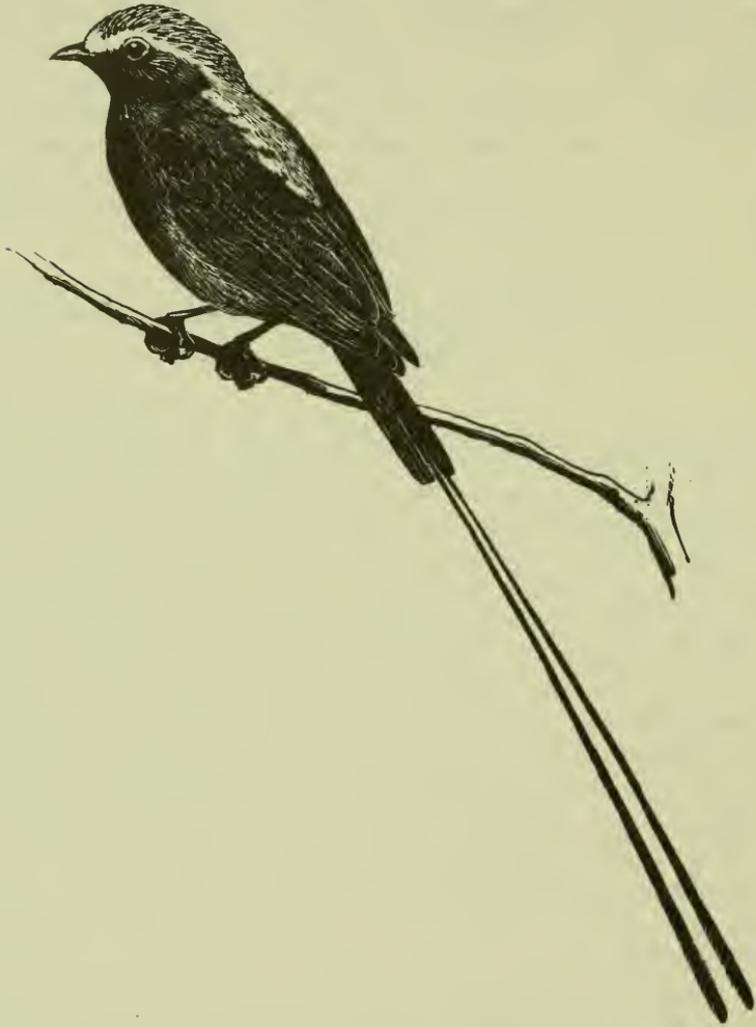


FIGURE 34.—Long-tailed tyrant, maestro, *Colonia colonus leuconota*, male.

rectrices 112.5–136.5 (113.9), culmen from base 9.6–11.2 (10.3), tarsus 13.0–14.2 (13.6) mm.

Resident. Found locally, on the Pacific slope from the southern face of Cerro Azul in eastern Province of Panamá east through

Darién; on the Caribbean slope throughout, from western Bocas del Toro to eastern San Blas.

The published records for the Pacific slope for Santa Fé, Veraguas, and "Veragua" (Salvin, Proc. Zool. Soc. London, 1867, p. 146; and Cat. Birds Brit. Mus., vol. 14, 1888, pp. 51-52) based on collections by Arcé, are considered erroneous, as there are no modern records. The only area where I have found this flycatcher on the Pacific drainage west of the Canal Zone is on the head of the Río Mata Ahogada on the eastern base of Cerro Gaital, northeast of El Valle, Coclé. The point is immediately adjacent to the head of the Río Indio of the Atlantic drainage, the two streams here being separated by a low open ridge. It was my impression that the two birds seen were merely casual intruders from the northern slope, a few hundred meters distant.

In primitive areas, especially in Darién, these small birds, attractive in their quiet mannerisms, range in heavy forest along the banks of the larger streams, less often where a tree had fallen, or where there was a break in the forest canopy from some other cause. Here they perched alertly on small dead or bare branches, and on the tops of stubs. More rarely, I had views of them resting on dead limbs, projecting in the open above the tree crown. In areas of human settlement they are birds of forest edge, pastures, and clearings adjacent to forest. This is one species that adapts readily to the usual methods of forest clearing and burning, as this provides open range with suitable perches in dead trees. The birds rest high or low above the ground, watching alertly with quickly turning heads for passing insects. These they capture expertly in short sallies from their lookout points, with a graceful sweep of the long tail feathers as they turn in the air.

The note of the males is a sibilant *whees whees*, or *wheet*, a sound of little carrying power. Occasionally these soft calls are repeated more rapidly in sequence as a low song. In display, males rose a few meters in air and circled with wings held widely spread as they turned to come down again on the perch. At rest, the tail was switched vertically up and down quickly, assisted by up and down movements of the short lateral rectrices. Though true flycatchers in appearance and movement, they show few aggressive traits, as two males may rest quietly, a meter or less apart.

In Darién, Chocó and Cuna Indian boys called them *Luis* or *Luisa*, in imitation of their low calls. Elsewhere they were known as *Maestro*, because of the whiplike switching movements of the long

tail. Eisenmann has noted that they nest throughout the entire year, as indicated by birds pairing and with young. Males and females, singly or in company, are seen frequently examining old woodpecker holes and other cavities in dead stubs, often high above the ground. On one occasion on March 6, on the Río Pequení, back of Madden Lake, I found a pair feeding young in a hole 8 or 10 meters above the ground in a stub standing in the open near the house of a Chocó Indian family.

Dr. Pedro Galindo gave me sections of tree trunk with woodpecker holes collected near Almirante, Bocas del Toro, one on March 27, the other on June 20, in 1962, in which these flycatchers had built their nests. In both the lower quarter or more of the cavity was packed with slender, short filaments of vegetable fiber, mostly dark in color, as a base to support a deep cup made of finer materials. According to Meise (Schönwetter, Handb. Opl., pt. 15, 1968, pp. 75, 91) the eggs (in the nominate race, *C.c. colonus*) in form are somewhat pointed oval, occasionally broader, in color clear white, with very thin shells. Measurements are 18.0–20.8×13.3–14.6 mm.

As a species *Colonia colonus* ranges widely from southeastern Honduras through eastern Central America and South America to northeastern Argentina and southeastern Brazil. The northern subspecies *leuconota* is the form of Central America, Colombia west of the Andes, and western Ecuador.

FLUVICOLA PICA PICA (Boddaert): Pied Water-tyrant, Pozera

Muscicapa pica Boddaert, Tabl. Planch. Enlum., 1783, p. 42. (Cayenne.)

Small; under surface white; black and white above; walks with vibrating tail.

Description.—Length 115–125 mm. Adult (sexes alike), posterior half of crown, hindneck, center of back, wings, and tail black; a few small often hidden dark gray plumes at posterior canthus (angle) of eye; rest of plumage clear white, including rump, upper tail coverts, spots on distal end of longer secondaries, tip of tail, axillars, and under wing coverts.

Immature, center of forecrown, with the remainder posterior to a line through the center of the eyes, hindneck, back, and wings dull brown; side of upper breast, neck and head clouded lightly with grayish brown; rest of plumage as in adult.

The iris is dark brown; bill, tarsi, and feet black; inside of mouth black; tongue dark neutral gray.

Measurements.—Males (4 from Panamá), wing 62.0–64.4 (63.4), tail 47.4–50.6 (48.9), culmen from base 15.0–16.9 (16.0), tarsus 19.7–21.0 (20.5) mm.

Females (6 from Panamá), wing 56.2–61.8 (57.9), tail 41.2–46.2 (42.9), culmen from base 15.1–17.0 (16.1), tarsus 19.2–20.6 (19.5) mm.

Resident. Found locally on the coastal marshes of eastern Province of Panamá from the lower Río Juan Diaz east for about 35 kilometers to near the mouth of the Río Bayano, ranging inland from the shore-line for 5 kilometers or slightly more.

The first report of this species in Panamá was a male (now in the American Museum of Natural History) collected by E. André, March 7, 1899 (labeled Tocumé) in the coastal area near the lower Río Tocumen. James Chapin and Charles Rogers collected a male and saw two other birds of this species on the Río Tapia marshes, east of Juan Diaz, on August 4, 1923 (specimen in the Princeton Museum). Arbib and Loetscher (*Auk*, 1935, p. 326) in 1934 recorded it from this same area.

In my field studies I have found this attractive small bird especially common in the marshes adjacent to the Río La Jagua and the Sabana de San José, beginning in 1949 when I had the privilege of living in the old La Jagua Gun Club. In the season of rains when the marsh area is more extensive they spread inland, but never far from the coast. Usually they rest in low bushes, or walk about on the ground, constantly tilting the tail, a movement that with any excitement vibrates the whole posterior part of the body, almost as in the migrant water thrushes (genus *Seiurus*). In dry season, they range about small pools and the borders of stream channels. When the marshes are filled they are much more conspicuous and, as stated, more widely distributed. During the various periods that I have lived in their haunts I found them tame, often coming near while I bathed at a tank where a windmill supplied water for cattle. Though seen on many occasions I never heard them call. Grown young were found among the adults in March and early April. The bird was known locally as *Posera*, from its usual occurrence around waterholes.

This occurrence of the species in a limited area on the northern shores of the Bahía de Panamá marks an isolated colony of a bird that ranges widely in tropical marshes of northern and eastern South America, the nearest known being along the Río Sinú in northwestern Colombia, 400 kilometers distant. In spite of this isolation the birds in Panamá are like those of Colombia in color and size. While they

are listed here under a trinomial heading, in line with current usage for those found from Colombia to the Guianas, their union as a species with *Fluvicola albiventer* of farther south in South America should have careful study in areas where the two approach. In the considerable series that I have examined *albiventer* has differed consistently in lack of white on the dorsal surface, except on the head and in a restricted area on the rump, wings, and tail tip.

Belcher and Smooker (Ibis, 1937, pp. 227–228) in Trinidad wrote that nests “may be found at almost any season, but particularly during the rains from June to October. The nest is placed without concealment towards the end of a bough of a small bush or tree at a height which may vary from a few inches over the ground or water (usually the latter) to thirty feet. In shape it is a vertically-placed oval with entrance-hole (at one side near the top) sometimes screened by a projecting porch. Materials used are dried grass and weed stems, plant-down and leaves, the egg chamber being lined with feathers, generally white ones. The eggs number two or three. They are biconical, the shell being fairly thick and of a pure glossless white, with infrequent scattered markings evenly distributed in the form of speckles, spots, and an occasional small blotch. Eight average 17.2×13.3 mm.” Hellebrekers (Zool. Med. Rijksm. Nat. Hist. Leiden, vol. 24, 1942, p. 256) who lists 16 sets of 2 eggs and 5 of 3 in the Penard collection from Surinam describes them as “oval, sometimes spherical, nearly glossless . . . white. Spots: marked at the large end with small, but also larger spots of red-brown.”

**PYROCEPHALUS RUBINUS (Boddaert): Vermilion Flycatcher,
Cardenalito**

Muscicapa rubinus Boddaert, Tabl. Planch. Enlum., 1783, p. 42. (Tefé, Brazil.)

Rather small; male, crown, and under surface bright red; female, breast and foreneck white, lightly streaked with gray, abdomen pale red in some races.

Description.—Length, 126–132 mm. Adult male, crown and under surface bright red, in some varying to orange; side of head, including lores dusky to grayish brown; back, rump, scapulars, and wing coverts grayish brown; upper tail coverts, tail, primaries, and secondaries dusky; wing coverts and secondaries edged with grayish white; tail with outermost rectrix edged, and all rectrices tipped narrowly, with grayish white.

Adult female, upper surface grayish brown; upper tail coverts, wings and tail dark grayish brown to dusky; forehead dull white;

lores dusky; crown streaked indistinctly with dusky; wing coverts, secondaries, and outer web of outermost rectrix edged with dull white; foreneck, breast, and sides white, streaked indistinctly with grayish brown; flanks, abdomen, and under tail coverts, in the northern race salmon pink to pinkish buff, in the southern subspecies red.

Measurements.—Size throughout the range is variable. Males, wing 54–82, tail 49–62 mm; females, wing 55–72, tail 47–59 mm, varying according to the subspecies.

Accidental. One record.

Dr. Eugene Eisenmann (*Auk*, 1948, p. 606) on August 19, 1947, at Playa Coronado, about 7 kilometers west of Chame, western Province of Panamá, found a full-plumaged male resting on a wire fence in an open area among beach cottages. He had it under close observation for the afternoon, and it then disappeared. He was not able to collect the bird, but secured "a tiny but recognizable image on 8 mm. Kodachrome motion picture film."

The species ranges in the north from southwestern California, southwestern Utah and central Texas through México to Nicaragua; and in South America from northern Colombia and Venezuela to northern Chile and central Argentina, with an outlier on the Galápagos Islands. In this range seven or more geographic races are recognized, varying somewhat in size and appreciably in depth of color. The record in Panamá evidently is that of a stray individual with no clue as to its origin.

**MUSCIVORA FORFICATA (Gmelin): Scissor-tailed Flycatcher,
Papamoscas Tijerillo**

Muscicapa forficata Gmelin, *Syst. Nat.*, vol. 1, pt. 2, 1789, p. 931. (México.)

Medium size; with slender forked tail, longer than body; gray-white, with reddish sides.

Description.—Length 260–340 mm. Two outer rectrices nearly equal in length; tenth (outermost) primary narrowed at the tip; two outer rectrices extensively white or pink, with black tip. Adult male, tip of outer primary narrowed for 20 to 25 mm; crown, side of head, and hindneck pale gray; center of crown with feathers basally white and a small concealed spot of orange-red; back and scapulars gray, washed with pink; rump brownish gray; upper tail coverts and wings dull black; inner primaries and secondaries edged with dull white; outermost lesser coverts pinkish red, others gray; middle and greater coverts dull black, edged with gray to grayish white; inner lores dusky; bare edge of eyelids black, bordered with a narrow line

of pale gray feathers; malar region, chin, and throat white; side of neck and breast pale gray; sides, flanks, tibiae, and under tail coverts salmon-red; axillars and pre-axillars bright pinkish red; under wing coverts and edge of wing pink; inner margins of wing feathers white to grayish white; central tail feathers black, tipped narrowly with white; longer feathers basally pink, paler distally, tipped widely with white.

Female, tip of outer primary narrowed for 10 to 15 mm; feathers of crown white basally, but red spot found in male usually absent, when present small and usually pale; otherwise like male.

Measurements.—Males (10 from Texas, Virginia, and Bocas del Toro), wing 120.1–127.0 (123.3), tail 214.0–248.0 (225.7), culmen from base 19.1–22.2 (20.8), tarsus 18.6–20.0 (19.2) mm.

Females (10 from Texas, Louisiana, Nevada, Veracruz, and Coclé), wing 112.8–119.4 (116.1), tail 148.0–173.0 (160.7), culmen from base 19.2–21.4 (20.3), tarsus 18.3–19.8 (19.1) mm.

Migrant from the north. Found locally in western Panamá; in migration through Chiriquí and Bocas del Toro, to wintering grounds in the Azuero Peninsula and Coclé.

The Scissor-tailed Flycatcher was first recorded in the Republic by W. W. Brown, Jr. (see Bangs, *Auk*, 1901, p. 363), who collected five in November and December 1900 near Divalá. Rudolfo Hinds saw several near Almirante in October 1961 and collected a male on October 31. There are two sight records for the eastern side of the Azuero Peninsula, one near Ocú, Herrera, about January 20, 1950, by T. E. White (during search for vertebrate fossils with C. L. Gazin of the U.S. National Museum) and another December 29, 1966, in Los Santos by Horace Loftin and G. V. N. Powell. In January 1963, I found a number on what was evidently their wintering grounds in the areas of open savanna bordered by thorn scrub between Aguadulce, Coclé, and the sea. On January 17, I collected two females here. At sundown, 15 or more in straggling company flew across an open salina to roost in mangroves bordering a tidal channel. The two collected had eaten green drupes 10 mm or so long, on which other flycatchers (elaineas) were feeding. Others were seen in this area (known locally as Gallo) on January 25. During archeological investigations in central Coclé, Richard Cooke saw one at the salinas near Aguadulce, and others in February and March 1970 (including four together) near El Caño.

The species is a summer resident from southeastern Colorado and Nebraska south through eastern New Mexico, western Arkansas and

western Louisiana to southern Texas, northern Nuevo León, and northern Tamaulipas. It is known in winter from southern México (and sparingly in southern Florida) south to western Panamá.

MUSCIVORA TYRANNUS MONACHUS (Hartlaub): Fork-tailed Flycatcher, Tijereta Sabanera

FIGURE 35

Tyrannus (Mivulius) monachus Hartlaub, Rev. Zool., vol. 7, June 1844, p. 214. (Guatemala).

Medium size; with very long, slender tail; crown and tail black.

Description.—Length 240–360 mm. Outer rectrix decidedly longer than the one adjacent. Adult male, three outer primaries incised at tip; crown, hindneck, and sides of head black; a large, concealed yellow area bordered with white in center of crown; back and scapulars light gray, becoming darker on the upper rump; lower rump and upper tail coverts dusky to black; wings dark gray, with the coverts and flight feathers edged in varying amount with white to light gray; tail black, the outer rectrix white on the narrow outer web for half or less of length; under surface, including malar region, axillars, and under wing coverts (except the outermost) pure white; posterior outer under wing coverts gray.

Adult female, tips of outer primaries not incised; coloration as in male, but tail shorter.

Juvenile, head grayish to sooty brown; back somewhat brownish gray; rump, and wing coverts, in part, edged with buff to cinnamon-buff; outer rectrix edged with white as in adult; others tipped and edged lightly with cinnamon to cinnamon-rufous.

In two adult females, taken January 11 and March 9, 1962, the iris was dark reddish brown; bill, tarsus, toes, and claws black.

Measurements.—Males (10 from Chiriquí, Los Santos, Herrera, and Province of Panamá), wing 102.4–107.2 (103.5), tail 232.0–284.0 (254.0), culmen from base 17.1–18.3 (17.8), tarsus 17.0–17.8 (17.3) mm.

Females (10 from Chiriquí, Herrera, Coclé, Panamá, and Costa Rica), wing 94.0–100.8 (95.9), tail 137.0–195.0 (173.0), culmen from base 17.1–18.3 (17.6), tarsus 17.0–17.5 (17.2) mm.

Found throughout the year. Common locally on the savannas and other open areas of the Pacific slope, from western Chiriquí (where it is encountered from the coastal lowlands to the open Llanos del Volcán, to 1460 meters on the western base of Volcán Barú), east through southern Veraguas, the eastern side of the Azuero Peninsula,

Coclé, the southern Canal Zone, and both sectors of the Province of Panamá, to the lower Río Bayano (El Llano); recorded on the Caribbean side in the northern Canal Zone as migrants or wanderers; from late August to the middle of September; sight records for Puerto Obaldía, eastern Comarca de San Blas, and Isla Coiba.

On the Pacific slope as a whole these birds are present throughout the year, with seasonal variation in occurrence and abundance. Mating display may be noted in January; nesting is recorded from February to May and June. The period may vary locally according to the season. Near the La Jagua Gun Club east of the Río Pacora, Province of Panamá, on February 22, 1957, I noted two occupied nests and collected one with three eggs in which incubation had begun. Two years later on April 11, 1959, in this same area the birds were present but there was no sign of nesting activity as there had been no rain and the savannas were very dry. Eisenmann and J. R. Karr recorded two nests, with two and three eggs respectively, on March 12, 1969, at the old La Joya airstrip in this same area. A male collected in northern Herrera March 18, 1948, was in breeding condition. West of Penonomé, Coclé, on April 6, 1954, Mrs. Gladys Barnard watched a nest being built with both male and female bringing straws for construction. Eisenmann and the Barnards in this area on June 20, 1953, found many fledglings still showing down. Near Soná, Veraguas, on May 18 and 22, 1953, I noted immature individuals recently on the wing.

The nests that I have examined have been shallow cups of plant fibers padded with fluffy down. Leaves may be woven into the outer edge. In location they have ranged from less than a meter to 10 meters from the ground. At one collected near the La Jagua Gun Club, Panamá, February 22, 1957, elevated about 3 meters, when I stood on the jeep hood directly underneath, the brooding female did not leave her post until I began to pull the branch with the nest toward me. The three eggs are oval in form, somewhat glossy white, spotted irregularly with small markings of chocolate and lilac, mainly in a circlet on the large end, but with a few scattered at random elsewhere. They measure 21.2×16.2 , 21.6×16.2 and 21.9×16.5 mm.

Males in mating display are an attractive sight as they hover or fly slowly with tail widely spread and quickly fluttering wings. Eisenmann described a display seen February 14, 1960, near Tocumen in which two males perched in the top of a low bush, while a third bird, possibly a female, rested below. The two above fanned their tails and raised them almost vertically, while fluttering the wings and calling.

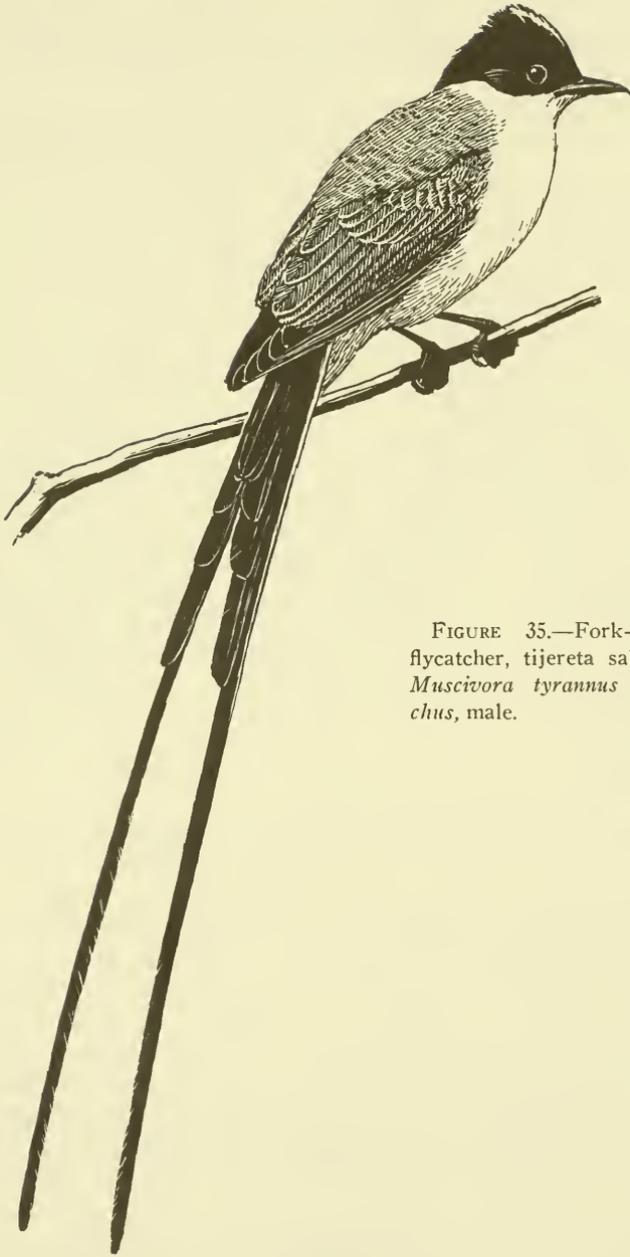


FIGURE 35.—Fork-tailed flycatcher, tijereta sabanera, *Muscivora tyrannus monachus*, male.

The calls are rapid chipping notes, sometimes accompanied by a metallic rattle that possibly may be made by the incised tips of the outer primaries.

These flycatchers, like their kingbird relatives, are aggressive, usually toward birds on the wing, driving at hawks or turkey vultures that chance to pass. Once I saw one pursuing a caracara that was chasing an ani. While they are active flycatchers they also feed extensively on berries. Occasionally in an area of forest they may even come to the upper twigs of a berry tree that rises into the tree crown.

While Fork-tailed Flycatchers are present in the savanna area throughout the year their numbers may vary widely. The subspecies *monachus* ranges north through Central America to Veracruz and the Yucatán Peninsula. In México it is reported that the birds decrease appreciably in number at the end of July. And there is indication of movement among them in Panamá in late August and September, apparently through migrants from the north, though this needs verification by records through banding whenever these may be available. Thus in the northern Canal Zone Eisenmann's notes cite observations by J. E. Ambrose of numbers seen at Coco Solo from August 24 to September 7, 1957. Eisenmann also on August 29, 1958, noted 18 with 6 Eastern Kingbirds and 2 Gray Kingbirds resting on a lawn at Fort Sherman, all giving the impression of passage migrants.

Locally, these birds are sometimes called *Tijereta del Llano*, or fancifully, *Golondrinas* (swallows).

On the Pacific slope they appear at times to occupy communal roosts. Thus on March 18, 1955, at David, Chiriquí, toward sunset, I recorded them singly or half a dozen together in straggling company flying east past the grounds of the Hotel Internacional, 50 to 100 meters in the air, evidently toward some roost. I counted 200, and then estimated that at least 500 passed during half an hour until the sun was below the horizon. On January 23, 1963, in the open savannas near the sea at Gago, Coclé Province, south of Río Grande on the highway, I recorded another large roost of these birds. As I drove into this area at dawn about 200 came out of a small grove of dense-leaved trees. They swirled past, twisting and turning in the early morning breeze, so that occasionally the air seemed filled with them.

At the close of his interesting account of vocalization in kingbirds, and their allies, W. John Smith (Publ. Nuttall Orn. Club, no. 6, 1966, pp. 234–241) groups the 13 species that he studied in 2 subgenera,

Tyrannus for the true kingbirds, and *Muscivora* for the Scissor-tailed and Fork-tailed Flycatchers. By including the latter under the genus *Tyrannus*, the usual species name *tyrannus*, from *Muscivora tyrannus* Linnaeus, 1766, is preoccupied by *Lanius tyrannus* Linnaeus, 1758 for the common kingbird. For the Fork-tailed Flycatcher, therefore, he uses the next available name *Tyrannus savana* Vieillot, described in 1807. While his comment that the two long-tailed flycatchers obviously are related to the true kingbirds is pertinent, his statement that (p. 234) "their special characteristics are proximate adaptations for fitting a kingbird to life in the more open savannahs," with their allocation under the same genus name is questioned. In brief, the two species currently placed in the genus *Muscivora* differ distinctly externally in the long tail and much more slender body. Internally the skeleton reflects this less robust form, especially in the skull, sternum, and pelvis. Among other modifications, the pygostyle has lateral processes for the muscle attachments that control the extended tail. There are slight but definite differences elsewhere.

The nominate subspecies, *Muscivora tyrannus tyrannus* which nests from south-central Argentina northward to southern Bolivia, central Paraguay, and southern Brazil, migrates northward regularly in the southern winter to the Guianas, Venezuela, Colombia, Trinidad, and the southern Lesser Antilles. As it is of accidental occurrence casually elsewhere (as far as eastern United States) it may be found as a straggler in Panamá. It is easily identified in the hand by the much darker gray of the back, compared to the native *M. t. monachus*.

TYRANNUS TYRANNUS (Linnaeus): Eastern Kingbird, Pitirre Norteño

Lanius Tyrannus Linnaeus, Syst. Nat., ed. 10, vol. 1, 1758, p. 94. (South Carolina.)

Medium size; blackish gray, with white under surface and white tipped tail.

Description.—Length 185–205 mm. Adult male, tips of eighth and ninth primaries definitely narrowed at tip, the seventh only slightly sinuated toward the end; crown and sides of head black; center of crown with a large, concealed orange-red patch, the adjacent feathers white at base; hindneck to rump, including scapulars, blackish slate to slate color, with the rump edged slightly with white; upper tail coverts black edged with white; tail black, with the outer web of the outer rectrix edged narrowly with white, and all tipped rather broadly with white; wings dusky, with the coverts and secon-

daries edged narrowly with white or pale gray; lower foreneck and upper breast pale gray; rest of under surface, including the malar region, white; axillars and anterior under wing coverts plain gray; edge of wing and posterior under coverts white.

Female, similar, but with tips of ninth and tenth primaries only slightly narrowed, and orange-red crown patch smaller.

Immature, outer primaries not narrowed at tip; slightly brownish above, with white edgings on wings and upper tail coverts reduced or absent; gray of breast duller.

Measurements.—Males (10, May, June, eastern United States, South Carolina to New York), wing 115.1–122.5 (117.9), tail 75.3–89.7 (81.3), culmen from base 19.0–21.5 (20.5), tarsus 18.0–20.0 (18.7) mm.

Females (10, May, June, eastern South Carolina to Nova Scotia), wing 111.0–116.5 (113.4), tail 76.0–84.6 (80.0), culmen from base 18.0–21.5 (19.8), tarsus 17.9–19.1 (18.5) mm.

Abundant in migration. Present during the northern seasons of fall and spring, mainly in the lowlands on both Pacific and Caribbean slopes. It is believed that a few remain through the winter months. The earliest record in the southward flight in fall is that of Arbib and Loetscher (Auk, 1935, p. 326) of the two seen at the Río Tapia, east of Panama City, on August 29, 1934. A week later, in early September they become common, and continue in abundance through October into November. The main flight ends in early November, though some may be found later. Eisenmann, who furnished much of the fall data on this species recorded six or eight on November 26, 1962, at Santo Tomás Hospital, in Panama City, where they were feeding on the fruit of palms. Loftin that same season saw a few near Curundu, Canal Zone, in late November, and one at France Field, Canal Zone, the following year on November 30. T. Imhof recorded a few between Pacora and Chepo from December 3 to 8, 1942. It is possible that these later records were of wintering individuals, though there have been no reports in January or February.

The flight northward in spring begins in early March and continues through April and the first ten days of May. As an early record, we saw three small flocks at El Uracillo, northern Coclé, near the upper Río Indio on March 4, 1952. Soon after the middle of March they become common, with the main flight passing in April. It is usual then to see 50 to 100 in a flock. Ridgely has reported that above Gamboa on April 15, 1968, for a period of 15 minutes he watched

thousands flying over the Río Chagres. Eisenmann from April 8 to 21, 1969, found this the most conspicuous passeriform. They remain common through the first 10 days in May. The latest record is a male taken by Austin Smith, May 23, 1927, at Zegla, on the Río Teribe, Bocas del Toro, a specimen in the Havemeyer collection at Yale.

The habits of this species in its migrations may be a surprise to naturalists familiar with it in the North. Here in Panamá they are seen regularly in flocks that fly in close formation like Cedar Waxwings. In the steady passage of flocks that I have seen in early mornings following down the Río Jaqué in Darién they may change to travel in straggling lines like those of migrating robins. When these groups rest, usually they perch closely together. In early morning, birds that may be tired from a night flight often drop down on lawns in the towns, or on open areas elsewhere. My own first sight of them in Panamá was on October 10, 1940, when a small group rested in the short grass at the old Washington Hotel in Cristobal. While they may be seen feeding as usual on flying insects, regularly flocks visit the clusters of fruit on royal palms or gather in fig or berry-bearing trees. When single birds are seen occasionally, they perch partly hidden among leaves, instead of on the commanding lookout points that they use in the North. At this season also they are silent, as in many observations I have not heard one call. Once only has a kingbird displayed a habit normal in the North when one pursued a passing osprey which twisted and turned to avoid the attack.

Their flights regularly cross the Gulf of Panamá.

Present records include islas San José, Rey, Saboga, Chapera, Viveros, Taboga, Taboguilla, and Uravá. They have been recorded also in the mountains of eastern Darién at Cana on Cerro Pirre.

Morton (Auk, 1971, pp. 925-926), in observations in the Canal Zone in 1965-1966 and 1970, found kingbirds generally more plentiful as migrants during the northward flight. In the fall migration in September he recorded flocks moving southward at such high elevations that they could be identified only through binoculars. He believed that this seasonal difference in their migratory movement was regulated by the availability of a food supply. In spring, in the main they were fruit eaters, principally of the berries of the common mangabé, *Didimopanax morototoni*, available in abundance at that season. In fall, when berries were less available, they depended more on insects, secured through greater effort.

**TYRANNUS DOMINICENSIS DOMINICENSIS (Gmelin): Gray
Kingbird, Pitirre Gris**

Lanius tyrannus β . *dominicensis* Gmelin, Syst. Nat., vol. 1, pt. 1, 1788, p. 302. (Hispaniola.)

Medium size; similar in form to the Eastern Kingbird, but gray above, and white underneath.

Description.—Length 200–215 mm. Adult male, seventh to tenth primaries (the four outermost) narrowed at the tip; the sixth somewhat less attenuated, the fifth becoming slender at the end but with inner web not incised; tail deeply notched at the end; upper surface gray, with narrow dusky shaft lines on the crown; a large crown spot, orange to orange-red centrally, pure white at the sides and rear, concealed by the gray tips of the feathers; upper tail coverts dusky-gray edged narrowly with rusty brown; tail dusky, the external rectrix edged narrowly, and all tipped, with white; wings grayish brown, lesser and middle coverts edged with grayish white, the secondaries and inner primaries edged with white; anterior lores like crown; a spot in front of eye, narrow circlet around eye, and auricular region dusky-black; malar region, throat, lower breast, abdomen, flanks, and under tail coverts pure white; upper breast and lower foreneck pale gray, becoming darker on the adjacent sides; axillars and under wing coverts yellowish white; inner webs of wing feathers edged with dull white.

Adult female, with tips of outer primaries broader; orange crown spot smaller; otherwise like male.

Immature, in first fall, like adults, but with tips of outer primaries not narrowed or incised; occasionally with lower rump, upper tail coverts, and wing coverts edged with cinnamon, retained from the juvenile plumage.

Measurements.—Males (10 from Florida), wing 117.0–121.8 (119.7), tail 88.6–99.5 (91.6), culmen from base 28.2–30.3 (29.2), tarsus 18.1–19.4 (18.8) mm.

Females (10 from Florida), wing 114.1–118.1 (116.2), tail 80.4–88.9 (85.6), culmen from base 28.0–30.4 (29.1), tarsus 18.2–19.8 (18.8) mm.

Migrant, and winter resident. Not abundant. Recorded in the lowlands from late August to April.

This nominate race of the species breeds from Florida, rarely coastal South Carolina, and the Bahamas through the Greater Antilles. It is migrant in the winter season from the United States and the Bahama Islands, and apparently in part at least from Cuba and

Jamaica. The principal information regarding it in Panamá is from records by Eugene Eisenmann. His earliest dates of arrival are August 28, 1958, at Galeta Point, and August 29, 1954, at Fort Sherman. By the end of September they are more common and remain in small numbers through the winter. While during migration they may be found in small flocks, in the winter months they are seen usually as scattered individuals. Horace Loftin recorded them on November 23, 1962, along the highway from Penonomé, Coclé, to Chitré, Herrera. In January and February I have recorded single birds occasionally at Panamá Vieja, and at Ancon, Canal Zone. I collected a female at Monagrillo, Herrera, February 25, 1948. Wedel secured several during his work at Permé and Puerto Obaldía, San Blas. The northward migration seems to begin in March. Eisenmann noted small migrant flocks at the old La Joya airfield east of Pacora, Panamá, March 12, 1969. He has records of others from J. E. Ambrose, at Fort Davis, Canal Zone, April 24 and 27, 1961. Mrs. Sturgis (Field Book Birds Panama Canal Zone, 1928, p. 330) saw one on Sosa Hill, Canal Zone, April 11, 1926.

While they are seen regularly capturing insects on the wing, they also feed extensively on the fruit of royal palm, fig, and other trees.

TYRANNUS MELANCHOLICUS Vieillot: Tropical Kingbird,
Pitirre Tropical

FIGURE 36

Medium size; white to gray throat, yellow breast and abdomen; tail long and deeply notched at the end.

Description.—Length 195–215 mm. Adult male, five outer primaries with tips distinctly incised, the sixth somewhat narrowed at distal end. Crown and hindneck rather light gray; a large concealed central reddish-orange crown patch, underlaid posteriorly and at sides with light yellow and white; back, scapulars, and rump grayish olive-green; upper tail coverts dark olive, usually tipped narrowly with grayish olive-green; tail dusky, tipped and edged narrowly with dull white; wings dusky grayish brown; lesser and middle wing coverts edged with gray; greater coverts and secondaries edged with grayish white; lores gray, becoming dusky in front of eye; a dull dusky line across auricular area; chin and throat white to grayish white; upper breast light yellowish olive; lower breast and abdomen yellow; flanks and under tail coverts light yellow; axillars and under wing coverts yellowish white; inner webs of wing feathers grayish white.

Adult female, tips of five outermost primaries only slightly incised, the sixth only slightly narrowed at end; color pattern as in male.

Juvenile (both sexes), outer primary in some individuals (but not in all) very slightly narrowed at tip; in first plumage, wing coverts, including primary coverts, lower rump, upper tail coverts, and tail edged with cinnamon-buff.

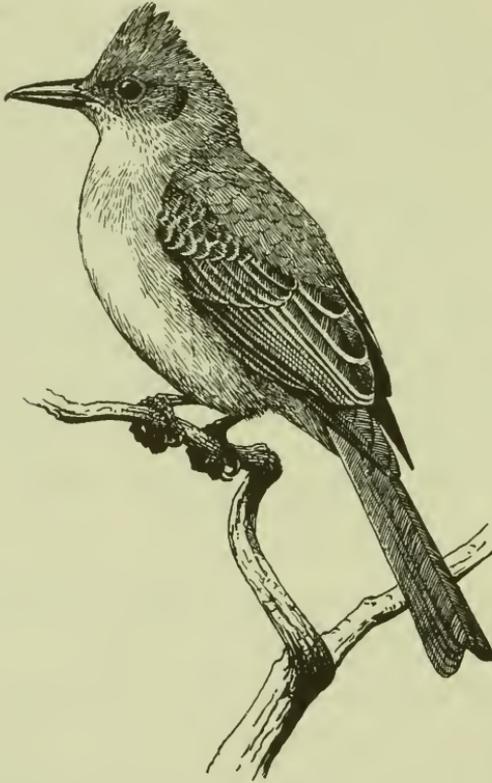


FIGURE 36.—Tropical kingbird, pitirre tropical, *Tyrannus melancholicus chloronotus*.

This is the species of the flycatcher family most often seen, especially throughout the lowlands outside forested areas. In open country they are constantly in sight on wires and fences along the roadways, at the borders of fields and pastures, and regularly around houses. In wilder sections they are found wherever there are openings or open forest borders. They appear in lookout trees back of the beaches, and are found on all but the very smallest of the many off-shore islands.

The resident birds are of a single, widely distributed subspecies that ranges from southern México south through Central America to Colombia, northern Venezuela, Trinidad, and Curaçao. The nominate race, which breeds from southern Colombia and southern Venezuela southward, is known in Panamá at present from a single locality in southeastern Darién.

TYRANNUS MELANCHOLICUS MELANCHOLICUS Vieillot

Tyrannus melancholicus Vieillot, Nouv. Dict. Hist. Nat., nouv. éd., vol. 35, December 1819, p. 84. (Paraguay.)

Characters.—Darker gray on the head and hindneck; back dark gray with little or no greenish cast; chin and throat grayish white; lower foreneck, upper breast, and adjacent sides dark gray with little or no wash of yellowish green; under surface darker, deeper yellow.

Measurements.—Males (10 from western Colombia, extreme southern Venezuela, and Paraguay), wing 112.4–117.2 (115.0), tail 90.6–99.2 (93.2), culmen from base 23.2–27.1 (24.9), tarsus 18.5–19.5 (19.1) mm.

Females (10 from western and southeastern Colombia, extreme southern Venezuela, Brazil, Bolivia, and Uruguay), wing 106.5–116.4 (110.9), tail 87.0–90.7 (88.7), culmen from base 22.2–25.8 (24.1), tarsus 18.1–18.8 (18.3) mm.

Status uncertain. Birds of the Pacific coast in extreme eastern Darién appear to be intermediate with *chloronotus*, but in part show the darker coloration of the nominate form.

In the coastal area at Jaqué, Darién, near the mouth of the Río Jaqué, on March 24, 1946, I collected a mated pair of this species in which the male agrees fully with typical *melancholicus*. They were in breeding condition, and were preparing to nest. The female is dark on the head, hindneck, and back but on the ventral surface resembles *chloronotus*, except that the yellow is darker, as in *melancholicus*. A third female, collected above Jaqué at El Brazo, on the Río Jaqué, about 5 kilometers above its mouth, agrees also with *melancholicus*. On the basis of these three specimens the population here appears intermediate, but nearer *melancholicus*.

In further work in this area in 1947 I noted occasional kingbirds along the Río Jaqué from its mouth inland to the point where it is joined by the Río Imamadó, but had no opportunity to secure other specimens.

TYRANNUS MELANCHOLICUS CHLORONOTUS Berlepsch

Tyrannus chloronotus Berlepsch, *Ornis*, vol. 14, February 1907, p. 474. (Temax, Yucatán.)

Characters.—Lighter gray on the head and hindneck; more greenish gray on back, rump, and scapulars; throat somewhat whiter; upper breast brighter, more yellowish olive-green.

A male taken February 4, 1963, on Isla Parida, Golfo de Chiriquí, had the iris mouse brown; bill and claws black; tarsus and toes fuscous-black. In another, at the Candelaria Hydrographic Station on the Río Pequení above Madden Lake, collected March 9, 1961, the iris was dark mouse brown; bill black; tarsus, toes, and claws black, with the edges of the tarsal scutes neutral gray. Two females, at Puerto Armuelles, Chiriquí, January 30, 1966, had the iris dark mouse brown; bill black; tarsus and toes fuscous-brown; claws black.

Measurements.—Males (10 from Chiriquí, to Darién and San Blas), wing 109.5–115.6 (112.9), tail 89.0–98.0 (93.2), culmen from base 22.8–26.0 (24.3), tarsus 18.1–19.5 (18.5) mm.

Females (10 from Chiriquí to Darién and San Blas), wing 108.0–112.4 (109.6), tail 86.3–92.8 (90.0), culmen from base 22.9–26.3 (24.5), tarsus 18.0–19.1 (18.6) mm.

Resident. Common throughout in open country in the lowlands on both slopes; to 1890 meters on the western side of Volcán Barú. Recorded widely through the Archipiélago de las Perlas; Taboga, and adjacent islets; Cébaco and Gobernadora, in Golfo de Montijo; Isla Coiba, and Isla Coibita; Canal de Afuera, Isla Parida, in Golfo de Chiriquí; Isla Escudo de Veraguas.

While they are not known to be migratory, these flycatchers appear to move readily over expanses of the sea. They are distributed throughout the Archipiélago de las Perlas, even on small, rocky islets, wherever there are scattered trees of sufficient size to serve for lookout perches, coupled with sufficient elevation above sea level to afford reasonable shelter against gale force winds. In travel along the International Highway from Panama City westward this is the bird most commonly seen, noted constantly on elevated wires, trees, or fences. It ranges regularly also along the open shores of larger streams and the borders of coastal swamps. In heavily forested areas it does not enter, but appears in any lowland clearing, even though this may be distant from other suitable haunts. With increased settlement and clearing of highland forests it appears to have moved upward in the mountains of western Chiriquí. Bangs (*Proc. New*

England Zoöl. Club, vol. 3, 1902, p. 40) reported that W. W. Brown, Jr., collected it only at 600 meters elevation below Boquete. Blake (Fieldiana: Zool., vol. 36, 1958, p. 536) listed it at about 1600 meters above this point in collections made by Mönniche between 30 and 40 years later. They appear regularly in suburban areas in towns and about country houses, where the projecting spikes of royal palms and telephone wires are favored lookout points.

On Isla Coiba I found them common on dead limbs and other prominent perches in the low brush back of the beaches, and also in the extensive pastures behind the convict camps. Here it was one of the few bird species seen regularly in this comparatively new open habitat made by clearing large areas of forest.

In a survey of the birdlife on Isla San José in the Perlas group in early 1944 I found this kingbird in small numbers mainly along the beaches and casually elsewhere. In that year there was extensive clearing for roadways over the island. In a second visit in 1946 I noted a slight increase in abundance, apparently due to the more open range available.

These birds, with long, pointed wings are accomplished aerialists, so that it is a pleasure to watch when they are engaged in active feeding on passing insects. From a commanding perch the bird may rise directly upward for a meter or so to a much greater distance, seize some insect and then drop vertically back to its original resting place with marvelous precision and a minimum of wing movement to control the rise and descent. With agile prey, it moves in swift pursuit following the twisting, turning course of the insect in its attempt to escape. Or the bird may pitch forward in a tight, rolling loop following some unusually active prey. Often they circle through swarming termites, or clouds of gnats, sometimes high above the ground. They come regularly also with other birds to the ripened berries of feeding trees.

The nesting season begins in January and continues through June, or later. Eisenmann recorded three full grown young being fed at Fort San Lorenzo on August 28, 1958. In an attractive early season display males at sunrise may spiral up high in the air and then, with many twists and turns, fly across pastures or other open lands until they are mere specks in the distance, coming finally to rest in some tall dead tree. In another display I have seen a pair rise with rapidly fluttering wings high in air and then descend rapidly with one bird directly above the other but not quite in contact.

The voice is a high-pitched repetition of a twittering call, without

great carrying power, that to me is a pleasing sound. At sunrise the males may sing for several minutes in repetition of these notes.

While often flying out toward passing hawks, tropical kingbirds in the main are not aggressive toward smaller birds except when the latter chance to pass too near the nests.

Skutch (Proc. Linn. Soc. New York, nos. 63-65, 1954, p. 26) records that the nest is built by the female alone, with the male merely a spectator. It is a broad, shallow, open cup made of plant material, placed from 2 to 5 meters above the ground, rarely higher, in a bush or tree standing in the open. The walls may be so thin that the outlines of the eggs are seen from below. Often it is untidy with bits of the material dangling loosely. The eggs, two or three in number, are "whitish or pale buff, more or less heavily blotched with reddish-brown, pale brown, and pale lilac, the markings most crowded on the thicker end. At times there are a few fine, black spots." Size in twelve varied from $22.2-26.6 \times 17.5-19.1$ mm. Kreuger (Ool. Rec., vol. 42, 1968, pp. 73-74) gives measurements of two eggs collected in British Honduras as 25.7×18.0 , and 27.1×17.6 mm. Three taken by Jewel at Gatun, Canal Zone, March 20, 1912 (Stone, Proc. Acad. Nat. Sci. Philadelphia, vol. 70, 1918, p. 268) measured 25.1×17.8 , 24.9×18.0 , and 24.9×18.3 mm.

The female incubates alone, with the male resting nearby. While he may fly out at some intruder, usually small birds are not molested when they perch nearby. At hatching the young have scanty gray down. The male assists in feeding them and guards the nest, but does not cover them.

Only seldom does the kingbird descend to the ground and there it hops slowly and awkwardly. In bathing they come quickly down to the surface of a pool, splash the breast in the water, and then rise to a perch. Here the feathers are fluttered to shake out the water and the birds preen.

**LEGATUS LEUCOPHAUS (Vieillot): Piratic Flycatcher,
Papamoscas Ladrón**

Rather small; dusky above, with light line over eye; heavily streaked below.

Description.—Length 135-145 mm. Adult (sexes alike), a dull white line from the forehead back above eye united with a similar band across the hindneck; crown sooty brown to nearly black, with a partly concealed central spot of yellow; back, scapulars, and upper rump olive to grayish brown, with indistinct brownish edgings; lower

rump and upper tail coverts similar, but edged with rusty or cinnamon; tail sooty to blackish brown, the feathers edged lightly with pale to dull cinnamon; wings brownish black, with coverts, secondaries, and inner primaries edged with dull white; side of head dusky black; malar region and throat white, with a narrow dusky line separating them; lower foreneck, breast, sides, flanks, and under tail coverts white to pale yellow, streaked with dark gray; central abdomen white to pale yellow; axillars and under wing coverts pale yellow; inner webs of primaries and secondaries cinnamon.

Juvenile, grayish brown above, without central crown patch; superciliary, edgings of wing coverts and of tail cinnamon-rufous; under surface pale yellow, with few or no streaks.

The species has a wide distribution from southern México through Central America and South America to northern Argentina and Brazil. From Costa Rica northward it is migratory. Its status in Panamá as a resident from available data is not wholly clear.

Two races currently are recognized based on difference in size, the smaller nominate form being found from Nicaragua southward. The larger *L. l. variegatus*, the breeding form from southern México to Guatemala, is migrant after the nesting season to South America. The two are reported to intergrade through Honduras (Monroe, *Birds of Honduras*, 1968, p. 255).

LEGATUS LEUCOPHAIUS LEUCOPHAIUS (Vieillot)

Platyrrhynchos leucophaeus Vieillot, *Nouv. Dict. Hist. Nat.*, nouv. éd., vol. 27, December 1818, p. 11. (Cayenne.)

Characters.—Smaller, more slender in form.

A male, taken at La Jagua, Panamá, March 23, 1961, had the iris dark mouse brown; bill black; tarsus and toes fuscous-black; claws black. Another male, at Puerto Armuelles, Chiriquí, March 9, 1966, was similar, with the inside of the mouth orange. In a female from El Potrero, Coclé, March 8, 1962, the iris was dark brown; bill, tarsus, and toes black.

Measurements.—Males (20, Chiriquí to Darién), wing 79.6–84.2 (81.1), tail 54.4–60.0 (56.4), culmen from base 12.7–14.5 (13.4), tarsus 14.6–16.7 (15.5) mm.

Females (17, Chiriquí to Darién), wing 75.2–81.8 (78.6), tail 52.7–57.8 (55.7), culmen from base 12.4–14.1 (13.3), tarsus 14.8–16.3 (15.5) mm.

Recorded from January to late October throughout the lowlands; from 1280 to 1580 meters in western Chiriquí; 600 meters above El

Valle, Coclé; 550 meters on Cerro Pirre, Darién. Possibly migrant after the breeding season.

The piratic flycatcher is found locally in the Tropical Zone wherever there is tree growth, ranging widely through areas of lowland forest, and also in the savannas. In regions of heavy forest it appears to be absent, except along the open borders of larger streams. Occasionally I have found them at the landward edge of mangrove swamps. In settled sections they may come to trees in suburban areas. They are seen usually singly or in pairs; more rarely three or four may be found near one another.

The species is widely distributed from southern México through Central America and South America to northern Argentina and Brazil. From the Isthmus of Panamá northward it is migratory, though as yet its movements are not fully known. Eisenmann has no report for this flycatcher in Panamá between late October and January. My earliest date in specimen records is a male taken at El Real, Darién, January 11, 1964. Apparently the bird may leave the Isthmus for part of the year.

The common names for this species refer to their breeding habits, in which they do not build nests themselves, but appropriate the domed or pendant homes of some other species. Early accounts of this habit were published by Chapman (*My Tropical Air Castle*, 1929, pp. 111–121). Skutch (*Pac. Coast Avif.* no. 34, 1960, pp. 451–464) has written of it in detail. In brief, in southwestern Costa Rica he found the Piratic Flycatcher occupying nests of the following species: White-winged Becard *Pachyramphus polychopterus*, Gray-capped Flycatcher *Myiozetetes granadensis*, Vermilion-crowned Flycatcher *Myiozetetes similis*, Yellow-olive Flycatcher *Tolmomyias sulphure-scens*, Eye-ringed Flatbill *Rhynchocyclus brevirostris*, and Gartered Trogon *Trogon violaceus*.

Dr. Frank M. Chapman on Barro Colorado Island found them taking the nests of the Chestnut-headed Oropendola, *Zarhynchus wagleri*. Eisenmann reports them at Tocumen in nests of *Cacicus cela* and *Pachyramphus cinnamomeus*. Neal Smith near Almirante has seen them at a nest of *Cacicus uropygialis*. In addition they are reported to usurp the nests of orioles (*Icterus*), and even those of the great kiskadee (*Pitangus sulphuratus*).

The method used with these species, several of them aggressive and decidedly larger than the intruder, is persistent annoyance through attack and attempt to enter the nest. The rightful owners drive the interlopers away repeatedly but finally give up. If the rightful owners

have eggs, when finally one of the pirates gains entry, it carries them to the nest entrance and drops them to the ground. Their usurping the nest cavity of the much larger trogons in a cavity made in a paper wasp's nest seems especially strange.

With a nest thus secured, the two flycatchers as their only contribution carry in small dead leaves to add to the nest lining. Two or three eggs form the set. These show varying shades from dark to grayish brown, with blotches or lines of darker brown forming a wreath around the larger end. Belcher and Smooker (Ibis, 1937, p. 231) describe eggs taken on Trinidad as "rather narrow elongated ovals" and give measurements in two as 23×16 and 22×16 mm. On May 24, 1961, at La Jagua, Panamá, I found a pair that had taken the nest of the Cayenne Flycatcher *Myiozetetes cayanensis*. Their three eggs were heavily incubated so that only two were preserved. These are oval in shape, and are heavily clouded over the entire surface with rather dull, somewhat grayish brown. Irregular lines and scrawls of a darker brown appear over the surface and form an indistinct cap at the larger end. They measure 21.3×15.9 and 21.3×15.6 mm. Skutch in Costa Rica, in two sets of three and four of two, described the color as varying through "café-au-lait, unsaturated brown, or smoky brownish gray with a suffusion of darker brown over most of the surface. About the thick end there is a wreath of deeper, dirty brown in confluent blotches." Twelve eggs that he measured averaged 21.7×16.3 mm.

Skutch reports that the female alone incubates, but that the young are fed by both parents. At hatching, they "bear a short, rather dense, tawny down on much of their dorsal and ventral surfaces." They are fed berries and insects, the latter including dragonflies.

LEGATUS LEUCOPHAIUS VARIEGATUS (Sclater)

Elaenia variegata P. L. Sclater, Proc. Zool. Soc. London, vol. 24, 1856 (January 26, 1857), p. 297, pl. 24. (Córdoba, Veracruz, México.)

Characters.—Larger; usually heavier in body form.

Measurements.—Males (10 from San Luis Potosí to Tabasco, México), wing 88.1–96.5 (91.8), tail 62.6–68.5 (65.2), culmen from base 13.1–17.7 (14.8), tarsus 16.2–17.9 (16.7) mm.

Females (7 from Veracruz to Chiapas; 1 from Colombia), wing 83.0–90.4 (87.5), tail 60.0–66.3 (63.7), culmen from base 13.1–15.1 (14.3), tarsus 15.4–17.9 (16.5) mm.

Passage migrant; abundance not known. Recorded to date from

Panama Bay, Canal Zone; and Isla Pacheca, Archipiélago de las Perlas.

Two specimens in the American Museum of Natural History were collected on Isla Pacheca by Griscom and Crosby on March 9, 1927. One, marked female, has the wing 89.0 and the tail 63.3 mm, thus agreeing definitely with the northern race. The second, with sex marked "male" (wing 87.1, tail 59.0 mm), probably also is a female, as it agrees in size with that sex. These two are the only records of the species in the Archipiélago de las Perlas, an indication that they were in migration. A third, a male, in the collection of the Cornell Laboratory of Ornithology, was collected by R. B. Lea, March 11, 1946, on board the U.S.S. *Grafton*, when the ship was anchored in Panama Bay off the Canal Zone.

MYIODYNASTES LUTEIVENTRIS Sclater: Sulphur-bellied
Flycatcher, Papamoscas Cejiblanco

Medium size; like the Streaked Flycatcher, *Myiodynastes maculatus*, but yellowish on lower surface, with a heavy black line on either side of the throat, the two joined across the chin.

Description.—Length 180–205 mm. Adult (sexes alike), forehead and superciliary grayish white; rest of crown and hindneck brownish gray to olive, streaked narrowly with black; center of crown with a concealed patch of yellow; back, scapulars, and upper rump light olive, the feathers edged with buff, the two colors forming light and dark streaks; lower rump and upper tail coverts cinnamon-rufous, streaked with dusky; tail cinnamon-rufous, with a shaft line of dusky that is expanded distally; wings dusky; outer webs of middle and greater coverts and the secondaries edged with white to yellowish white; lesser coverts edged narrowly with grayish buff; lores and auriculars dusky; malar area and space below eye dull white to brownish or yellowish white; chin and sides of throat dusky-black edged with grayish olive; rest of throat white streaked with dusky; rest of under surface pale yellow to yellowish white; breast and sides streaked with black and dusky; axillars and under wing coverts pale yellow with dusky shaft lines; inner margin of primaries and secondaries edged with white to pale yellow.

A passage migrant fall and spring to and from wintering grounds in South America, fairly common. The species as a whole, while generally similar to the abundant resident *Myiodynastes maculatus difficilis*, the Streaked Flycatcher, when clearly seen is easily dis-

tinguished by the dusky chin and yellowish underparts, and also by the darker, more contrasted head pattern.

There are two slightly different subspecies, as noted beyond, that may be identified only with specimens in the hand. The following summary of occurrence (in considerable part from data supplied by Eugene Eisenmann) relates to the species as a whole. In fall, by early September, these flycatchers are fairly common. The earliest actual date of arrival is September 8, 1968, when three were seen on the Chiva Chiva road by R. S. Ridgely. Other recent reports from the Canal Zone include September 9, 1962, when one was captured at Albrook Field by Horace Loftin; September 10, 1968, near Gamboa, by H. M. Stevenson and L. Marsh; and September 27 and 30, 1968, on Barro Colorado Island by C. F. Leck. Other reports indicate wide occurrence. George Hicks collected male and female October 5 and 19, 1964, near Almirante, Bocas del Toro. Loftin reports others captured there October 11, 12, and 13, 1963; a male was taken there September 19, 1961, by Tomás Quintero. While most pass in September and October, some may remain later, as Griscom (Bull. Mus. Comp. Zool., vol. 72, 1932, p. 350) reported a male taken by H. von Wedel at Puerto Obaldía, San Blas, November 20, 1930.

The passage northward begins in March. Eisenmann recorded this species at Panama City, March 12, 1967. A specimen in the American Museum of Natural History was taken by Benson at Santa Fé, Veraguas, March 17, 1925. I have personal records at Los Santos in the Azuero Peninsula for March 15, 1948, on Isla Taboguilla in the Bay of Panamá for March 20, 1952, at Charco del Toro on the Río Majé, eastern Province of Panamá, March 24, 1950, and on Isla Cébaco, Golfo de Montijo, March 28, 1962. The birds continue to move through April.

MYIODYNASTES LUTEIVENTRIS LUTEIVENTRIS Sclater

Myiodynastes luteiventris P. L. Sclater, Proc. Zool. Soc. London, vol. 27, May 1859, p. 42. (Verapaz, Guatemala, and Orizaba, México.)

Characters.—Under surface darker yellow, with the dark streaking broader and heavier; light markings on back averaging deeper buff; cinnamon-rufous of upper tail coverts and tail slightly darker.

Measurements.—Males (10 from México, Guatemala, Honduras, and Costa Rica), wing 112.6–116.6 (114.5), tail 80.0–82.9 (81.7), culmen from base 22.2–25.2 (23.4), tarsus 18.8–20.4 (19.5) mm.

Females (10 from México, Guatemala, Nicaragua, and Costa

Rica), wing 107.1–111.0 (109.6), tail 75.7–82.2 (78.1), culmen from base 22.3–25.5 (23.9), tarsus 18.1–19.8 (19.1) mm.

Passage migrant; fairly common, mainly in September–October and March–April.

The nominate race nests from central Tamaulipas (Victoria), northeastern Nuevo León, and Sinaloa south locally through Central America to central Costa Rica (Gulf of Nicoya and the central highlands), and winters apparently in Perú. While, as stated above, in the general account of the species, these birds have been recorded most frequently in the Canal Zone, in their migrations they may appear anywhere in the Tropical Zone throughout the Republic.

Definite records for the nominate race, based on specimens, are as follows: Veraguas—Santa Fé, March 17, 1925; El Villano, September 17, 1924; Caleta Caimán, western end of Isla Cébaco, March 28, 1962. Los Santos—Los Santos, March 15, 1948. Province of Panamá—Charco del Toro, Río Majé, March 20, 24, 28, 1950 (4 specimens). Darién—Cerro Sapo, Jesucito, April 1922 (3 adults). Bocas del Toro—Almirante, September 19, 1961. Canal Zone—Empire Range, October 3, 1955; K-6 Road, September 14, 1955. Comarca de San Blas—Puerto Obaldía, November 20, 1930.

MYIODYNASTES LUTEIVENTRIS VICINIOR Cory

Myiodynastes luteiventris vicinior Cory, Field Mus. Nat. Hist., Orn. Ser., vol. 1, no. 10, August 30, 1916, p. 342. (Yurimaguas, Perú.)

Myiodynastes luteiventris swarthi van Rossem, Condor, vol. 29, no. 2, March 15, 1927, p. 126. (Huachuca Mountains, Arizona.)

Characters.—Under surface paler, yellowish white, with the dark streaks narrower; light streaking on back lighter, grayer, paler buff; cinnamon-rufous of upper tail coverts and tail faintly paler.

Measurements.—Males (10 from Arizona, México, and Guatemala), wing 111.5–118.2 (115.1), tail 77.0–85.0 (80.6), culmen from base 23.2–26.0 (24.6), tarsus 19.5–22.3 (20.1) mm.

Females (5 from Arizona and Colima, México), wing 101.5–110.3 (106.5), tail 74.0–81.0 (76.8), culmen from base 21.2–24.9 (23.5), tarsus 19.4–20.7 (19.9) mm.

Transient from the north, fall and spring.

Definite records are as follows: Canal Zone (probably Lion Hill Station on the Panama Railroad), collected in 1862, by McLeannan; Fort Clayton, October 13, 1953, F. S. Blanton.

This subspecies nests from southeastern Arizona (Santa Rita and Chiricahua Mountains) south in northern México to the mountains

of western Chihuahua and Sonora. It migrates in the winter season to Bolivia and Perú. While in spring and fall it passes through Panamá, probably during the same periods as *M. l. luteiventris*, few have been recorded. As stated above, individuals of the two subspecies may be identified only with specimens in hand.

Zimmer (Amer. Mus. Nov., no. 963, 1937, p. 3) has indicated that Cory's name *vicinior* applies to this form, and so is to be used instead of *swarthi*. The type of *vicinior*, seen at the Field Museum, is an immature bird, as shown by its lack of the bright-colored crown patch found in the adult. It is marked on the label as male, but with a wing measurement of only 105.8 mm it is probably a female, as may be seen from the dimensions listed above.

**MYIODYNASTES MACULATUS (Müller): Streaked Flycatcher,
Papamoscas Rayado**

FIGURE 37

Muscicapa maculata P. L. S. Müller, Natursyst., Suppl., 1776, p. 169. (Cayenne.)

Medium size; differs from the Sulphur-bellied Flycatcher, *Myiodynastes luteiventris*, in white chin, and whiter lower surface (only faintly, if at all, yellow); dusky forehead; less prominent light line above eye.

Description.—Length 190–205 mm. Adult (sexes alike), crown and hindneck olive to light brown, with the feathers edged narrowly with cinnamon; a central crown patch of bright yellow, or orange-yellow, edged more or less with buff to cinnamon, varied in an occasional individual to wholly dark cinnamon-buff; back, scapulars, and upper rump grayish brown to olive, the feathers edged more or less with buff to buffy brown; lower rump and upper tail coverts cinnamon-rufous, streaked narrowly with black or dusky; tail cinnamon-rufous, the feathers lined along the shaft with dull black to dusky; wings dusky, with the lesser coverts edged with pale cinnamon-rufous; the middle and greater coverts, primaries and inner secondaries with external margins narrowly cinnamon-rufous; lores and sides of head dull black; a narrow, indefinite superciliary line of dull white to dull yellowish white; rictal stripe and under surface, including chin, white, becoming yellowish on sides, flanks, lower abdomen, and under tail coverts; upper foreneck streaked narrowly, sides and breast heavily, with black to dusky; axillars and under wing coverts white to yellowish white, lined faintly with dusky; inner webs of wing feathers whitish to pale buff.

Juvenile, similar to adult but without yellow crown spot; dark central stripe on rectrices usually narrower.

As a species, these birds have an extensive distribution in the Tropical Zone from northern México through Central America, continuing in South America through Colombia, Venezuela, eastern Perú, and Brazil to northern Argentina. The far northern birds (subspecies *M. m. insolens*) are migratory, moving southward after



FIGURE 37.—Streaked flycatcher, papamoscas rayado, *Myiodynastes maculatus difficilis*.

the breeding season. At the southern end of the range the very dark birds that nest in Argentina, at the approach of southern winter move north through the Amazon region, as far as southeastern Colombia and southern and eastern Venezuela.

Two of the six geographic races currently recognized are found in Panamá, one resident, the other as a migrant from the north.

MYIODYNASTES MACULATUS INSOLENS Ridgway

Myiodynastes audax insolens Ridgway, Man. N. Amer. Birds, September 1887, p. 332. (Mirador, Veracruz, México.)

Characters.—Darker above; crown more olive, less buff; back more olive.

Measurements.—Males (9 from México, Guatemala, Honduras), wing 111.4–116.7 (114.1), tail 81.2–85.4 (83.3), culmen from base 24.4–27.8 (25.6), tarsus 19.0–20.8 (20.0) mm.

Females (7 from México, Guatemala), wing 106.1–110.5 (108.4), tail 74.8–81.0 (78.7), culmen from base 24.2–26.7 (25.2), tarsus 19.5–22.8 (21.1) mm.

Passage migrant. Known at present in Panamá from specimens collected in western Chiriquí (Puerto Armuelles), southern Veraguas (Río San Lorenzo), Canal Zone (Lion Hill), Darién (Cerro Sapo); and Isla Coiba.

The first report of this form in the Republic is that of Bangs and Barbour (Bull. Mus. Comp. Zool., vol. 65, 1922, p. 220) who, in recording an adult female of the species taken on the slopes of Cerro Sapo, Darién, April 24, 1922, say of it that it "agrees in all of the distinguishing characters, longer wing (109 mm); olive not cinnamonous pileum . . . with *M. m. insolens* Ridgway of southeast Mexico if that form were migratory." As this migration was not suspected at the time, they recorded it under the name *nobilis*, the name then current for the population of the Isthmus.

In the collection of the U.S. National Museum there are two, a male and a female, taken by E. A. Goldman April 11, 1911, at the old Lion Hill locality in the Río Chagres Valley of the Canal Zone, now submerged in Gatun Lake. In addition, in more recent work I have collected the following examples: two males on Isla Coiba, February 1 and 2, 1956; two males in Chiriquí, one at the lakes near El Volcán, February 15, 1960, and the other at the head of the Río San Bartolo, near the Costa Rican boundary west of Puerto Armuelles, Chiriquí, March 1, 1966. A male in the American Museum of Natural History came from near the mouth of the Río San Lorenzo, southern Veraguas, taken by Griscom April 6, 1924.

This race is recorded as nesting, or as present in the nesting season, south to northeastern Guatemala in Petén (Nueva Agua, Tikal), northern British Honduras (Gallon Jug), and central Honduras (Lancetilla, La Lima, Lake Yojoa). (There appear to be no records as yet for Nicaragua.)

MYIODYNASTES MACULATUS DIFFICILIS Zimmer

Myiodynastes maculatus difficilis Zimmer, Amer. Mus. Nov., no. 963, November 18, 1937, p. 9. (Bebedero, Guanacaste, Costa Rica.)

Characters.—Lighter colored above; crown and hindneck decidedly buff; back also with buffy borders on the darker streaks.

In several specimens, including both sexes, the iris was dark brown, occasionally slightly more reddish; maxilla and tip of mandible fuscous-black to black; rest of mandible dull white to flesh color; tarsus and toes dark to dusky neutral gray; claws black.

Measurements.—Males (16 from Chiriquí to Darién and San Blas), wing 104.4–110.8 (107.4), tail 79.0–86.0 (83.2), culmen from base 24.0–29.0 (26.9), tarsus 20.0–21.7 (20.5) mm.

Females (14 from Chiriquí to Darién and San Blas), wing 101.5–106.0 (103.4), tail 77.1–84.8 (81.2), culmen from base 25.5–29.5 (27.4), tarsus 19.3–21.7 (20.3) mm.

Resident. Common, widely distributed through the tropical lowlands, a few ranging to higher levels; on the Pacific slope from western Chiriquí to eastern Darién, including the Azuero Peninsula; to 1675 meters on the western and eastern sides of Volcán Barú. On the Caribbean slope, from El Uracillo, northern Coclé, east through the northern Canal Zone, the lower Chagres Valley, and the Province of Colón to eastern San Blas (Puerto Obaldía); recorded on the Pacific coast in the Archipiélago de las Perlas (islas Pacheca, Saboga, Chapera, Rey, Pedro González, and San José); in Golfo de Montijo on Isla Cébaco; Isla Coiba; in the Islas Contreras (Isla Brincanco); in Golfo de Chiriquí, on the islas Bolaños and Parida.

These attractive flycatchers are widely distributed in forest areas, where often they are not easily seen as they may range in the top of the high treecrown, hidden by leaves. They come also regularly to forest edge, trees standing in pastures and fields to the borders of mangrove swamps along the coast, and around any clearings when second growth appears. It is usual to find them in pairs that rest near one another, the sexes ordinarily readily evident because of the larger size of the males. They are active in feeding, but otherwise rather quiet since they are not unduly aggressive toward other birds that come near, except occasionally around their nests. Even then they pay little attention to tanagers, honeycreepers, and other small birds, but may attack fiercely such nest predators as hawks and toucans.

Attention often is attracted to them by their calls, which can be vociferous but usually are subdued—a rather metallic, nasal sounding

note without great carrying power. When excited at approach to their nests, they become loud and noisy. (Though several authors have rendered the call in English terms, personally I have found these insufficiently suggestive to recall to mind the actual sounds.) Morning and evening, males join the notes in a steadily repeated song, a quiet effort, pleasing to hear.

The nest usually is in a hollow in a tree trunk, often the old nesting hole of a woodpecker. They may also place a nest in the bases of the huge leaf stems of palms, while some select the shelter of masses of bromeliads growing on tree trunks. On Barro Colorado Island, Eisenmann (Smithsonian Misc. Coll., vol. 117, no. 5, 1952, p. 40) records that in several years they placed nests in a partly protected angle on a metal roof. Other pairs have attempted to use window ledges as sites where, when the nest material was blown away, they have occupied a small box specially placed for them.

The nest is a bulky accumulation of twigs, rootlets, and similar materials, with a central open cup for the eggs. Where the birds occupy an old woodpecker hole, the cavity often is filled completely so that the female during incubation looks out the entrance hole. The female alone builds the nest, though accompanied regularly by the male, and also incubates alone. The male joins in feeding the young. Three is the normal set of eggs, in color whitish or cream-white, heavily marked overall with reddish brown, often in a circlet around the larger end. Skutch (Pac. Coast Avif. no. 34, 1960, p. 381) gives the sizes in one set on Barro Colorado Island as 27.0×18.3 , 27.8×18.3 , and 28.2×19.1 mm. A. O. Gross (Wilson Bull., 1950, p. 189) lists the dimensions of three also on Barro Colorado Island as 22.8×18.9 , 23.0×19.1 , and 24.2×19.5 mm. R. Kreuger (Oologists' Rec., vol. 43, 1969, p. 27) records the size of two eggs from Costa Rica as 26.6×17.8 and 27.7×18.1 mm, and in addition to the brown spotting says that some "lilac-grey markings exist."

These flycatchers take the usual variety of insects as food, and also kill and eat small lizards. In addition they are regular visitors to the feeding trees whose ripening berries are attractive to so many birds. Such vegetable matter appears to be a considerable item in their food. Stomachs that I have examined usually have held insect remains of hemiptera, cicadas, beetles, and caterpillars, all species of medium size, and in addition, seeds from berries.

In Costa Rica, Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 245) recorded this race as resident. Skutch (cit. supra, pp. 374–376, 383) however, reports that in western Costa Rica it is migratory,

present for the nesting period from late February and early March until late September.

MYIODYNASTES HEMICHRYSUS (Cabanis): Golden-bellied Flycatcher, Papamoscas Barriga-dorada

Hypermitres hemichrysus Cabanis, Journ. f. Orn., vol. 9, July 1861, p. 247. (Costa Rica.)

Medium size; bill large, a broad white line above and behind eye, a narrow one below; lower surface bright yellow.

Description.—Length 190–205 mm. Adult (sexes alike), anterior crown dark gray with very fine dusky shaft lines, paler, faintly mottled with white, on forehead, changing to slaty black on posterior half; a partly concealed orange-yellow stripe, bordered with white, on center of crown; superciliary white, greatly expanded behind the eye, the two sides separated behind by dark gray of hindneck; a broad black line on side of head, passing through eye; below this a narrow line of dull white bordered below by a broader line of dull grayish black on the ramal area; back dark grayish green; lower rump and upper tail coverts somewhat darker, bordered narrowly with dull rufous; tail fuscous with the feathers bordered narrowly externally with dull gray, internally more broadly with pale dull buff; wings fuscous-black; inner secondaries bordered with yellowish white; primary coverts and inner primaries edged narrowly with rufous; chin and throat white; rest of under surface bright yellow; axillars and under wing coverts pale yellow; inner webs of flight feathers narrowly cinnamon-buff.

Immature, white stripes on side of head much broader; crown and back dull grayish brown; wings and tail more broadly edged with rufous; under surface paler yellow.

H. J. Watson in an adult male (Amer. Mus. Nat. Hist. no. 496579) taken at Boquete, Chiriquí, April 19, 1905, recorded the iris as brown; bill black, and feet black.

Measurements.—Males (10 from Chiriquí and Veraguas), wing 102.9–107.7 (105.7), tail 80.1–86.0 (83.1), culmen from base 21.0–24.7 (23.4), tarsus 18.2–20.3 (19.4) mm.

Females (9 from Costa Rica, Chiriquí, and Veraguas), wing 97.0–103.6 (100.3), tail 79.5–84.5 (81.7), culmen from base 21.8–24.0 (22.9), tarsus 17.5–20.0 (19.3) mm.

Resident. Rare in the Subtropical Zone in western Chiriquí; recorded also in the higher elevations of western Bocas del Toro, and in Veraguas.

The early records of this species were by Arcé who sent specimens to Salvin taken near Chitra, Calovévora, and Calobre on the Pacific slope of Veraguas. Three of these from the last two localities are now in the British Museum. H. J. Watson collected a male at 1220 meters above Boquete, April 19, 1905, and Mrs. M. E. Davidson a male at 1524 meters at Chiquero, December 17, 1933, and a female at 1615 meters at Horqueta above Boquete, February 5, 1934. The Mönniche collection in the Field Museum has others from Lériða and Quiel in this same area, and also a male at 1584 meters at Camp Cilindro on the Holcomb Trail in adjacent Bocas del Toro. In February 1955, I collected a male and saw at least two others on the long, forested ridge of Cerro Picacho at 1880 meters west of El Volcán. Others were seen here somewhat lower down on February 7, 8, and 13, 1960. We have one other male, collected by Dr. C. Lynn Hayward above Cerro Punta on March 8, 1962.

I found them in the high tree crown, moving rather slowly among the leaves, and also coming to a feeding tree. In this, one flew out, seized the small drupes one at a time and then came back to a lower perch to swallow them. Their low calls, heard rather indistinctly, suggested those of the streaked flycatcher, a resemblance heightened by their similarity in movement, but with a confusing suggestion of the Boat-billed Flycatcher because of their yellow breasts and dark backs.

In Costa Rica, where Skutch (Pac. Coast Avif., no. 34, 1960, pp. 392-395) found them more common, he heard a high, sharp call and a three-noted melodious phrase that resembled a song. They were found in pairs throughout the year. Two nests that he observed were placed in recesses among the mosses and epiphytes abundant in the cloud forest, elevated 20 to 30 meters above the ground. The nests, built by the female alone (though accompanied by her mate), were made mainly of green moss. As they were inaccessible, he made no notes on the eggs or young.

Though Hellmayr has listed *hemichrysus* as a race of the more southern *M. chrysocephalus*, it differs so distinctly in the brighter yellow of the under surface, without streaking on the breast, even in the juvenile stage, that it is to be treated as a separate species.

MYIODYNASTES CHRYSOCEPHALUS MINOR Taczanowski and Berlepsch: Golden-crowned Flycatcher, Papamoscas Corona-dorada

Myiodynastes chrysocephalus minor Taczanowski and Berlepsch, Proc. Zool. Soc. London, June 1, 1885, p. 91. (Machay, Río Pastaza, Ecuador.)

Medium size; generally similar to *M. hemichrysus* but white streak behind eye much smaller; paler yellow on lower surface, with breast indistinctly streaked.

Description.—Length 195–205 mm. Adult (sexes alike), crown and hindneck dark gray; forehead freckled with white; a narrow white superciliary, slightly expanded behind eye; a partly concealed yellow spot, bordered with white laterally, in center of crown; a dusky stripe on side of head from lores through eye and auricular region; hindneck, back, and rump dull greenish gray, with lower rump and upper tail coverts bordered narrowly with rufous; tail fuscous, the rectrices bordered externally faintly with whitish, internally more broadly with cinnamon-buff; wings fuscous; inner secondaries bordered with white; greater and middle coverts edged with white to dull buff; primaries, except the two external, and outer secondaries edged with rufous; a dull white malar streak bordered below by a broader line of dark gray; chin and foreneck dull white to faintly buffy white; rest of under surface rather dull yellow; breast and sides streaked indistinctly with dark gray; axillars and under wing coverts pale yellow; inner border of under wing feathers edged narrowly with pale cinnamon-buff.

Immature, upper breast and foreneck washed with buff.

Measurements.—Males (10 from Darién and Colombia), wing 103.5–107.8 (105.7), tail 82.5–89.0 (85.0), culmen from base 22.5–25.7 (23.9), tarsus 17.5–18.8 (18.1) mm.

Females (10 from Darién and Colombia), wing 97.7–103.8 (101.3), tail 79.1–84.7 (82.3), culmen from base 22.5–25.5 (24.0), tarsus 17.9–19.2 (18.5) mm.

Resident. Rare in the Subtropical Zone of Cerro Pirre and Cerro Tacarcuna, Darién.

This flycatcher, widely distributed in the mountains of Colombia and Ecuador, is known in Panamá from two specimens in the collections of the U.S. National Museum (first reported in Proc. Biol. Soc. Washington, vol. 80, 1967, p. 242). The first, a female, was collected by E. A. Goldman on Cerro Pirre, April 17, 1912, at 1580 meters near the head of the Río Limón. The second, a male, was secured by Dr. Pedro Galindo of the Gorgas Memorial Laboratory on May 25, 1963, at 1460 meters near the point where the ridge of Cerro Malí joins the higher slopes of Cerro Tacarcuna in the Serranía del Darién, a short distance from the low divide that marks the boundary with Colombia.

Both specimens have the maximum amount of buff on throat that apparently marks the first adult plumage.

The race *minor* appears to range in the Subtropical Zone of the Andes of Colombia, south to central Ecuador. It was described (in French) from specimens collected by Stolzman: "une paire de Machay et de Mapoto," Ecuador, collected in November 1883 and January 1884. Mapoto, according to notes furnished by the collector, was a hacienda at an elevation of 2130 meters on the upper Río Pastaza between Baños and Canelos; Machay was another hacienda a little lower on the same trail, at 1525 meters. This places both localities on the eastern face of the mountains in the Province of "Napo-Pastaza."

Kreuger (Ool. Rec., vol. 43, no. 2, May 1969, p. 28) describes eggs from Venezuela of the closely related race *M. c. cinerascens* as "salmon-cream with many small red-brown spots and dots nearly forming a ring at the larger ends." He lists the average size of three as 23.7×19.4 mm.

Stolzman and Domaniewski, in a list of types in the Polish Museum of Natural History (Ann. Zool. Mus. Pol. Hist. Nat., vol. 6, June 1, 1927, p. 146) cites as "Typus: no. P. 2414 ♀ 28 XI 1883. Machay (5000'), sur Río Pastaza, Ecuador or." They say that two males collected by Stolzman at Mapoto and Surupata were taken to Rostoff during the war, and had not yet been returned. Hellmayr (Cat. Birds Amer., pt. 5, 1927, p. 128) says merely "type examined" with no further statement.

MEGARYNCHUS PITANGUA MEXICANUS (Lafresnaye): Boat-billed Flycatcher, Pico de Canoas

Scaphorhynchus mexicanus Lafresnaye, Rev. Mag. Zool, vol. 3, October 1851, p. 473. (México.)

Medium size; yellow underneath; dusky head with prominent white line over eye, and large, broad bill.

Description.—Length 205–235 mm. Bill large, long, and broad, with prominently hooked tip. Adult (sexes alike), crown and side of head dull black, in some faintly gray; center of crown with a large concealed spot of yellow and rufous, these feathers white at base; forehead grayish white; a broad white superciliary stripe that becomes wider at the nape; back, scapulars, and rump greenish olive, varying somewhat in depth of greenish cast; wings and tail grayish brown, secondaries edged lightly with grayish white, primaries and rectrices with cinnamon; chin and upper throat white; rest of lower surface,

including axillars and under wing coverts, bright yellow; inner webs of wing feathers dull cinnamon-buff.

Young, without crown spot; similar to adult in general pattern of coloration, but forehead white and the white superciliary band broadly continuous across nape; feathers of entire upper surface, including wings and tail, edged broadly with cinnamon-rufous.

Immature, feathers of back with a subterminal bar of dusky and tip of dull cinnamon-buff; without the concealed crown patch until first complete molt.

A male taken near Puerto Armuelles, Chiriquí, January 30, 1966, had the iris dark brown; bill black, with the inside of the mouth on both maxilla and mandible very pale grayish white; tarsus and toes fuscous-brown; claws black.

A female, at Las Palmitas, Los Santos, January 21, 1962, had the iris dark mouse brown; bill black; upper end of tarsus dusky neutral gray, shading at center to black which continues over toes and claws.

Measurements.—Males (13 from Chiriquí, Veraguas, Los Santos, Canal Zone, Darién, and San Blas), wing 120.2–127.2 (123.5), tail 81.2–94.2 (87.5), culmen from base 31.2–36.1 (33.6), tarsus 19.0–21.2 (20.2) mm.

Females (10 from Chiriquí, Los Santos, Province of Panamá, and Bocas del Toro), wing 120.4–125.4 (122.5), tail 80.1–89.7 (85.3), culmen from base 30.7–36.2 (33.1), tarsus 19.0–21.2 (20.5) mm.

Weight, ♂ adult, 61.1 grams (R. S. Crossin).

Resident. Common; found throughout the Tropical Zone and the lower Subtropical Zone in Chiriquí, regularly to 1280 meters near El Volcán, less frequently to 1900 meters at Cerro Punta. Recorded on Isla Cébaco in Golfo de Montijo, and Isla Ranchería (near Isla Coiba).

This is a common bird in the borders of forests, groves, and scattered stands of trees, through the savannas and more open areas of the Pacific slope and the eastern side of the Azuero Peninsula; in groves and clearings elsewhere. It lives also, apparently in lesser number, across the high treecrown in forest areas, but there is less often seen because of the cover of leaves. Though it may dispossess a kingbird from a high commanding perch on a palm spike, it rests more frequently under partial cover of leaves. Apparently it does not cross wide expanses of water as Isla Cébaco at the entrance of Golfo de Montijo and Isla Ranchería near Coiba are the only islands at all distant from the mainland on which I have found it.

Boat-bills range singly or in pairs, scattered through their haunts,

associated more closely with others of their kind only when attracted to feeding trees, or when they are accompanied by their young. These, when grown, may remain with the parents for a time so that four or five may range together.

A usual call is a rather loud single note that may be repeated quickly. A chattering repetition with fainter sound, often in a querulous or complaining cadence, has less carrying power. Occasional more forceful calls in rapid sequence may be suggestive of the rattling of a kingfisher. Skutch (Auk, 1951, pp. 32-33) describes a repetition by the male of the more musical notes as a dawn-song given before sunrise at the beginning of the nesting season. In this the bird rests high in a tree at the forest border or in the open.

The nest, built by the female, has a foundation of twigs broken from dead branches, with rootlets and other parts of epiphytes picked from the trunks of trees. With these the bird forms an open, shallow cup, lined with finer materials. While this may be placed as low as 6 meters from the ground, usually it is much higher, up to 30 meters. Males may accompany the females during nest-building and even carry a bit of the material, but this is dropped or held, and is not offered to the builder. The eggs, two or three in number, are described by Skutch (idem, p. 38) as "whitish, thickly speckled with brown and pale lilac . . . most densely on the large end." A set of two eggs (originally three but one broken and discarded) of *M. p. mexicanus* collected by Charles W. Richmond on the Río Escondido, above Bluefields, Nicaragua, have the ground color very pale buffy white. One is heavily, the other sparingly, covered rather uniformly with dots and small- to medium-size lines and irregularly shaped markings of cinnamon-rufous and bluish gray. They measure 29.9×20.8 and 29.6×20.8 mm. A single egg, received from Dr. Pedro Galindo, collected at Almirante, Bocas del Toro, March 29, 1962, is oval in form, very pale buffy white, sparingly dotted with gray and dark brownish black. The size is 31.4×21.9 mm. Belcher and Smooker (Ibis, 1937, p. 233) give measurements of a set of three of the nominate race, *M. p. pitangua*, from Trinidad as 29.5×21.5 , 29.5×21.5 , and 30.0×21.5 mm.

The female incubates alone, with the male nearby. When she is away from the nest he remains to watch and guard the eggs or nestlings. The young do not leave the nest until at 24 days of age they are able to fly. As stated above, they may continue in the company of the parents until the onset of the next breeding season. Pairs that lose their eggs or young also remain together.

The food of the boat-bill is larger insects, which it picks usually from twigs and leaves, and berries secured in the same manner. They are said also to eat small lizards and minnows.

The fact that these are forest birds, resting and moving among twigs and leaves, should be kept in mind in selecting specimens for measurements as wing and tail feathers become abraded at the tip. The wing tip especially may become definitely shortened. True size is obtained only from specimens that are not worn.

Megarynchus pitangua as a species has wide distribution from México through Central America and South America to Paraguay and northern Argentina. Ridgway (U.S. Nat. Mus. Bull. 50, pt. 4, 1907, p. 666) called attention to larger size in northern birds compared to those of South America. Those of Panamá have the dimensions of the northern group, which continues through Darién and San Blas into northwestern Colombia. Other subspecies based on slight differences in color have been named from limited areas in western México, Guatemala, and western Ecuador.

CORYPHOTRICCUS PARVUS ALBOVITTATUS (Lawrence):
White-ringed Flycatcher, Atrapamoscas Corona Anillada

Pitangus alborittatus Lawrence, Ibis, vol. 4, January 1862, p. 11. (Atlantic slope, line of the Panama Railroad, Canal Zone, Panamá.)

Rather small; white throat, yellow breast; a conspicuous white line above eye and around back of head.

Description.—Length 145–155 mm. Male, crown sooty brown (almost black); a large central crown patch of orange-yellow; a broad white stripe from the forehead, above the eye, where it becomes wider and encircles the back of the head; side of head from lores to the auricular region deep blackish brown, like crown; side of hindneck, back, rump, and upper tail coverts grayish olive-green; tail dark grayish brown, with the rectrices edged faintly with light grayish brown; wings dusky, with innermost secondaries edged with white; chin and upper throat white; rest of under surface and under wing coverts yellow, darker on the abdomen and under tail coverts; inner margin of underside of wing feathers edged narrowly with dull white.

Adult female, crown patch light yellow, otherwise like male.

Measurements.—Males (3 from Province of Panamá and Colombia), wing 80.4–82.6 (81.4), tail 62.4–63.9 (63.2), culmen from base 19.2–20.0 (19.5), tarsus 18.0–18.8 (18.4) mm.

Females (4 from Province of Panamá, Darién, and Colombia),

wing 76.1–81.5 (78.5), tail 56.2–64.2 (61.3), culmen from base 19.6–20.1 (19.8), tarsus 17.8–18.1 (18.0) mm.

Resident. Uncommon; found locally on the Pacific slope in eastern Province of Panamá, near Tocumen, on Cerro Azul, near Chepo, and on the Río Chimán; in Darién, on Cerro Sapo, and near Jaqué; on the Caribbean slope recorded on Barro Colorado Island, near Gamboa, and at Achiote, Canal Zone, and Río Piedras, eastern Colón.

The type of the subspecies *albovittatus*, named by George N. Lawrence, was collected by McLeannan and Galbraith on the Caribbean slope of the Canal Zone. E. O. Willis has seen it at Gigante Bay on Barro Colorado Island, and J. H. Karr and others found it in the Navy Pipeline area near Gamboa. Eisenmann recorded it in 1969 on the Achiote road west of the Canal, near the boundary with western Colón. Records supplied by Eisenmann report it as found regularly near Río Piedras on the Canal Zone boundary with eastern Colón. E. S. Morton collected one at 760 meters on Cerro Azul, January 6, 1966.

On the Pacific slope Eisenmann found a pair for several years near the Tocumen airport. A male in the Peabody Museum was collected by Austin Smith at San Antonio on the lower Río Bayano east of Chepo. On February 27, 1950, where the Río Corotú enters the Río Chimán, above Chimán, Panamá, I found a male and two females in active mating displays. All three called with much noise. The male in level flight produced a loud rattling sound by vibrating the wing suddenly. At rest, it held the wings partly spread and moved them tremulously. One was taken in 1941 on the Fifth Vanderbilt Expedition at about 900 meters on Cerro Sapo above Garachiné, Darién (Bond and de Schauensee, Acad. Nat. Sci. Philadelphia, Mon. 6, 1944, p. 37). March 10, 1950, I collected one in forest at 300 meters elevation on the base of Cerro Chucantí. At Charco del Toro, on the head of tidewater on the Río Majé at the end of March several were noted along the banks of the river.

The nominate race *Coryphotriccus parvus parvus* found in the Guianas and northern Brazil differs in having the throat yellow, like the rest of the underparts, instead of white as in *albovittatus*. Haverschmidt (Auk, 1957, p. 241) on September 2, 1956, near Zanderij, Surinam, found a nest in an old woodpecker hole near the top of a tall dead tree. When this trunk had been felled and opened, he found a "neatly built nest made of dry grasses, which filled the bottom of the hole." It held two eggs, one of them broken. "The shell was rather glossy, of a cream color, and covered all over with streaks and blotches

of chocolate brown, which formed an unbroken, solid, broad ring around the large end." The egg measured 20.8×16.0 mm.

The genus *Coryphotriccus* was named by Ridgway (Proc. Biol. Soc. Washington, vol. 19, September 6, 1906, p. 115) with *albovittatus* Lawrence, as type. In later, more detailed consideration Ridgway (U.S. Nat. Mus. vol. 50, pt. 4, 1907, p. 668) pointed out that it was "more nearly related to *Conopias* but bill relatively much larger (exposed culmen equal to or slightly longer than tarsus)." On comparison it will be seen that the bill not only is larger, but also is considerably more robust in form, with the opening of the nostril more rounded, though the bird as a whole is smaller. The general pattern of color and markings is closely similar in these two, except that in *Conopias* there is no colored crown patch. Hellmayr (Cat. Birds Amer., Pt. 5, 1927, pp. 136-137) recognizes the genus in listing three races of *Coryphotriccus parvus*. The proposal of de Schauensee (Spec. Birds South Amer., 1966, p. 347) to place it in *Conopias* on the basis of what is said above does not appear valid.

MYIOZETETES CAYANENSIS HARTERTI Bangs and Penard:
Rusty-margined Flycatcher, Papamoscas Alicastaño

Myiozetetes cayanensis harterti Bangs and Penard, Bull. Mus. Comp. Zool., vol. 6, January 1921, p. 374. (Lion Hill, Canal Zone, Panamá.)

Rather small; breast yellow; crown and side of head black, with a prominent white superciliary extending back to side of hindneck; wings edged with rufous; crown patch orange and yellow.

Description.—Length 145-155 mm. Adult (sexes alike), crown and side of head brownish black; forehead gray mixed with white; a broad white superciliary stripe extending back to side of nape; a large, partly concealed crown patch of bright orange, becoming yellow on the sides and basally; hindneck, back, scapulars, rump, upper tail coverts, and lesser wing coverts plain olive; rest of wings and tail grayish brown; primaries and outer secondaries edged with cinnamon-rufous; larger wing coverts, inner secondaries and rectrices edged with light olive; chin and throat white; rest of under surface, including the axillars and under wing coverts bright yellow; inner edge of wing feathers cinnamon.

Young, crown plain brownish black, with no bright-colored crown patch; wings, including the coverts, tail, and upper tail coverts edged heavily with cinnamon-rufous; otherwise like adult.

In male and female, the iris varies from wood brown to mouse brown; bill, tarsus, toes, and claws are black.

Measurements.—Males (14 from Veraguas, Colón, Canal Zone, eastern Province of Panamá, Darién, and San Blas), wing 84.9–87.3 (86.2), tail 63.8–71.2 (67.1), culmen from base 14.3–15.7 (14.9), tarsus 18.1–18.9 (18.5) mm.

Females (10 from Canal Zone, eastern Province of Panamá, and San Blas), wing 81.1–82.9 (82.0), tail 63.9–67.9 (65.6), culmen from base 13.4–15.8 (14.7), tarsus 18.2–19.0 (18.5) mm.

Resident. Found in the Tropical Zone, on the Pacific slope; uncommon in eastern Chiriquí (San Félix) and Veraguas (Zapotillo, Paracoté); recorded in the southern Canal Zone, and locally common through eastern Province of Panamá and Darién; on the Caribbean side fairly common from the Río Indio, Colón (including the headwaters in northern Coclé), and the Canal Zone eastward to the Colombian boundary; to 600 meters on Cerro Pirre.

This species, one of South America, has its northern limit in Panamá, mainly in limited distribution in the eastern half of the Republic. On the Pacific slope it is uncommon near Panama City. To the west, Griscom collected it on the Río San Lorenzo, Veraguas, in 1924, and Aldrich took a pair February 15, 1932, at Paracoté, Veraguas, near the head of Golfo de Montijo. In western Veraguas I found several and collected a male on May 19, 1953, on the Río Bubi beyond Zapotillo. Eisenmann in September 1958 saw it there and near Las Lajas in eastern Chiriquí. The most western record is a female that I collected on the Río Dupí, west of San Félix, eastern Chiriquí, February 18, 1956. The bird has not been recorded elsewhere on this slope west of Panama City and the Canal Zone. On the Atlantic side, in 1952, I found it in small number along the Río Indio, in the western sector of the Province of Colón, from near the mouth inland to the foothills at El Uracillo, on the Caribbean slope of Coclé. From here eastward it is fairly common through the Canal Zone, eastern Colón, and presumably through the Comarca de San Blas, where I found it at Mandinga in the west and Puerto Obaldía on the Colombian boundary in the east.

These flycatchers, one of several small- and medium-size kinds with yellow breast, called *Pecho Amarillo* in Spanish, range in pastures, fields, small clearings, or other open areas, usually in the vicinity of water, where they rest quietly on open perches, turning the head quickly from side to side and frequently expanding the breast feathers so that the yellow color is conspicuous. Usually they are found singly or in pairs, several being encountered in company only when in the process of pairing. Then they may be quite vociferous,

though the usual call, a high-pitched *whee-ee* or *see-ee-ee*, has no great carrying power. This low note distinguishes it from the louder-voiced Vermilion-crowned Flycatcher, when the darker head markings and rufous wing markings of the present bird may not be seen.

Their food is divided between small beetles and other insects and the berries of trees and shrubs.

The nesting season in Panamá begins in January and continues for 6 months as they may be feeding young in July. The nest is a large rounded structure of grasses, rootlets, and similar vegetable material placed in small trees or shrubs at the borders of clearings or meadows, often beside some body of water. Skutch (Pac. Coast Avif., no. 34, 1960, p. 447) describes as exceptions one that was built in coarse grass standing in water, and others on small dead stubs at the water's edge on Barro Colorado Island. A nest found by E. A. Goldman, June 1, 1911, on the bank of the Río Maré near Portobelo, Colón, was fastened among forking twigs in a small tree overhanging the stream. Built of grass and plant fibers, it was a rounded ball with an opening in one side. The single egg was fresh. It is somewhat pointed sub-elliptical, in color slightly creamy white marked with scattered dots and small irregular spots of dull cinnamon-brown and dull gray, with most of these markings concentrated in a narrow wreath at the large end. The measurements are 23.5×17.0 mm.

The closely similar race *Myiozetetes cayanensis hellmayri* with type locality Cachaví, northwestern Ecuador, differs in slightly darker, more olive hue on the dorsal surface, with the rufous wing edging faintly darker, and in somewhat larger size. Males from Caldas, Cauca, and Huila in southwestern Colombia, with wing measurements of 90.0–94.0 (91.2) mm, appear fairly typical of this race. Specimens in a long series taken by Carriker from northern Chocó across northern Colombia to Magdalena show the average slightly darker dorsal coloration but are intermediate in size as they are only slightly larger than *harteri*. A series of 21 males has wing 87.0–91.4 (88.6) mm, thus showing approach to the population *harterti* of Panamá.

MYIOZETETES SIMILIS COLUMBIANUS Cabanis and Heine:
Vermilion-crowned Flycatcher, Papamoscas Copete Rojo

Myiozetetes columbianus Cabanis and Heine, Mus. Hein., vol. 2, 1859, p. 62.
(Cartagena, Bolívar, Colombia.)

Myiozetetes marginatus Lawrence, Ibis, April 1863, p. 182. (Isthmus of Panamá.)

Rather small; breast yellow; with a prominent white superciliary extending back to side of hindneck; sides of crown gray; adult with primaries edged with pale olive.

Description.—Length 155–165 mm. Adult (sexes alike), crown rather dark gray with the forehead dotted with white; concealed crown patch bright orange-red, with base yellow; broad superciliary white; back, scapulars, rump, and lesser wing coverts olive-green; upper tail coverts, grayish brown; wings (except lesser coverts) grayish brown with pale yellowish olive edgings; tail grayish brown; lores and side of head dusky-brown; throat and upper foreneck white; rest of under surface with axillars and under wing coverts bright yellow.

Immature, like adult but without the orange-red crown patch; wings and tail narrowly edged with cinnamon.

In several males the iris varied from light buffy brown to mouse brown; bill black; tarsus and toes fuscous-black to black; claws black.

Measurements.—Males (10 from Chiriquí, Coclé, Los Santos, Province of Panamá, and Canal Zone), wing 86.8–89.5 (88.3), tail 67.0–72.9 (69.8), culmen from base 15.9–17.1 (16.4), tarsus 18.2–18.8 (18.5) mm.

Females (10 from Bocas del Toro, Chiriquí, Los Santos, Herrera, Province of Panamá, and Canal Zone), wing 80.2–85.1 (83.0), tail 62.3–68.1 (65.4), culmen from base 15.7–16.9 (16.1), tarsus 18.1–19.0 (18.5) mm.

Resident. Common locally, in the lower Tropical Zone in western and central Panamá; on the Pacific slope, from western Chiriquí to the Río Majé in the eastern sector of the Province of Panamá, including the western side of the Azuero Peninsula (Río Mariato), and the southern end in southwestern Los Santos (Río Guánico, at Las Palmitas); on the Caribbean side from western Bocas del Toro to the lower Chagres Valley in the eastern sectors of the Provinces of Panamá and Colón; in western Chiriquí to 1300 meters near El Volcán, casually to 1900 meters above Cerro Punta.

There are two records for the Azuero Peninsula, one a bird taken by Aldrich (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, p. 102) on the western side at the Río Mariato, inland from the lower Golfo de Montijo, and one that I collected on January 21, 1962, on the Río Guánico, near Las Palmitas, in southwestern Los Santos. I have not found it in extensive travel on the eastern side of the peninsula.

Currently the range of the race *columbianus* has been considered to be continuous from southwestern Costa Rica and western Bocas del Toro through Panamá, northern Colombia, and northern Venezuela. In the present survey, in Panamá I have no record of it for the whole of Darién. For Comarca de San Blas also there appear to be no specimens, the only report being sight records by D. Sheets at Puerto

Obaldía and La Bonga, near the Colombian boundary. From Venezuela through Colombia it is regular in occurrence west to the middle Magdalena and middle Cauca valleys. Westward, there is one specimen record at Tierra Alta, Córdoba, on the middle Sinú. It appears that there is an extensive area in which the bird is absent or very rare as it has not been reported from the Atrato Valley, or in the whole of the Department of Chocó along the Pacific Coast.

The Vermilion-crowned Flycatcher, like the preceding species, is found in open areas along the banks of the larger streams, along the borders of fields and pastures, and to some degree in low second-growth forest and thickets (rastrojo), ranging also across broader open areas where roadside wires and fences offer suitable perches. It comes regularly to suburban areas and around country houses.

The voice as a whole is more varied, part of its calls somewhat more vociferous, though many are soft, somewhat sibilant and with little carrying power. Skutch in his account of the life history (Pac. Coast Avif. no. 34, 1960, pp. 427-446) describes a dawn-song in a male, a repetition of the common notes, heard during the nesting season. Soft notes of greeting are used by the pair around the nest. This structure is a domed ball of soft grasses and other vegetable fibers, rather large in size, with an entrance in one side near the top. This may be constructed wholly anew, or may be built on an old cup-shaped nest of some other small bird as a base. The entrance often is an untidy opening, fringed on the outer side with straggly grass heads. The location ranges from less than 2 to more than 15 meters above the ground, and varies from the open top of a stump to a site partly hidden among the branches of a thorn tree. Often one will be found close beside a wasp nest, or in a tree with stinging ants living in its hollow thorns. In such close association birds and insects seem to live in harmony. Frequently the nest is located over water. Eggs number from two or three, rarely four in a set. The nesting season extends from February through June. Four sets in the U.S. National Museum collected by E. A. Goldman near Gatun, Canal Zone, April 26 and May 8, 1911, include three of three eggs and one of four. In form the eggs are between subelliptical and oval, in color from faintly creamy white to white, spotted rather finely with cinnamon to chocolate-brown (varied as usual to gray or lavender where the pigment is overlaid by a film of shell deposit). In most the markings are grouped at the larger end, often as a cap or wreath, occasionally with the rest of the surface plain without markings. Measurements are as follows: two eggs in a set of three (one broken), 22.3×17.8 , 22.6×16.9 mm; set of three, 21.3×16.2 ,

21.7×16.2, 21.8×15.5 mm; set of four (one broken) 21.5×16.1, 21.9×16.8, 22.9×16.5 mm; set of three 22.2×16.5, 22.9×16.3, 23.4×16.5 mm. At hatching the young are covered scantily with light gray down.

Nest-building and incubation fall to the female alone, but with the male in close attendance. In due course he shares in feeding the young. The latter may remain with the parents when fully grown so that from five to six individuals may be associated for a period in loose company. Skutch has recorded young out of the nest, but still under parental care roosting "in a compact row on an exposed twig of a guava tree." Hallinan (Auk, 1924, p. 318) recorded a nest at Gatun built on the same limb with one of the Yellow-bellied Elaenia. At the border of the marsh at La Jagua in the savannas east of the Río Pacora, I found a nest of this species and one of the Rusty-margined Flycatcher located only 4 meters apart in the open branches of a small tree. The two nests were similar in form but that of the present species was about one-third less in bulk.

While these are active flycatchers of flying prey, around houses with lawns they come regularly to the ground and hop slowly, peering about, often with the tail cocked over the back, searching for spiders and insects. They also have this habit of ground feeding on open gravel bars in streams. A considerable part of their food is taken from the berries of the royal palm, and they are regular visitors to other fruiting trees in the forest edge. Skutch (loc. cit., p. 428) recorded that at open stream borders they may "venture into shallow pools up to their thighs to catch small tadpoles."

Some examined from the Cauca and northern Magdalena valleys across to northern Venezuela are very slightly darker above than the average of those of Panamá, but many from both series are too similar to allow clear separation in two subspecies. Size also is almost identical. The darker shade in the few from Colombia and Venezuela appears as a faint variation toward the darker dorsal coloration of the nominate race *similis* found from southeastern Colombia and southern Venezuela to the Guianas and northeastern Brazil.

MYIOZETETES GRANADENSIS Lawrence: Gray-capped
Flycatcher, Papamoscas Copete Gris

Rather small; breast yellow; forehead and a superciliary extending only slightly behind eye, white; crown gray; lores and side of head slaty-black; wing edging olive.

Description.—Length 150–165 mm. Adult male, crown and hind-

neck gray; forehead and a narrow superciliary, extending a short distance back of the eye, white; center of crown with a partly concealed patch of orange-red, these feathers basally yellow; back, scapulars, and rump olive-green; upper tail coverts dark olive edged with olive-green; wing and tail dusky; rectrices edged with pale olive; remiges, greater and middle wing coverts margined with grayish olive; lores, space below eye, and auricular region dusky; chin and throat white, in some tinged faintly with yellow; malar area also white, faintly lined with pale gray; rest of under surface, with axillars and under wing coverts bright yellow; sides of upper breast streaked indistinctly with gray; inner margin of wings very pale buff.

Adult female, like the male but in most without an orange crown patch; where present this crown patch hidden and much reduced in size.

Juvenile, in general like the adult but with no crown patch, and with white area of forehead reduced; crown and hindneck grayish olive-green; wings, tail, and upper tail coverts edged with rufous or cinnamon; inner margins of wing feathers cinnamon-buff.

The species is distributed widely from eastern Honduras southward through Central America, and in South America from Colombia and southern Venezuela south to Bolivia and western Brazil.

Two slightly different subspecies are found in Panamá, the nominate race being the more common.

MYIOZETETES GRANADENSIS GRANADENSIS Lawrence

Myiozetetes granadensis Lawrence, Ibis, vol. 4, January 1862, p. 11. (Isthmus of Panamá: Lion Hill, Panama Railroad, Canal Zone.)

Characters.—Slightly paler on the dorsal surface; white of forehead slightly more extensive; under surface faintly lighter, brighter yellow. Juvenile with the lighter edging on wings and tail slightly paler, more cinnamon-buff.

A male, from the Candelaria Hydrographic Station on the Río Pequení, back of Madden Lake, collected March 7, 1961, had the iris pale mouse brown; bill black; tarsus and toes fuscous; claws black. Another male, from Gago, Coclé, January 23, 1963, had the iris buffy brown, bill black; tarsus and toes black. A female at Puerto Armuelles, Chiriquí, January 30, 1966, had the iris light yellowish brown; tarsus and toes fuscous-brown, claws black. Eye color apparently is lighter, more yellow in the older birds; duller, browner in those less than a year old. The light-colored eyes of adults are often visible in life when the light is favorable.

Measurements.—Males (10 from Chiriquí, Bocas del Toro, Canal Zone, Panamá, and Colón), wing 82.2–88.7 (85.7), tail 66.8–71.7 (69.4), culmen from base 14.8–16.7 (15.7), tarsus 18.1–18.6 (18.3) mm.

Females (10 from Chiriquí, Canal Zone, Colón, and Panamá), wing 79.2–84.7 (80.7), tail 61.4–66.3 (64.2), culmen from base 14.5–15.8 (15.0), tarsus 17.4–18.5 (18.0) mm.

Resident. Widely distributed, but found locally, in the tropical lowlands from near the Costa Rican boundary in western Chiriquí (Puerto Armuelles, Bugaba, Divalá) eastward (San Félix); Veraguas (Soná), the eastern side of the Azuero Peninsula in Los Santos (Pedasí, Tonosí), and Coclé (Gago, El Valle); through the Province of Panamá west and east of the Canal Zone to the Río Majé; to 1300 meters on the western side of Volcán Barú; and on the Caribbean side from western Bocas del Toro east through the lower Chagres Valley and eastern Colón (Portobelo).

In the original description Lawrence gave the type locality as "Isthmus of Panama." Ridgway (U.S. Nat. Mus., Bull 50, pt. 14, 1907, p. 452) made this more definite by citing it from Lion Hill.

In my acquaintance with this bird in life it has seemed to be somewhat more active than the two related species in the genus. Like the others, they range in open areas at the borders of pasturelands and fields, in trees along open streams, and near second-growth thickets, not in heavy stands of forest. They find lines of wire and fence rows attractive, and come to open suburban areas and around country homes. The calls, while resembling those of the Vermilion-crowned Flycatcher, are louder. The morning calls especially are more vociferous. On the whole, they also seem more active, often resting for a period with the tail cocked over the back and wings drooped, and then changing to the more usual erect position normal in related species of this family.

They eat quantities of small berries, visiting fruiting trees in company with other flycatchers. And also make constant sallies to seize flying insects. In this they may swing gracefully in a wide circle in returning to the lookout post on a dead branch or wire.

Their large nests, domed, with the entrance in the side near the top, are placed in trees and shrubs, often in those with thorny branches, frequently also near the nests of wasps. At times the old nest of some other small bird is taken as a base in beginning construction. The location may be low or fairly high, usually with little or no attempt at concealment. It may be in a tree occupied also by

the Vermilion-crowned Flycatcher, where the two live peacefully even though their homes may be only a few meters apart.

In Panamá the nesting season begins in February and continues through May.

Skutch writes (loc. cit., p. 411) that the usual set is of three eggs, occasionally two, and rarely four. The color is "dull white, speckled and coarsely blotched with pale lilac and shades of brown, chocolate and burnt umber." In a series the measurements ranged from 20.6–25.0×15.9–17.5 mm, with the average for 53 eggs 23.3×17.0 mm.

The female incubates alone, calling and singing regularly in the nest, with the male resting near. When the young appear, the male assists in feeding them. Young call frequently and in noisy manner in the nest. Skutch noted them in family groups until September and October, when apparently the young may separate in pairs.

MYIOZETETES GRANADENSIS OCCIDENTALIS Zimmer

Myiozetetes granadensis occidentalis Zimmer, Amer. Mus. Nov. no. 963, November 18, 1937, p. 22. (Barbacoas, Nariño, Colombia.)

Characters.—Slightly darker on upper surface; white of forehead somewhat less in extent; slightly deeper yellow on lower surface, with the throat averaging faintly yellowish. Immature, with brown edging on wings and tail slightly darker, more rufous.

Measurements.—Males (10 from Darién and northwestern Colombia in Chocó and Córdoba), wing 84.0–88.1 (86.0), tail 65.6–70.8 (68.5), culmen from base 14.1–16.7 (15.3), tarsus 18.2–18.9 (18.6) mm.

Females (10 from Darién and northwestern Colombia in Chocó and Antioquia), wing 78.2–83.6 (80.7), tail 60.6–68.7 (63.5), culmen from base 14.0–15.8 (14.6), tarsus 18.0–18.8 (18.3) mm.

Resident. Found locally in the Tropical Zone through Darién and eastern San Blas.

This race is less abundant than the western one because of the forests that cover most of Darién. It is found mainly along the streams in the larger valleys, ranging out as the land is cleared for planting and for pasture. Habits and mannerisms are those described for the nominate race. In eastern San Blas to date it has been recorded only at Permé. In Darién, at Jaqué I collected one from a high perch in an open pasture grown with guayaba bushes. Near the mouth of the Imamadó, on the upper Río Jaqué, I found a pair over the river at the border of a small clearing. Near the mouth of the Río Paya in the Tuira River Valley they came to feeding trees

and fruiting guarumos near our camp, and also were found in small number along the broader reaches of the river.

Beyond Panamá this form ranges through western Colombia to northwestern Ecuador, and from the Caribbean coast through Antioquia and Bolívar to the middle Magdalena Valley.

PITANGUS SULPHURATUS GUATIMALENSIS (Lafresnaye):
Great Kiskadee, Cristofué

Saurophagus Guatimalensis Lafresnaye, Rev. Mag. Zool., ser. 2, vol. 4, October 1852, p. 462. (Guatemala.)

Large; yellow breast; throat, forehead, and line over eye white; crown black; wings rufous.

Description.—Length 215–225 mm. Adult (sexes alike), crown and side of head black with a large concealed central patch of bright yellow, tending toward orange; forehead and a broad line over eye, extending back across the nape, white; plumes projecting forward over nostril, gray; hindneck, back, scapulars, and rump, olive-brown: upper tail coverts edged with cinnamon-rufous; tail grayish brown, edged in varying amount with cinnamon-rufous; wings blackish brown, the coverts edged narrowly, the primaries and secondaries widely, with cinnamon-rufous; chin, throat, and malar region white; rest of under surface, including axillars and under wing coverts, lemon yellow; inner webs of wing feathers cinnamon.

Juvenile, without yellow patch in crown; rufous edgings on wings more extensive, and usually paler; otherwise like adult.

According to notes by F. H. Kennard, the iris is mummy brown, bill and tarsus black.

Measurements.—Males (10 from Bocas del Toro and Canal Zone), wing 115.3–120.6 (117.6), tail 86.4–91.5 (89.0), culmen from base 29.0–33.4 (30.8), tarsus 24.2–27.5 (26.0) mm.

Females (10 from Bocas del Toro), wing 108.2–116.6 (112.7), tail 76.6–90.1 (82.4), culmen from base 29.2–33.5 (30.9), tarsus 23.7–26.8 (25.6) mm.

Resident. Common in western Bocas del Toro; recently appeared and has become established in the Canal Zone (Ancon, Balboa), adjacent eastern Province of Colón, and Province of Panamá, in the eastern suburbs of Panama City, and at Playa Coronado in the west (two adults and a grown juvenile, May 31, 1971, Eisenmann).

The first specimens known for Panamá, four males and a female, were collected February 11 to 22, 1926, at Almirante, Bocas del Toro by F. H. Kennard (Kennard and Peters, Proc. Boston Soc. Nat.

Hist., vol. 38, January 1928, p. 457). Simultaneously Griscom (Amer. Mus. Nov. no. 293, January 12, 1928, p. 1) listed the Kiskadee by scientific name only from skins collected by R. R. Benson at Almirante and Cocoplum, Bocas del Toro, in early 1927. Kennard reported that he found it "common and conspicuous, particularly in coconut groves and on brushy hillsides." M. A. Carriker, Jr. (Ann. Carnegie Mus., vol. 6, no. 4, August 1910, pp. 688-689) collected specimens and recorded the Kiskadee as common on the "Río Sicsola" in southeastern Costa Rica. This stream, now known as the Río Sixaola, marks the boundary in this area between the Provinces of Bocas del Toro in Panamá and of Limón in Costa Rica. Carriker lived on the Costa Rican side from late January 1904 to early August 1905 in a camp overlooking the river, located between 8 and 10 kilometers downstream from Sibube on the Panamanian side. The indication is that the Kiskadee has been resident for more than 60 years, probably much longer, in the area. Presumably its spread in range has come through extensive forest clearing in recent years along the Caribbean coast.

From detailed records furnished by Eugene Eisenmann, the Kiskadee was first identified in the Canal Zone on December 4, 1955, when J. E. Ambrose saw two at Coco Solo. Soon after he saw others at Coco Solito, Mt. Hope, Cristobal, and Rainbow City. Eisenmann, guided by Ambrose, on June 19, 1956, saw them at New Cristobal and Gatun Dam, and the following year Ambrose found a nest. In August and September 1958, the bird was common on the Caribbean slope in the Canal Zone, and on September 2 Eisenmann saw one in the suburbs of Panama City. Later, in May 1961, he found a pair in this area. Since then the bird has become well established in Ancon and Balboa on the Pacific slope. It was breeding also at Gamboa, and on April 14, 1961, Eisenmann saw one in the laboratory clearing on Barro Colorado Island. It is common also at Río Piedras, in the eastern sector of Colón.

Two specimens collected in the Canal Zone, one by E. S. Norton near Gamboa, October 26, 1965, and one by Storrs Olson at Miraflores Lake, May 2, 1966, both agree with those of the race *guatimalensis* represented in Bocas del Toro.

Around Bahía Almirante, and from Changuinola to the Río Sixaola, I found these birds common in 1958. In form they show heavy bodies and short tails, with attractive color pattern. Usually they rest quietly on open perches, except for turning the head to

look about, or occasionally twitching the wings. Regularly their loud calls repeat the common name *kis-ka-dee-ee-ee*, with various other loud, strident sounds. It is usual to see two or three resting near one another, a number increased occasionally to ten or a dozen. Frequently they come down to the ground where they rest quietly, moving about by hopping. Following a heavy rain, I saw one on a low perch where it could reach the ground, watching for earthworms. When a worm appeared, the bird seized it by one end, carried it to a higher perch, beat it against this branch several times before starting at one end to gulp it down. They eat many insects, small lizards, and are also reported to seize small minnows occasionally. Berries and drupes of various kinds are a regular part of the diet. It is common to see a bird regurgitate the seeds of these, especially when the pits are large. At our house in Almirante, two came to the ground to investigate a ripe banana that I had peeled and laid in the grass for the numerous orioles. Though after some watching the Kiskadees moved nearer in long hops, they were suspicious, until finally one made a quick stab at the fruit and then with bill full flew to a perch and swallowed.

Males displayed by raising the body erect, spreading the wings widely and moving them tremulously while calling loudly. The nest is a fairly compact, globular mass of vegetable fibers, partly stems and straws of dried grasses, held together by long filaments of fine rootlets. The entrance, in the upper part of one side, allows a view of the finer material of the lining. A nest collected by Dr. Pedro Galindo May 15, 1962, near Almirante, measured 250 by 220 mm with a height of 130 mm. The inner chamber was 125 mm in diameter. Another secured June 13, less bulky than the one described, was made almost entirely of long, fibrous rootlets, with only scattered bits of dried grasses. The inner lining also was of finer materials. It measured approximately 180 by 200 mm, with a height of about 120 mm. The eggs, of attractive appearance, are pale cream-colored, varying somewhat in depth of tint, with scattered blotches and smaller spots of dark reddish brown varying to bluish gray where overlaid lightly by a deposit of shell. Often the markings form a wreath around the larger end.

Kiskadees seem to show little belligerence toward smaller birds. Once I saw a Baltimore Oriole come to rest almost within reach of one, but with no reaction on the part of the Kiskadee.

The form under discussion ranges north to northern Guatemala.

PITANGUS LICTOR PANAMENSIS Bangs and Penard: Lesser
Kiskadee, Pecho Amarillo Orillero

Pitangus lictor panamensis Bangs and Penard, Bull. Mus. Comp. Zool., vol. 62, April 1918, p. 78. (Lion Hill, Canal Zone, Panamá.)

Rather small; slender; white throat; yellow breast; black crown; bill long, slender; call notes low, wheezy.

Description.—Length 155–170 mm. Adult (sexes alike), crown black, with a large, nearly concealed, central patch of orange-yellow; forehead and lores dull gray; superciliary white, widened posteriorly and joined across the nape to its counterpart from the other side; lower hindneck, back, scapulars, and lesser wing coverts olive; upper tail coverts dark olive, edged with cinnamon; tail dark grayish brown, the central rectrices edged externally with cinnamon, the two outer pairs with light grayish brown; inner margins of all pale cinnamon; wings deep grayish brown, with the primaries and secondaries, and in some the middle and greater coverts, edged with cinnamon or rusty; side of head dull black; malar area, chin, and throat white, rest of under surface, including the axillars and under wing coverts, bright lemon yellow; inner webs of wing feathers edged with cinnamon-buff.

Juvenile, like adult, but black of head duller; crown patch absent, or faintly indicated by hidden narrow, central shaft lines of dull orange; rufous brown edgings of upper tail coverts, tail and wings paler and more extensive; yellow of under surface paler.

A male taken at Juan Mina, Canal Zone, January 18, 1961, had the iris dark brown; bill black; feet fuscous-black. Another, at El Real, Darién, January 8, 1964, was similar except that the claws were black.

Measurements.—Males (10 from Canal Zone, eastern Province of Panamá, and San Blas), wing 86.0–88.5 (87.1), tail 67.5–70.6 (69.2), culmen from base 23.3–25.5 (24.1), tarsus 18.2–19.0 (18.6) mm.

Females (10 from Canal Zone and eastern Province of Panamá), wing 80.5–82.9 (81.9), tail 63.7–67.0 (65.1), culmen from base 21.7–23.5 (22.7), tarsus 17.4–18.7 (17.9) mm.

Resident. Locally, fairly common in the tropical lowlands from the Canal Zone east through eastern Province of Panamá and Darién, and through eastern Colón and the Comarca de San Blas. They are casual in occurrence from the Pacific side of the Canal Zone east to the Río Pacora, locally common on the Caribbean slope throughout the lower Chagres Valley, including the shores of Gatun Lake.

Their main habitat is in marshy areas along the open shores of

the larger rivers and the borders of mangrove swamps. On the Caribbean coast at Mandinga, San Blas, three came from the cover of mangroves to a pool of fresh water where they drank and bathed, and then returned to the salt environment of the swamp. Bushes and low trees standing in shallow freshwater marshes are a common haunt. Normally they rest on perches near or over the water, and seldom rise to high commanding posts. In this, and in their softer notes, they differ completely from the larger Kiskadee, which they resemble so closely in color and in pattern of markings. Usually they are found in pairs, resting near one another. Usually also they are tame and are attracted easily by squeaking sounds, when they come near with low, wheezy calls of no great carrying power. These are plaintive chattering sounds, *pree-ee-ee-pree-a*, or *whee-ee-ee whee-o*, in which the first notes are uttered slowly, drawled and lengthened, the latter calls more quickly. Around larger bodies of water they range in the open to bushes and low trees over grassy areas.

The nest of this species was first described by the Penards (Vogels van Guyana, vol. 2, 1910, p. 246) as bowl shaped and rather flat, made of grass and leaves. This was verified by Haverschmidt (Auk, 1957, pp. 240-241). As this differs completely from the rounded, covered globe with the entrance near the top at one side of the Great Kiskadee, the identification was questioned by some, more recently by T. A. W. Davis (Auk, 1961, pp. 276-277). Verification of the earlier account came immediately from Haverschmidt (Auk, 1961, pp. 277-278), from W. John Smith (Auk, 1962, pp. 108-111), and from E. O. Willis (idem, p. 111). At the Barro Colorado Island laboratory I have examined a nest collected by Willis on the island shore on August 13, 1962. This nest was located amid grasses above the top of a stump standing in water. It was of open construction of fibrous vegetation on a base of coarse stems and bits of vine. The cup was approximately 75 mm in diameter by 40 mm deep, very small, even for so slender a bird.

Hellebrekers (Zool. Med. Rijksm. Nat. Hist. Leiden, vol. 24, 1942, p. 260) described the long series of eggs of the nominate race *Pitangus lictor lictor* in the Penard collection from Surinam as broadly oval to spherical in form, without gloss, whitish to yellowish cream in color, marked heavily with dark purplish brown, reddish brown, to nearly black, mainly on the larger end, in some forming a ring or cap. Size ranged from 18.7×16 and 19.8×14.3 to 20.7×16.0 and 22.0×17.2 mm, with 20.7×16.0 mm as the average of 50 specimens.

The race *panamensis* found through eastern Panamá and across northern Colombia differs from the nominate form only in slightly larger average size. Measurements of a small series of *P. l. lictor* are as follows: Males (10 from Venezuela and Brazil), wing 89.5–93.5 (90.8), tail 67.5–74.8 (71.9), culmen from base 22.5–25.1 (23.8), tarsus 19.0–21.6 (19.9) mm. Females (10 from Venezuela and Brazil), wing 81.4–87.4 (84.6), tail 64.7–71.0 (68.1), culmen from base 22.1–25.2 (23.7), tarsus 18.1–19.0 (18.4) mm.

Assignment of *lictor* to the genus *Pitangus* follows current usage. Actually while the species in question is like *P. sulphuratus* in colors and pattern of markings, it differs decidedly in its calls, manner of life, and nesting. In addition, details of form in the palatal region of the skull also differ widely in the two. It is in fact a separate entity as suggested by Haverschmidt (cit. supra, p. 241). A detailed study in life should assist in clarifying the status of the two in relation to one another, probably with *lictor* placed in a separate genus.

**MYIARCHUS CRINITUS (Linnaeus): Great Crested
Flycatcher, Cabezota de Paso**

FIGURE 38

Medium size; upper surface grayish and brownish olive; lower breast and abdomen yellow; under side of tail cinnamon-rufous.

Description.—Length 185–200 mm. Adult (sexes alike), above olive to somewhat greenish olive, with the crown feathers browner, and darker on the centers; tail with middle pair of rectrices and outer webs of others brownish olive, in the outer two or three this color extended as a narrow line along the inner side of the shaft; the inner webs on the outer pairs cinnamon-rufous; wings dusky brown; middle and greater coverts and the secondaries tipped and edged with brownish white to dull white or yellowish white; central area of basal half or more of primaries edged externally with cinnamon-rufous; sides of head gray; auricular area olive; chin to upper breast gray, with the throat in some lined indistinctly with dull white; sides of upper breast and neck yellowish olive; lower breast, abdomen and under tail coverts light yellow; axillars and under wing coverts paler yellow; inner webs of wing feathers edged with pale cinnamon-rufous.

Juvenile, like adult, but upper tail coverts and outer webs of tail feathers edged with rufous; cinnamon-rufous edgings of primaries broader, with this color tipping the light edgings of the wing coverts.

Two very slightly different subspecies are included in these migrant visitors from the north, one averaging faintly darker. The differences are evident in the extreme examples but with intergradation through which allocation of numerous individuals is difficult. All may be identified only from comparison of specimens in hand.

They range through the lowlands, except that few are found in the

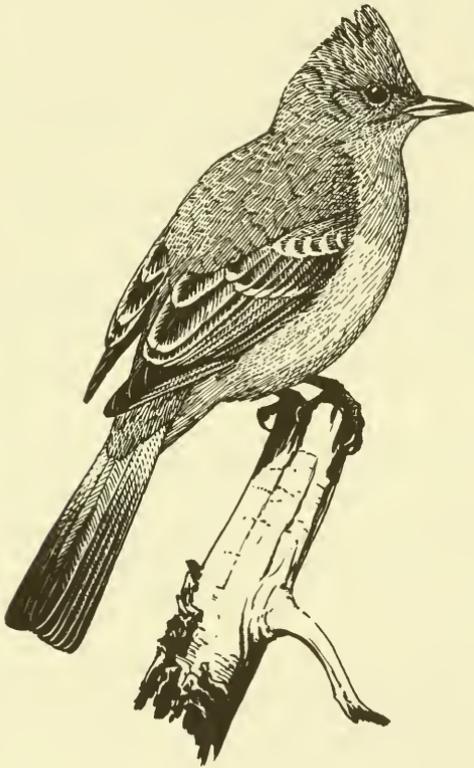


FIGURE 38.—Great crested flycatcher, cabezota de paso, *Myiarchus crinitus*.

savanna areas toward the sea on the Pacific slope. On the Azuero Peninsula they are found mainly on the western side and the southern end, more rarely on the eastern side where I recorded single birds in gallery forest on the Río Escotá near Santa María, Herrera, on March 8 and 9, 1948, and one near Pesé, Herrera, on March 24 following.

In fall flight the early records are September 11, 1965 (Eisenmann and Willis) and September 20, 1961 (Willis), with the birds common through October and November. While many appear to

pass on southward, they are common through the winter as I have recorded them regularly from late December through March and April. Late records in spring include one at Fort Davis, Canal Zone, May 11, 1961 (Eisenmann) and one on May 25, 1961, at Barro Colorado by Willis (Living Bird, 1966, p. 192). Eisenmann recorded one at 700 meters near our quarters at Buena Vista, Chiriquí, March 4, 1960; Ridgely found one near Boquete, Chiriquí, November 9 to 11, 1968; Goldman collected one at 550 meters at Cana, Darién, February 28, 1912.

In general they are restricted to the mainland, though on Isla Coiba I collected one January 19, 1956. Elsewhere in the Gulf of Chiriquí I recorded one March 23, 1962, on Isla Brincanco, in the Contreras group, and several on Isla Parida February 2 to 7, 1963. Others were recorded on Isla Gobernadora January 8 to 10, and Isla Cébaco, January 15, in the Gulf of Montijo. The only record for the Perlas Islands is of two taken on Isla Saboga April 9 and 13, 1904, by W. W. Brown, Jr. While several may be seen during a day, they range singly, or two or three near one another. A majority of the records in my own notes are of birds heard calling from forest cover.

A major part of their food in their winter quarters in Panamá is the small fruits of berry-bearing trees. They visit such trees regularly in company with the resident tropical birds that seek this supply. Eisenmann reports them feeding on the berries of mistletoe, and of uvero, *Hamelia nodosa* of the Madder family. In addition I have found large orthoptera and other insects in the stomachs of those I have collected.

MYIARCHUS CRINITUS CRINITUS (Linnaeus)

Turdus crinitus Linnaeus, Syst. Nat., ed. 10, vol. 1, 1758, p. 170. (South Carolina.)

Characters.—Dorsal surface slightly darker, grayer; bill somewhat larger and heavier.

Measurements.—Males (10 from Florida and South Carolina, at the end of May to mid-August), wing 100.3–104.0 (102.2), tail 88.4–92.8 (89.9), culmen from base 23.8–26.2 (24.8), tarsus 20.8–22.5 (21.5) mm.

Females (10 from Florida, Alabama, and Louisiana, in May and June), wing 93.4–99.7 (96.4), tail 79.7–86.6 (83.5), culmen from base 22.4–24.2 (23.3), tarsus 20.2–21.7 (20.8) mm.

Migrant from the north, and winter resident; specimen records follow.

Chiriquí: Puerto Armuelles, November 8, 1929, February 21, 1966; San Félix, December 1, 1931.

Bocas del Toro: Cocoplum, October 29, 1927; Almirante, October 4, 1964; Boquete Trail, 450 meters, above Chiriquí Grande, March 22, 1926.

Los Santos: Las Palmitas, January 23, 1962.

Province of Panamá: La Campana, March 4, 1951; Charco del Toro, March 24, 1950.

Canal Zone: Farfan, October 17, 1955.

Darién: Jesucito, April 9, 1922; Boca de Paya, Río Tuira, March 15, 1959; Pucro, February 5, 1964.

Isla Gobernadora: January 8, 1965; Isla Saboga: April 9, 13, 1904.

The breeding range in the north extends from southeastern Louisiana and southern Mississippi to southern South Carolina, and southward in the lowlands of Georgia through Florida. Obviously the total population is small, a fact reflected in the few individuals found in the considerable series of migrant birds seen in winter from the Republic of Panamá.

MYIARCHUS CRINITUS BOREUS Bangs

Myiarchus crinitus boreus Bangs, Auk, vol. 15, no. 2, April 1898, p. 179. (Scituate, Massachusetts.)

Characters.—Dorsal surface averaging lighter, somewhat olive greenish gray; bill somewhat smaller and slightly less in bulk, often slightly shorter.

Measurements.—Males (10 from North Carolina and Tennessee to Minnesota, Wisconsin, Virginia, and Maryland, from late April to early July), wing 100.1–106.2 (103.4), tail 87.3–92.5 (89.6), culmen from base 22.7–24.6 (23.0), tarsus 20.4–21.8 (21.3) mm.

Females (10 from Kentucky and Virginia to Kansas, Pennsylvania, and Rhode Island, in May, June), wing 93.9–99.1 (96.4), tail 80.6–85.2 (83.1), culmen from base 20.6–23.6 (22.1), tarsus 20.2–21.4 (20.7) mm.

Migrant from the north, and winter resident. Common; specimen records range from western Chiriquí and Bocas del Toro, eastward, including the wooded and partly wooded areas of the Azuero Peninsula, to eastern Darién and eastern San Blas. Island records are as follows: Isla Parida, Isla Coiba, Isla Cébaco, Isla Gobernadora.

The breeding range extends from southeastern Saskatchewan east

in southern Canada to Nova Scotia, southward to south-central Texas, central Louisiana, northwestern Georgia, and central South Carolina. Through this vast area the bird is locally common. As the total population of this race is large, it forms the great majority of those that come to Panamá, as indicated by the many specimens.

MYIARCHUS FEROX PANAMENSIS Lawrence: Short-crested
Flycatcher, Cabezota Común

Myiarchus Panamensis Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 7, May 1860, p. 284. (Atlantic slope of the Canal Zone near the Panama Railroad.)

Medium size; grayish olive above; foreneck and breast light gray, rest of lower surface yellow.

Description.—Length 185–200 mm. Adult (sexes alike), upper surface grayish olive; feathers of crown with darker shaft lines; upper tail coverts somewhat more grayish; tail dark grayish olive, with tips of rectrices, and outer web of lateral rectrix, paler; wings dusky-olive; lesser and middle coverts tipped widely with grayish olive; tips of greater coverts indistinctly paler, whiter, inner primaries edged narrowly with dull white; secondaries tipped and edged with grayish white; a finely dotted white line around the eye; lores and ramal area dull gray; throat and upper breast gray; rest of under surface light yellow; axillars and under wing coverts yellowish white, changing to yellowish olive on the sides; inner margin of under side of wings buffy white.

Juvenile, primaries and rectrices edged widely with cinnamon-rufous.

A male, taken at Pacora, Panamá, March 23, 1961, had the iris wood brown; bill black; tarsus and toes dusky neutral gray; claws black; inside of mouth orange. Another male, from Isla Parida, Golfo de Chiriquí, February 5, 1963, had the iris mouse brown; base of bill fuscous, rest black; tarsus and toes fuscous-black; claws black.

A female, from La Jagua, Panamá, January 13, 1962, had the iris wood brown; base of mandible grayish white, rest of bill black; tarsus and toes dusky neutral gray; claws black. In another, from Las Palmitas, Los Santos, January 22, 1962, the base of the mandible was dull brownish white; other colors as in the first. A third of this sex, from El Llano, Panamá, February 4, 1962, had the iris wood brown; bill fuscous-brown, slightly paler at the base of the mandible; tarsus and toes dusky neutral gray; claws black.

Measurements—Males (10 from Chiriquí and Canal Zone), wing 91.5–96.3 (94.2), tail 86.3–92.0 (88.8), culmen from base 21.0–22.5 (21.7), tarsus 23.2–24.7 (23.8) mm.

Females (10 from Chiriquí, Coclé, Los Santos, Canal Zone, and Province of Panamá), wing 85.5–88.9 (87.5), tail 80.7–88.6 (83.8), culmen from base 21.0–24.0 (22.1), tarsus 22.5–24.6 (23.2) mm.

Resident. Common throughout the tropical lowlands on both slopes, from western Chiriquí and western Bocas del Toro (Almirante, Cocoplum) eastward, including the Azuero Peninsula, to Colombia; to 1280 meters elevation near El Volcán and 1220 meters at Boquete, Chiriquí. Islas Parida, Brincanco, and Afuerita, in Golfo de Chiriquí; islas Coiba and Ranchería; Isla Gobernadora, Golfo de Montijo; Isla Iguana, off the coast of Los Santos; islas Taboga, Taboguilla and Uravá; islas Pacheca, Saboga, Bayoneta, Málaga, Vivienda, Rey, Cañas, Santelmo, Moreno, Pedro González and San José, Archipiélago de Las Perlas.

This, one of the more plainly colored of the Yellow-breasted Flycatchers called *pechi-amarillo* from the yellow color of the under surface, is widely distributed through the Tropical Zone from the Costa Rican boundary eastward throughout the lowlands of Panamá and much of Colombia. In southwestern Chiriquí I found this bird in 1966 near Puerto Armuelles, where it had been taken earlier (November 26, 1929) by Mrs. Davidson. In adjacent Costa Rica, Slud (Amer. Mus. Nat. Hist. Bull. 128, 1964, p. 250) lists it at Rincón de Osa on Golfo Dulce. Sassi (Temminckia, vol. 4, 1939, p. 183) collected a female at Puerto Jiménez, on the end of the Peninsula de Osa at the entrance of this body of water. These records mark the western limit of the race on the Pacific Coast. In Bocas del Toro (where it had not been reported previously), in 1958 on February 11 I took one on Cayo Roldan, and February 22 recorded five (two collected) on Isla Pastores, both localities being in the southern part of Bahía Almirante. At the eastern end of the Republic they were common near Jaqué in March and April, 1946. On the Caribbean slope in the Comarca de San Blas this form is recorded at Mandinga, Bahía Caledonia, and Puerto Obaldía.

They are most common at the borders of woodland, and in brushy pastures, ranging also at the inner margins of mangrove swamps, and through the open gallery forest over inland hills. They are not seen in the denser stands where shade is heavy, but here may range in small number over the open surface of the high tree crown. This latter habitat was common for them in the extensive forests of Isla

Coiba, along the streams back of Chimán and Majé in eastern Province of Panamá, and also along the Río Indio in western Colón, and the Caribbean slope of northern Coclé.

The usual call is a high-pitched *whee-ee-ee*, a sound with little carrying power, though in the dawn-song this may become faster, louder, and somewhat more prolonged. They take wing quickly to seize passing insects, and also move about in search of such food. On Isla Coiba I saw one fly out at a passing butterfly, possibly in play as the insect was not seized. They also feed extensively on berries, being regular visitors to feeding trees. Though usually not wary, they may remain unseen except to a keen eye, as they are quiet in movement. On one occasion on Isla Taboga where they were common, in careful watching I located eight perched within a radius of 60 meters from where I stood.

The nest is placed in cavities in trees, usually somewhat concealed so that it is not easily seen. At the La Jagua Gun Club, in the savanna east of Pacora, Panamá, for years a pair has used a box placed for them on the side of the building. On March 24, 1964, I flushed a female from another nest site on a beam under the ceiling of the clubhouse, and collected the two fresh eggs. The nest material was a rather bulky mass of rootlets, slender bits of vine, and fragments of leaves, bound loosely with cobweb, approximately 140 by 120 mm, and 70 mm high. In one side the bird had shaped an open cup with the cavity 55 mm in diameter and 35 mm deep. The eggs were pale greenish white, marked heavily and irregularly with dark brown. One egg, short subelliptical in form, measured 21.6×16.9 mm; the other, subelliptical, was 23.1×16.3 mm. A nest found April 20, 1941, at Summit, Canal Zone, by Major-General G. Ralph Meyer was placed in the upper end of a 4-inch metal pipe set at an angle in the ground. The three eggs rested in a soft hollow of opossum fur and balsa down, with a length of shed snakeskin beside them. The form, ground color, and markings are more variable in these three than usual in eggs of the same set. In one, the shape is slightly long subelliptical, the ground color somewhat dull cream, with heavy markings of dark and light reddish brown, varying from tiny dots to irregular blotches. These coalesce in a wreath with irregular outline on the larger end. The second egg is somewhat elongated oval, with heavier markings of the colors found in the first. These coalesce to cover most of the larger end, with irregular, projecting points around the lower margin. The third is slightly pointed subelliptical, marked heavily with similar colors, but largely in elongate array parallel to

the central axis, varying from thin lines to broader, heavier form, and irregular blotches, coalescing to almost completely cover the smaller end. The three measure 25.2×17.3 , 26.0×18.1 , and 26.1×18.0 mm.

To the west on the Pacific side of central Costa Rica in the lowlands there is a grayer population, *Myiarchus ferox actiosus*, described by Ridgway. And along the Pacific slope of western Colombia one that also is grayer than the population of mainland Panamá, but differs from *actiosus* in being darker, slightly more olive-gray, with the crown somewhat lighter than the rest of the dorsal surface. This is the race *audens* Wetmore, described in 1953 from specimens collected by M. A. Carriker, Jr., at Nuquí on the coast of central Chocó.

MYIARCHUS TUBERCULIFER (Lafresnaye and d'Orbigny):
Dusky-capped Flycatcher, Cabezota Gorranegra

Tyrannus tuberculifer Lafresnaye and d'Orbigny, Syn. Av., Mag. Zool., vol. 7, cl. 2, 1837, p. 43. (Guarayos, Bolivia.)

Smaller than other species of the Crested Flycatchers (*Myiarchus*) found in Panamá; crown dull black; back greenish olive; anterior under surface light gray; lower breast and abdomen yellow.

Description.—Length 150–165 mm. Crown sooty brown to black; rest of upper surface olive to greenish olive, with upper tail coverts browner; tail dark grayish brown, with outer webs edged with rufous (in subspecies *bangsi*) or only slightly paler than central area (in subspecies *brunneiceps*); wings dusky; greater to lesser wing coverts edged with dull buffy brown; secondaries edged narrowly with dull white; inner primaries bordered narrowly with cinnamon-rufous to buff; foreneck and breast light gray; rest of under surface light yellow; axillars and under wing coverts pale yellow; inner webs of wing feathers edged with buff.

James Bond (Twelfth Suppl. Check-1. Birds West Indies, July 12, 1967, p. 4) holds that *Myiarchus barbirostris* (Swainson) of Jamaica, described in 1827, is conspecific with *Myiarchus tuberculifer* of 1837, so that the older *barbirostris* should be used as the species name for this group of subspecies. Lanyon (Bull. Amer. Mus. Nat. Hist., vol. 136, art. 6, 1967, pp. 342–346) from his studies of voice in these birds considers this not proven. He suggests instead that *barbirostris* should be treated as a separate monotypic entity. The question is one that requires further study for firm decision.

The species here accepted as *tuberculifer* is widely distributed from southern Arizona and New Mexico through México, Central America and South America to Paraguay, Brazil, and Argentina.

Numerous geographic races are recognized, based mainly on color, and to a lesser degree on pattern of markings. While the forms recognized may appear reasonably distinct in the central areas of their ranges, they merge in approach to one another where individual specimens may be of uncertain relationship. Two reasonably distinct races are found in mainland Panamá.

The inclusion by Nelson (Proc. Biol. Soc. Washington, vol. 17, 1904, p. 49) of "San Miguel Island," Archipiélago de las Perlas, in the distribution in Panamá under the name *Myiarchus nigriceps* was through error. The specimens that he had on loan from the Museum of Comparative Zoology were collected by W. W. Brown, Jr., at an Indian village called San Miguel on the northern slope of the Sierra Nevada de Santa Marta in Colombia, not "San Miguel," Isla del Rey, in the Gulf of Panamá, which Brown visited later.

Though widely distributed as a species, and often fairly common over a vast area in tropical America, little is known of nesting in the tropical forms. Belcher (Ibis, 1937, p. 236) in Trinidad, June 15, 1932, found a nest placed in a hole in a stump less than 5 meters from the ground. The cavity, padded with "dried weed-stems and moss, and lined with thin black horsehair-like fibres strongly woven together" held three fresh eggs. In these the buff ground color was "almost obliterated with blotches, longitudinal streaks, and tangled lines of dark purplish-brown, paler brown, and lavender-grey, most pronounced at the larger end." They measured 23.5×17.5 , 23.8×18 , and 24×18.2 mm. On April 17, 1933, he collected another set of three eggs from the same hole, similar to the first except that one egg was somewhat paler. These measured 23.5×17.3 , 24.0×18.0 and 23.0×17.5 mm. Birds from this island currently are assigned to the nominate subspecies *M. t. tuberculifer*.

Alexander Skutch (Pac. Coast Avif., no. 34, 1960, p. 398) records three nests from the lowlands of Honduras and Guatemala, two placed in hollows formed by decay in fence posts and the third in a deep hole in the broken top of a leaning tree trunk. The cavities in all held nests of soft vegetable materials, hair and feathers, and in one a fragment of snake skin. Two nests held four eggs, the other, three nestlings. The eggs were "dull white, heavily blotched and speckled with chocolate, especially in a wreath around the thick end. On the rest of the surface the markings tended to take the form of irregular longitudinal streaks, but on one egg dots rather than streaks were present." Range in size varied from 19.1×14.3 to 20.6×15.5 mm. In the area concerned these flycatchers currently are called *M. t. connectens*.

In Panamá these flycatchers inhabit tree cover at the borders of fields and pastures, the inner margins of mangrove swamps, and scattered open growth. They penetrate heavily forested areas mainly along the open courses of larger streams. They may remain in areas of shifting agriculture, in the quickly established second growth that fills cleared areas used temporarily for plantations.

They range alone, or in the nesting season in pairs, though often in sufficient abundance so that they are encountered widespread in such haunts.

The call, as I have heard it in Panamá, is not loud, but rather high-pitched, uttered slowly, represented in my field notes as *whee-ee-ee*, a sound uttered by both sexes usually without especial emphasis. In early morning and evening the notes may be repeated steadily for several minutes as the form of song usual to other species in this family. They are quiet birds that rest on slightly elevated perches, often sheltered partly by leaves so that their presence may be known only casually from their low calls. While occasionally belligerent, they are not as violently so as some related species of the family. Their food is largely insects, taken in the air or picked from leaves and twigs as they move about. They also come regularly in company with other forest birds to eat the berries found in feeding trees.

MYIARCHUS TUBERCULIFER BANGSI Nelson

Myiarchus lawrencei bangsi Nelson, Proc. Biol. Soc. Washington, vol. 17, March 10, 1904, p. 45. (Boquete, Chiriquí.)

Characters.—Crown somewhat dull black; back darker; primaries, and in some the outer tail feathers, edged with cinnamon-buff to cinnamon-rufous.

A female, taken at Puerto Armuelles, Chiriquí, February 11, 1966, had the iris dark brown; maxilla and tip of mandible fuscous-brown; base of mandible light wood brown; tarsus and toes fuscous-black; claws black.

Measurements.—Males (10 from Chiriquí and Bocas del Toro), wing 76.0–82.6 (79.2), tail 69.2–78.3 (72.3), culmen from base 18.6–21.4 (20.3), tarsus 19.1–20.1 (19.5) mm.

Females (10 from Chiriquí and Bocas del Toro), wing 73.2–78.7 (75.2), tail 66.3–70.7 (68.6), culmen from base 18.6–20.9 (19.8), tarsus 18.3–19.7 (19.0) mm.

Resident. Locally common and widely distributed on the Pacific slope in Chiriquí and Veraguas, including the western side and the southeastern tip of the Azuero Peninsula; on the Caribbean slope

in western Bocas del Toro; to 1800 meters on Volcán Barú near Cerro Punta and Boquete.

The larger series of specimens now available allows better understanding of the races represented in the Republic. The darker subspecies, *nigricapillus*, of adjacent Costa Rica intergrades along the western boundary with the present form *bangsi*, with the mixed population represented by birds from the Burica Peninsula, near Sereno in the highlands, and from Almirante in Bocas del Toro, variable in markings but related as a whole to the subspecies *bangsi*. There is one in the Havemeyer collection in the Peabody Museum at Yale from Sibube on the Río Sixaola at the Costa Rican boundary. The area concerned is too narrow and the population too varied to warrant inclusion of *nigricapillus* as a separate entity. Those of the Boquete area, the type locality of *bangsi*, though assigned by Blake (Fieldiana: Zool., vol. 36, 1958, p. 538) to *nigricapillus* are recognized here as *bangsi*.

In earlier studies, Aldrich (Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, 1937, pp. 103–104), with limited comparative material, assigned specimens that he had collected on the western side of the Azuero Peninsula to the eastern race *brunneiceps*. The series now at hand demonstrates that those of eastern Veraguas instead should be placed under *bangsi*. At the lower end of the Azuero Peninsula in 1957 I collected one, March 13, on the Río Caldera below Pedasí, and March 18 one (of two seen) on the Río Oria near Los Asientos, both in southern Los Santos. I did not find this bird in the open country in northern Los Santos and Herrera on the eastern side of the Peninsula, nor in southern Coclé beyond.

MYIARCHUS TUBERCULIFER BRUNNEICEPS Lawrence

Myiarchus brunneiceps Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 7, May 27, 1861, p. 327. (Atlantic slope, Panama Railroad, Lion Hill Station, Canal Zone, Panamá.)

Characters.—Crown sooty brown; back, scapulars, and rump paler, more greenish olive; primary edgings paler, buffy white.

A male, collected at Puerto Obaldía, San Blas, February 16, 1963, had the iris dark brown; maxilla black; mandible fuscous-black, tarsus, toes and claws black; tongue dull orange; rest of inside of mouth and gape pale greenish yellow.

Measurements.—Males (10 from Coclé, Province of Panamá, Darién and San Blas), wing 74.3–80.0 (76.7), tail 66.2–73.0 (69.7), culmen from base 19.2–21.6 (20.2), tarsus 19.0–19.6 (19.2) mm.

Females (10 from Coclé, Province of Panamá, Canal Zone, eastern Colón, Darién, and San Blas), wing 73.3–76.1 (74.5), tail 65.6–71.4 (67.7), culmen from base 18.1–20.3 (19.1), tarsus 18.6–19.9 (19.1) mm.

Resident. Common and widely distributed through the Tropical Zone, on the Pacific slope from the western sector of the Province of Panamá east through Darién; on the Caribbean side from the valley of the Río Indio in the western sector of the Province of Colón and northern Coclé east through the Canal Zone and the Comarca de San Blas to the Colombian boundary; to above 900 meters on Cerro Campana, 875 meters on Cerro Azul, 600 meters on the base of Cerro Tacarcuna and above Cana on Cerro Pirre.

Nesting appears to begin in March and April. On April 9, 1946, at Jaqué, Darién I found a pair in breeding condition. The following year, farther inland on the upper Río Jaqué in the same week, one at our camp gathered stray feathers for nest lining. March 9, 1950, on Cerro Chucantí, eastern Province of Panamá, one carried nesting material. At the old village site on the upper Río Tacarcuna, March 17, 1964, one gathered feathers from the playón in front of our camp and carried them to a tree cavity 10 meters above the ground. On March 21 following, at El Real, Darién, one brought nest material to a hole in a stub.

Stomachs of this race that I have examined have contained fragments of cicadas, several kinds of hemiptera, bits of an adult lepidopteron, ants and other hymenoptera, mixed usually with seeds from small berries.

As already stated, while not overly belligerent as a rule, once in eastern Darién I found several in high open tree tops being violently antagonistic to the many migrant Bay-breasted Warblers that moved with wings and tails flitting through the trees. Whenever these warblers appeared, the flycatchers drove at them, but in contrast paid no attention to numerous small native birds resting quietly near them in the same trees.

**SIRYSTES SIBILATOR ALBOGRISEUS (Lawrence): Sirystes,
Papamoscas Copetón**

FIGURE 39

Lipaugus albogriseus Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, May 1866, p. 9. (Lion Hill, Canal Zone, Panamá.)

Medium size; black crown, wings and tail; rump and under surface grayish white.

Description.—Length 175–185 mm. Adult (sexes alike), crown rather dull black; forehead, lores, and side of head slate-gray; hind-neck, back, and scapulars light gray, with a slight yellowish cast; upper back with slightly indicated dusky shaft lines; rump white; upper tail coverts dark gray, edged with grayish white; tail dusky, tipped lightly with grayish white; wings dusky black, coverts and secondaries broadly edged with white; foreneck and upper breast pale grayish white; rest of under surface, including axillars, under



FIGURE 39.—*Sirystes*, papamoscas copetón, *Sirystes sibilator albogriseus*, male.

wing coverts, and basal inner webs of primaries and secondaries, white.

Immature, gray and white, faintly buffy throughout.

An adult female, taken at the Peluca Hydrographic Station on the Río Boquerón, had the iris dark brown; tip of bill dull black; base of maxilla fuscous, that of mandible dull brownish white; tarsus and toes dark neutral gray; claws black; inside of mouth, including tongue, orange.

Measurements.—Males (10 from eastern Province of Panamá and Darién), wing 97.7–103.8 (101.4), tail 81.3–85.0 (83.2), culmen from base 18.9–21.3 (19.7), tarsus 18.1–19.7 (18.8) mm.

Females (10 from Colón, eastern Province of Panamá, and

Darién), wing 93.2–98.7 (95.8), tail 75.4–80.4 (78.1), culmen from base 18.1–21.0 (19.7), tarsus 17.8–19.3 (18.6) mm.

Resident. Uncommon. Recorded on the Pacific slope from western Veraguas (Soná), Cerro Azul, and Chepo east through Chimán and the Río Majé to eastern Darién, to 900 meters on Cerro Pirre; on the Caribbean side from the northern Canal Zone, near Piña, Gamboa, and the lower Chagres Valley, through eastern Provinces of Panamá and Colón, and San Blas to the Colombian boundary.

This forest species was little known until recent years, as Griscom in his list of 1935 reported only six specimens. It was described by Lawrence from one taken by McLeannan, supposed to have come from Lion Hill. Salvin received two (now in the British Museum), collected by Arcé in Veraguas, but without definite locality. One in the National Museum collection, taken by Heyde and Lux, April 19, 1888, is labeled Soná, Veraguas. Other early specimens in the Havermeyer collection at Yale came from Austin Smith at San Antonio on the lower Río Bayano, March 19 and 24, 1927. On March 23, 1949, I collected one in Bajo Grande on the headwaters of the Río Pacora in the Cerro Azul, and during April recorded several near Chepo. Near Chimán and on the upper Río Majé in February and March 1950 a number were recorded. Later I found them locally in the Tuira-Chucunaque Valley, and on the lower slopes of Cerro Tacarcuna. Other observations of the species were at Jaqué, and on the lower Río Jaqué in eastern Darién. On the Caribbean side, J. R. Karr has found them rather regularly back of Gamboa, where they have been recorded also by Eisenmann. R. S. Ridgely reported them at Río Piedras, Colón, in January 1968. West of the Canal, Dennis Sheets recorded *Sirystes* below Gatun Dam, toward Piña. In the lower Chagres Valley, March 1957, I found half a dozen on the ridge above the Río Boquerón near the old manganese mine, and in February 1961 took one above the Peluca Hydrographic Station back of Madden Lake. Wedel collected two in eastern San Blas, one at Ranchón (now in the Museum of Comparative Zoology) and one at Puerto Obaldía (in the University of Cincinnati Museum).

They range in the tops of the tallest trees where, unless they are calling, they may not be noticed. In February and March I saw them occasionally near the ground in clearings, moving about in a spirited manner with raised crests, apparently seeking nesting materials. At our camp at the old Tacarcuna village site on the head of Río Tacarcuna, Darién, one in such search, came under the thatched roof of our open rancho, where it saw several birds lying on the skinning

table and scolded at them, an attention that it transferred to me a little later as I bathed in the stream.

Their calls are high whistled notes, repeated rapidly, varied occasionally to noisy, chattering sounds. Though different in cadence, in high-pitched, rapid utterance they suggest the call of the Yellow-rumped Attila, a species that they resemble also in mannerisms and habitat. The feather coat on the body is unusually dense. I have noted also that the oil gland appears rudimentary, so small, in fact, that it is found only on close search.

I have seen no account of the nest and eggs. As the birds were noted occasionally examining cavities in tree trunks, they may nest in holes.

Stomachs examined held insect remains—a caterpillar, membracids, beetles of several kinds, bits of moths and hymenoptera, and seeds, apparently from a berry.

**ATTILA SPADICEUS (Gmelin): Bright-rumped Attila,
Pájaro Gritón**

FIGURE 40

Muscicapa spadicea Gmelin, Syst. Nat., vol. 1, pt. 2, 1789, p. 937. (Cayenne.)

Medium size; brown or dull green above, with buff or yellow rump; breast streaked.

Description.—Length 170–185 mm. Head with a slight crest; rictal bristles prominent. Adult (sexes alike), crown and hindneck dull grayish green or olive-green, streaked with dusky, the amount varying from heavy to nearly plain; in some mixed with grayish white on forehead; back, scapulars, and lesser wing coverts reddish brown to brownish or dull grayish green; rump and upper tail coverts from light cinnamon-buff to yellow, usually more ochraceous on the upper rump; wings and primary coverts dusky to dull black, secondaries and inner primaries edged with dull reddish brown; middle and greater coverts dull black, edged with dull cinnamon to buffy brown; tail dull grayish brown to brownish olive, more or less cinnamonous basally; rictal bristles black; lores, and usually the anterior feathers of the forehead, dull white to grayish white; lower eyelid lined narrowly with white; side of head dark like the crown, lined indistinctly with dull white and dusky; chin yellowish to grayish white; foreneck, breast, and sides grayish to yellowish, streaked heavily with dull gray, with shaft lines dusky; flanks yellowish to buff or cinnamon-buff; under tail coverts buff; axillars and under wing coverts cin-

namon-buff to pale yellowish white; inner edge of wing feathers white to buff.

These birds are tree dwellers found widely through the Tropical Zone, ranging less commonly over the lower subtropical mountain slopes. While primarily found hidden in the tree crown, they come regularly lower down, and then may be seen. They are frequent in the trees along streams, and as the species seems adaptable may be found in second growth, and also along lines of trees bordering marshlands or streams that cross open country, like those that meander through the savanna lands on the Pacific slope. Their

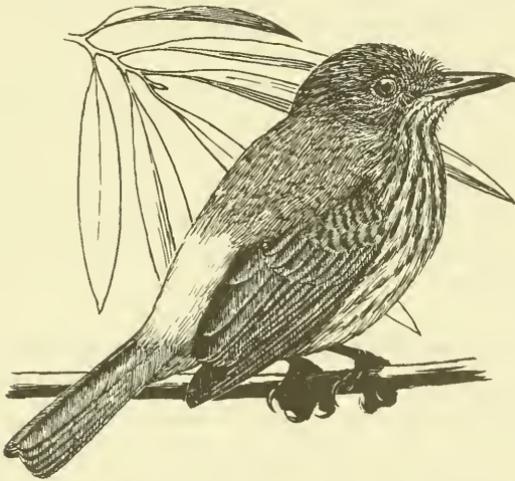


FIGURE 40.—Bright-rumped attila, pájaro gritón, *Attila spadiceus*.

presence is known most often by their strongly accented, steadily repeated calls, sounds that carry for some distance. Country inhabitants familiar with them recognize them as the *pájaro gritón* from these notes, though to many the bird remains merely a voice. Dr. Frank M. Chapman, on Barro Colorado Island, wrote these notes appropriately as "beat-it, beat-it, no-o-w," uttered slowly, with each syllable strongly accented. Both male and female call, though it has been my impression that the male is the more vociferous. Often the birds are silent for long periods, when their presence may remain unknown. Or, one may repeat the notes once or twice and then remain silent, without movement, hidden in its cover of leaves. When by chance the bird is seen, usually it is resting quietly on its perch.

In the early morning they may come to drink at the border of shaded stream banks or at small forest pools.

The species is widely distributed throughout much of tropical America from western and southern México through Central America and in South America to Perú and southeastern Brazil. In much of this area it is fairly common, so that numerous specimens are found in large museum collections. Two subspecies occur in Panamá, one in the east and one in the west. While *Attila spadiceus* has been placed in the Cotingidae, studies of the syrinx by Peter Ames (Peabody Mus. Nat. Hist., Bull. 37, 1971, pp. 37, 39, 160–161) and of the skull (not yet published) by Stuart L. Warter, indicate that the genus should be transferred to the New World Flycatcher family, the Tyrannidae, where the relationship seems nearest to the genus *Myiarchus*.

Individual variation in color is considerable, so that a specimen assigned from its locality to one form may tend toward the coloration of another. Brown-backed birds, for example, are found regularly in the general area of the race *sclateri* (which normally is green), but in series the two races may be separated. They give the impression of forms in which the differences marking the groups are not yet wholly stabilized.

ATTILA SPADICEUS CITREOPYGA (Bonaparte)

Dasycephala citreopyga Bonaparte, Compt. Rend. Acad. Sci. (Paris), vol. 38, 1854 (not earlier than April 3), p. 657. (Nicaragua.)

Characters.—Darker; more reddish brown on back; crown more heavily streaked with black; rump and upper tail coverts darker, more deeply buff; slightly larger.

A male, collected on Isla Parida, Golfo de Chiriquí, February 5, 1963, had the iris auburn; maxilla and tip of mandible fuscous; base of mandible dull neutral gray; tarsus, toes, and claws dark neutral gray. Another, taken at Puerto Armuelles, Chiriquí, March 7, 1966, had the iris bright reddish brown; base of mandible, basal two-thirds of cutting edge of maxilla, and extreme tip of maxilla and mandible dull brownish neutral gray; rest of bill fuscous-black; tarsus, toes and claws dark bluish neutral gray; under side of toe pads very dull honey yellow.

Measurements.—Males (10 from Chiriquí, Bocas del Toro, and Veraguas), wing 88.0–91.8 (90.0), tail 69.7–74.0 (71.8), culmen from base 24.0–27.5 (25.6), tarsus 24.0–25.6 (24.9) mm.

Females (10 from Chiriquí, Veraguas, Los Santos, Bocas del Toro,

and Costa Rica), wing 82.3–86.7 (84.2), tail 62.2–68.5 (65.2), culmen from base 22.8–25.7 (24.6), tarsus 23.6–25.7 (24.7) mm.

Resident. Locally fairly common on both Pacific and Caribbean slopes in the Tropical Zone, less commonly in the Subtropical Zone to 1250 meters, rarely to 1650 meters, from near the Costa Rican boundary in Chiriquí and Bocas del Toro east to Veraguas (Santa Fé and the Calovévora area), and both western and eastern sides of the Azuero Peninsula; Isla Coiba; Isla Parida, Golfo de Chiriquí.

The only Attila seen from Isla Coiba, a male taken January 22, 1956, is definitely greenish on the back, but has the crown heavily streaked and is large in size (wing 91.8 mm). One from Isla Parida, to the west in the Golfo de Chiriquí, also large (wing 92.5 mm), is slightly intermediate but is almost like the mainland bird. On the basis of this limited material both are assigned to the race *citrocopyga*.

A female taken near El Volcán, February 27, 1965, had a fully formed egg in the oviduct (broken so that it could not be saved). The markings resembled those of the eggs described beyond under *A. s. sclateri*.

In an account of this subspecies in Costa Rica, Skutch (Ibis, 1971, pp. 316–322) recorded it as “one of the rarer followers of army ants.” One came down from the high tree tops to perches 5 or 6 meters from the ground above the moving ant swarm. From such vantage points it swooped down to seize flying insects flushed by the ants or crawling on the tree trunks. A nest with four young was found in the Caribbean lowlands on April 12, 1967, hidden behind the base of a sapling growing from the buttressed base of a tall tree. The following year, on March 13, a new nest on the same site held four eggs “pale pinkish buff to dull white, heavily marked, especially on the thicker end, with large and small spots of bright cinnamon-rufous, brown of varying shades, and pale lilac.” These eggs measured 23.0×18.9, 22.6×18.4, 23.2×18.7, and 23.0×18.6 mm. Incubation was by the female alone, but the young later were fed by both parents. The food included many small lizards and frogs, with a few insects.

ATTILA SPADICEUS SCLATERI Lawrence

Attila Sclateri Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 7, 1862, p. 470. (Lion Hill, Panama Railroad, Atlantic Slope, Canal Zone, Panamá.)

Characters.—On average, more greenish, less brown on back; crown somewhat less heavily streaked; rump and upper tail coverts more yellow; size slightly smaller. (Occasional reddish brown, darker birds may be immature individuals in first postjuvenile plumage.)

In a female, from Juan Mina, Canal Zone, collected January 14, 1961, the iris was light brown; band across mandible anterior to gonys brownish buff; rest of bill dusky neutral gray; gape dull buff; tarsus and toes neutral gray; claws fuscous.

Measurements.—Males (10 from Canal Zone, Colón, Province of Panamá, Darién, and San Blas), wing 84.6–89.9 (87.7), tail 65.5–71.5 (66.4), culmen from base 22.4–26.1 (24.5), tarsus 23.7–25.7 (24.5) mm.

Females (10 from Canal Zone, Province of Panamá, Darién, and San Blas), wing 81.0–84.0 (82.4), tail 61.0–64.6 (62.8), culmen from base 22.5–26.2 (24.0), tarsus 23.1–25.4 (24.1) mm.

Weight, ♂, 32 grams (G. V. N. Powell).

Resident. Fairly common in the Tropical Zone from Coclé (El Valle, El Uracillo), western Colón (Río Indio), Cerro Campana, and the Canal Zone eastward on both slopes to the Colombian boundary; to the lower Subtropical Zone on Cerro Tacarcuna and Cerro Pirre.

At Charco del Toro, on the lower Río Majé, Darién, March 20, 1950, one flushed from a nest placed at the bottom of a narrow space in a fork between two sections of a large tree that stood on the bank of the river, the nest site a little over 2 meters above the ground. The bird came off beside my head and dropped almost to the ground, so that as it flew away I had clear view of it. The nest, a fairly deep cup of dark rootlets, held three beautifully marked eggs, far advanced in incubation. The two preserved are pinkish buff, marked heavily with rather large, irregular spots of chocolate, mixed with cinnamon-buff and lilac, mainly in a wreath around the large end but with a few rather small in size scattered elsewhere. In form slightly pointed subelliptical, they measure 26.0×20.0 and 27.8×20.0 mm. The embryos had long down on head, dorsal, and crural tracts.

The *pájaro gritón* comes regularly with other birds to eat the drupes of feeding trees. It also picks up many insects in gleaning over branches and leaves, but I did not observe it capturing insects on the wing. The well-filled stomach of one taken by Goldman, at Portobelo, Colón, held two drupes of a species of Lauraceae, bits of a cicada, two earwigs, and parts of a small lizard. A few bits of small beetles also included may have come from the stomach of the lizard.

Lawrence indicated that his type, collected by McLeannan and Galbraith during the winter of 1860–1861, came from the Atlantic slope near the line of the railroad. Hellmayr (Cat. Birds Amer., pt. 6, 1929, p. 136) restricted the type locality to Lion Hill, which was McLeannan's station.

This race ranges beyond Panamá into northern Chocó, Colombia, where Carriker collected it at Unguía and Acandí. Near the center of the western coast of Chocó, it is replaced by the race *parambae*, which is dark green on the dorsal surface, with the rump and upper tail coverts yellow.

LANIOCERA RUFESCENS RUFESCENS (Sclater):
Speckled Mourner, Bobo

FIGURE 41

Lipaugus rufescens P. L. Sclater, Proc. Zool. Soc. London, vol. 25, 1857 (January 28, 1858), p. 276. (Cobán, Guatemala.)

Medium size; wholly brown, darker above; indistinctly barred on under surface; a partly concealed yellow spot on the sides; wing coverts spotted irregularly with dusky.

Description.—Length 190–210 mm. Adult (sexes alike), upper surface dull cinnamon-rufous; crown feathers edged narrowly with dark gray; wing coverts dusky, tipped widely with cinnamon-rufous; rump and upper tail coverts barred narrowly and indistinctly with dusky; primaries and secondaries dusky, edged on outer and inner webs with cinnamon-rufous; tail russet; under surface tawny-ochraceous to cinnamon-rufous; throat paler; upper breast and sides barred indistinctly with grayish brown; a few feathers at center of sides lemon yellow, producing a partly concealed spot; under wing coverts and axillars cinnamon-rufous.

Immature, darker, grayer on crown, lower back and rump; center of foreneck and sides of neck dull gray, with the throat feathers basally cinnamon-brown; a few of the breast feathers tipped with black, producing distinct round spots; lower surface from lower foreneck to the sides of the abdomen banded more distinctly with dull gray.

A male collected near the Peluca Hydrographic Station, on the Colón side of the Río Boquerón, February 27, 1961, had the iris dark mouse brown; cutting edge of maxilla below nostril and of the mandible for its posterior half, and the gape dull honey yellow; mandibular rami and base of gonys pale brownish white; rest of bill black; upper half of tarsus dull mouse brown, shading to brownish neutral gray on the lower half and toes; claws dark neutral gray. Another male, taken at Cañita, eastern Province of Panamá, February 6, 1962, had the iris dark wood brown; maxilla and tip of mandible fuscous-black; base of mandible grayish brown; tarsus and toes neutral gray; claws dark neutral gray. In this bird, and in two other

males collected on a high ridge above the Río Boquerón, Colón, March 3, 1957, the bare skin of the eyelids was yellow.

Measurements.—Males (10 from Colón, Province of Panamá, and Darién), wing 111.4–116.7 (113.4), tail 78.3–88.5 (82.4), culmen from base 18.0–20.0 (19.2), tarsus 19.1–20.9 (20.3) mm.

Females (10 from Nicaragua, Canal Zone, and Darién), wing 112.6–118.2 (113.9), tail 78.2–86.0 (82.4, average of 9), culmen from base 18.0–21.8 (19.9) tarsus 20.0–22.5 (21.6) mm.

Resident. Uncommon in Tropical Zone forests from the lower Chagres Valley, the Canal Zone, and Cerro Azul east through eastern



FIGURE 41.—Speckled mourner, bobo, *Laniocera rufescens rufescens*.

Province of Panamá, Darién, eastern Province of Colón, and San Blas; to lower Subtropical Zone at 1400 meters on Cerro Tacarcuna, and 1060 meters on Cerro Pirre.

Published records for Veraguas are doubtfully valid. Sclater and Salvin (*Exotic Ornith.*, pt. 1, 1866, p. 5) mention one "obtained near Santiago de Veraguas in that province by Enrique Arcé in 1865. . . . Arcé met with this same bird during his excursion to Chepo . . . in 1864. Female taken." Salvin (*Proc. Zool. Soc. London*, 1867, p. 149) listed the species from these same collections as "Santa Fe." Salvin and Godman (*Biol. Centr.-Amer.*, Aves, vol. 2, 1891, p. 131) give the same records as from "Santa Fe (Arcé)" and "Chepo (Arcé)." Two specimens in the British Museum (Natural History) are listed

by Sclater (Cat. Birds Brit. Mus., vol. 14, 1888, p. 356) as "♂ ad. sk. Santa Fé, Veragua (Arcé). Salvin-Godman Coll." and "♀ ad. sk. Chepo, Isthm. of Panama (Arcé). Sclater Coll." There is obvious confusion over the early Veraguas records. It seems possible that Arcé collected the birds at Chepo and that inadvertently one may have been confused with later collections from Veraguas.

As these birds live mainly in heavy forest they may be more common than is indicated by the few that are seen in days afield in their range. While they may perch on small branches where they have an open view, also they may choose shaded perches where they rest quietly, almost like trogons. Their dull colors and rather small size serve as camouflage in their shaded haunts. Rarely, one has approached as I have decoyed birds by squeaking calls, but after a quick look they usually retreat to a distance. However, when feeding they may move actively through the branches. The whistled call, a sibilant double note, not explosive in utterance, and with little carrying power, is one that is not often heard. The flight is direct like that of the larger thrushes. Food seems to be varied as the stomach of one taken near El Real was filled with berries. Another, collected by Goldman at Cana on Cerro Pirre, had eaten small caterpillars and the pupal case of a lepidopteran.

I have seen no report of the nest and eggs. Ridgway (U.S. Nat. Mus. Bull. 50, pt. 4, 1907, pp. 763-764) placed this species with the Manakins, family Pipridae, because of the form of the foot in which the tarsus is exaspidean, and there is extensive union of the basal joints in the anterior toes, the middle toe with the first and second joints wholly adherent to the outer toe, and the first joined for most of its length to the inner toe.

The current name in English, "speckled mourner," is a misnomer as the spots on the breast are found only in the immature bird, and usually are few in number. They are called *bobo* in Colombia.

In northwestern Colombia from northern Chocó and Antioquia to the middle Magdalena Valley the population of this species is somewhat darker, duller cinnamon and rufous-brown, with the central foreneck and upper breast gray. These birds also average slightly smaller. Apparently in adult stage they retain the gray shade of the upper foreneck found in the immature *L. r. rufescens*. This Colombian group has been separated as *Laniocera rufescens griseigula* by de Schauensee (Not. Naturae, no. 221, February 24, 1950, p. 11) with Quimarí, north of Montería, Department of Córdoba, as type locality. Birds from Cerro Pirre and Cerro Tacarcuna in eastern

Panamá are slightly intermediate in darker colors and a wash of gray on the throat toward this race.

RHYTIPTERNA HOLERYTHRA HOLERYTHRA (Sclater and Salvin): Rufous Mourner, *Plañidera Acanelada*

Lipaugus holerytherus Sclater and Salvin, Proc. Zool. Soc. London, pt. 28, August 1860, p. 300. (Choctum, Alta Verapaz, Guatemala.)

Medium size; warm brown, darker above, paler below.

Description.—Length 180–190 mm. Posterior face of upper end of tarsus serrate; rictal and frontal bristles prominent, strongly developed. Adult (sexes alike), upper surface cinnamon-brown to russet; primaries and secondaries darker brown, edged with cinnamon-rufous; tail centrally darker, with the outer feathers cinnamon-rufous; under surface including axillars and under wing coverts tawny-ochraceous, darker on the breast, paler on throat and abdomen.

Juvenile, similar, but brighter, more rufous above, paler, more cinnamon-buff on under surface.

A female, taken at the head of Río Guabal, Coclé, March 1, 1962, had the iris light brown; base of maxilla fuscous-brown; distal end of maxilla and tip of mandible dull black; base of mandible dull brownish white; tarsus neutral gray; toes and claws dark neutral gray. Another female, from Cerro Malí, Darién, had the iris warm brown; maxilla at base fuscous-brown, shading to black at tip; tip of mandible black; cutting edge of maxilla at base, and rest of mandible, dull horn color; back of tarsus dull black; front and toes dusky neutral gray; claws black; gape dull honey yellow; inside of mouth orange.

Measurements.—Males (10 from Chiriquí, Bocas del Toro, Coclé, Province of Panamá, and Darién), wing 103.4–105.9 (104.3), tail 86.8–94.0 (90.6), culmen from base 20.5–23.1 (21.8), tarsus 22.4–23.8 (23.2) mm.

Females (10 from Chiriquí, Coclé, Province of Panamá, and Darién), wing 97.0–101.8 (100.0), tail 84.5–90.6 (86.9), culmen from base 20.4–22.9 (21.4), tarsus 21.5–22.7 (22.3) mm.

Resident. Fairly common locally in forest through the Tropical Zone and lower Subtropical Zone on the Pacific slope from the Costa Rican boundary in Chiriquí to Veraguas; and from Cerro Campana and Cerro Azul, Province of Panamá, through Darién; on the Caribbean side from western Bocas del Toro east to the northern Canal Zone and the valley of the Río Chagres; to 1375 meters west of El Volcán and 1425 meters on Cerro Tacarcuna.

As this is a forest inhabitant, in western Panamá it seems to have been reduced in number with the clearing that has come with increase in human population. In Chiriquí, Mrs. M. E. Davidson collected two at Puerto Armuelles November 19 and 24, 1929, but I did not find it between January and March 1966. Specimens in the Museum of Comparative Zoology were taken by W. W. Brown, Jr., near Boquete in 1901, and by H. J. Watson at El Banco in 1903, but the species is not listed by Blake in the collection assembled by Mönniche in that area from 1932 to 1952. In Veraguas, Arcé one hundred years ago sent specimens to Salvin from Santa Fé and Chitra. It is not recorded from the Azuero Peninsula. I collected one at 450 meters on the south face of Cerro Campana, western Province of Panamá, March 7, 1957. From Cerro Azul east through Darién it is fairly common. On the Caribbean side it is found in Bocas del Toro, northern Coclé, the northern Canal Zone, and the lower Chagres Valley. A male in the Field Museum was taken at Puerto Obaldía, Comarca de San Blas, April 21, 1931, by H. von Wedel.

Rufous Mourners are seen mainly on open branches below the high tree crown. At times they have exhibited some curiosity when I have been calling other birds. I have noted them also as they fed actively at berries in forest trees with other birds. In this they fly out and hover as they seize the drupes on the wing. Occasionally, I have seen as many as three in company, when they may give low, whistled calls, but usually they have been alone and silent. It is certain that concealed in heavy leaf cover they have regularly escaped attention. A pair collected March 3, 1959, where the Río Paya enters the Río Tuira in Darién were near breeding. I have no report of the nest and eggs.

In examination of stomachs I have identified seeds of berries (Melastomaceae), and a variety of insect remains. Among these orthoptera, cicadas, and membracids have been common, with numerous remains of caterpillars, ants, and a variety of beetles, with occasional bits of spiders.

The roughened surface on the posterior face of the upper end of the tarsus at first glance seems to suggest the heel pads found in some nestlings, but on examination the condition differs in that it is absent in young, immature individuals, and only becomes slightly evident as the birds become older, reaching its maximum in full adults. From examination of a series of skins, though it is present and evident in females, it attains its major development in males. In its final form the roughened scutes appear also above the joint on the

back and side of the lower expanded end of the tibiotarsus. On the upper end of the tarsus there are several roughened scutes in which, in ascending order, the lower edge of the projection becomes steadily larger. In its greatest development the projections become sharply tipped spurs of conical form on both tarsus and tibiotarsus. The illustration of the foot of this species in Ridgway (U.S. Nat. Mus. Bull. 50, pt. 4, 1907, pl. 30) shows the extent of the scalation above the joint, but not the maximum development in which the upper scales project as points.

The condition is found in the races of the present species, and in the two others, *Rhytipterna simplex* and *R. immunda* placed with it in the genus.

Rhytipterna h. holerythra ranges through Central America from eastern Guatemala southward. Beyond Panamá it continues in northern Colombia from extreme northern Chocó (Acandí) east to the middle Magdalena Valley. The somewhat darker subspecies *R. h. rosenbergi* is found on the Pacific slope from Central Chocó (Nuquí) southward to northwestern Ecuador.

LIPAUGUS UNIRUFUS UNIRUFUS Sclater: Rufous Piha,
Minero Acanelado

Lipaugus unirufus P. L. Sclater, Proc. Zool. Soc. London, 1859 (February 1860) p. 385. (Playa Vicente, Oaxaca, México.)

Lathria unirufa clara Ridgway, Proc. Biol. Soc. Washington, vol. 19, September 6, 1906, p. 120. (Line of the Panama Railroad, Canal Zone, Panamá.)

Medium size; cinnamon-brown to russet, without other distinctive markings.

Description.—Length 220–240 mm. Adult (sexes alike), crown cinnamon-brown, with shaft lines faintly paler; back, scapulars, and rump duller, upper tail coverts slightly paler, brighter; wings dusky-brown with the outer webs rufous-brown; tail rufous-brown; under surface cinnamon-brown, somewhat paler on the throat; a bushy tuft of pale buff feathers at either side of the center of the abdomen, concealed by longer overlying feathers; under wing coverts, axillars, and edge of wing pale rufous.

A female, taken at the head of the Río Guabal, Coclé, February 27, 1962, had the iris dark brown; maxilla dusky neutral gray, with the area below the nostrils dull buffy brown; tip of mandible neutral gray, base dull buffy brown; tarsus and toes dark gray with a slight greenish cast. Another from Puerto Armuelles, Chiriquí, March 8, 1966, had the iris dark brown; cutting edge of maxilla and basal half of

mandible light grayish brown; rest of bill fuscous-brown; tarsus and toes slaty brown, with the scutes outlined by light gray; claws slate at base, dull brown at point.

Measurements.—Males (10 from Chiriquí, Canal Zone, Province of Panamá, and Darién), wing 125.0–132.9 (128.8), tail 95.6–103.9 (100.8), culmen from base 21.0–24.6 (22.7), tarsus 20.0–22.5 (21.1) mm.

Females (10 from Chiriquí, Coclé, Province of Panamá, and Darién), wing 121.6–128.0 (124.4), tail 93.8–104.2 (98.0), culmen from base 22.3–24.4 (23.3), tarsus 20.4–22.4 (21.2) mm.

Resident. Locally common, in forests in the lower Tropical Zone; on the Pacific slope from western Chiriquí eastward through Darién, except the Azuero Peninsula. On the Caribbean side rarely from Bocas del Toro (one record) to northern Coclé; commonly from the lower Chagres Valley east through San Blas; to 1200 meters on Cerro Pirre.

While this species is primarily a forest inhabitant, it does not seem to range commonly in the more humid areas of rain forest. As indication of this, it seems to be rare on the Caribbean slope from the Costa Rican boundary east to northernmost Coclé. The only record available at present for the lowlands of Bocas del Toro is one prepared by R. Hinds, taken at Almirante in January 1961. On the Río Guabal at the headwaters of the Río Coclé del Norte I found two and collected one of them February 27, 1962. In the lower Chagres Valley, especially in the Canal Zone it is rather common. In San Blas I recorded it at Mandinga, and eastward it has been found at Permé, Armila, and Puerto Obaldía. On the Pacific slope, where it has been recorded regularly from Cerro Azul eastward, it ranges fairly high on the slopes of Cerro Pirre, but not on Cerro Tacarcuna. The few countrymen who know them have called them *pájaro chocolate*.

They live mainly in the cover of leaves in the high tree crown, their presence known usually by their loud explosive calls, and equally loud whistled song. It is usual to find two or three together. Occasionally they have been attracted by whistled imitations of their calls, and then have come down a little from their leafy cover to peer about. When silent their presence undoubtedly is unsuspected.

The five nests recorded by Skutch (Pac. Coast Avif., no. 35, 1969, pp. 67–76) were placed about 5 to 10 meters from the ground on small branches in forest trees standing in undergrowth. They were small, almost flat mats of coiled tendrils in locations sheltered from

wind, built and attended by the female alone. The single egg was "smoky gray heavily mottled and blotched with deep brown, which on the thick end nearly masks the ground color." Incubation lasted 25 or 26 days. Young at hatching were covered sparsely with gray down. Russell (A.O.U. Mon. no. 1, 1964, p. 112) recorded that at 900 meters on Victoria Peak, British Honduras, he flushed one from its nest. "The two pale brown eggs were in a shallow depression beside a sizeable epiphytic bromeliad in a crotch" in a large tree.

They feed on insects taken from leaves and twigs, and also come to feeding trees to secure the berries.

The considerable variation from light to dark in their brown coloration led Ridgway, with limited material, to name the bird of the eastern half of Panamá as a race distinct from those of farther north in Central America. With larger series it now is clear that nominate *Lipaugus unirufus unirufus* ranges from southern México and British Honduras south through the Caribbean slope of Honduras, Nicaragua, and Costa Rica. In southwestern Costa Rica it crosses also to the Pacific drainage and continues as described above through Panamá. In Colombia it is found from northern Chocó (Unguía, Acandí) east through the Sinú, Cauca, and middle Magdalena valleys to northern Santander (north of Bucaramanga).

**NUTTALORNIS BOREALIS (Swainson): Olive-sided
Flycatcher, Mosquero Boreal**

Tyrannus borealis Swainson, in Swainson and Richardson, Fauna Bor.-Amer., vol. 2, 1831 (February 1832), p. 141, pl. 35. (Carlton House, Saskatchewan, Canada.)

Medium size; heavy body; dusky above, with a white tuft on either side of rump; sides of breast dark, center area, white.

Description.—Length 165–180 mm. Adult (sexes alike), upper surface, including side of head, slaty olive, with the feathers faintly blacker centrally, especially on crown; wings dull black, with middle and greater coverts edged with grayish olive, lighter at tips; secondaries edged with grayish white; tail dusky, with outer webs bordered faintly with grayish; a tuft of white or yellowish white feathers on either side of the rump; a narrow circlet of white feathers around eye; sides of breast, sides, flanks, and tibia brownish gray, streaked faintly with olive; chin, center of foreneck, breast, and abdomen white, tinged faintly with yellow; under tail coverts centrally olive-gray; axillars and under wing coverts brownish gray, narrowly edged with pale gray.

Measurements.—Males (10 from United States, Canada, and Alaska), wing 102.1–114.1 (107.2), tail 63.3–74.4 (69.1), culmen from base 17.0–18.5 (17.4), tarsus 14.5–15.5 (15.0) mm.

Females (10 from United States, Canada, and Alaska), wing 99.1–106.0 (102.6), tail 63.0–71.3 (66.3), culmen from base 16.5–17.9 (16.8), tarsus 14.0–15.5 (14.8) mm.

Size in this species is variable, with part of those of the western half of the continent averaging slightly larger. It was once suggested that two populations were indicated but with increase in information the supposed differences proved to be indefinite.

Fairly common passage migrant to and from wintering grounds in South America, with a few remaining through the period of winter. Found from sea level to the higher mountains.

They are widely distributed, found singly wherever there are trees, from mountain forests to the borders of lowland fields and the vicinity of houses. High perches from which the view is unobstructed are the usual choice as is their custom in their northern summer homes. Customarily they are silent, but they may call at times, especially during the passage northward in spring.

From records assembled from a number of sources, mainly sight records through Dr. Eisenmann, passage southward comes between August 29 and November 18, with return from March 9 to May 30. Most move through September and October, and April and May. A record at the head of the Río Guabal in northern Coclé on February 28, 1962, indicates a wintering individual, as does one taken at El Volcán, February 17, 1960, in which the two outermost primaries in both wings were in molt. From February 23 to 29, 1964, on Cerro Malí, Darién, one passed its days in tall trees on a narrow ridge where a clearing had been cut to allow access by helicopters. At sunset this bird came lower to dead stubs on the slope adjacent to our camp. Here, while it made an occasional sally for insects, it seemed nervous as it continually twisted the head about and jerked, raised, and lowered its tail. This nightly performance terminated at dusk when finally it darted quickly into the leafy tree crown in the high forest behind our rancho. I wondered if its obvious nervousness was fear that an owl might await in the cover that it sought for shelter during sleep.

CONTOPUS LUGUBRIS Lawrence: Dark Pewee, Mosquero
Oscuro

Contopus lugubris Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, May 1865, p. 134. (Barranca, Costa Rica.)

Medium size; head with a short crest; appearance in life dusky throughout, except light colored underside of bill, and pale abdomen.

Description.—Length 155–170 mm. Adult (sexes alike), upper surface of body dark olivaceous-slate; crown darker, with the central shaft lines of the feathers blackish; wings dusky, with the wing coverts edged indistinctly with grayish brown; secondaries edged faintly with olive-gray to dull whitish; tail dusky-brown, with the outer web of the outermost feathers on either side edged narrowly with dull white, varied in some to olive-gray; chin dull white; abdomen pale dull brown; under tail coverts dull white, streaked centrally with dull brown; a concealed tuft of white feathers on either flank; axillars and under wing coverts dull grayish brown; carpal edge of wing similar, but mottled with white.

Juvenile, upper surface dull brown, darker on the crown; rump and upper tail coverts edged with dull rufous; tail and wings dusky; wing coverts edged widely with dull rufous-brown; foreneck and breast dull brownish gray; abdomen and under tail coverts dull buffy white.

A male taken at Cerro Punta, Chiriquí, March 5, 1955, had the iris dark brown; maxilla dark fuscous; mandible dull honey yellow; tarsus and toes fuscous; claws black. A female, at El Volcán, Chiriquí, March 13, 1954, had the iris dark brown; maxilla black; mandible honey yellow; tarsus and toes black; gape honey yellow.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 90.2–96.1 (93.5), tail 71.5–78.2 (74.8), culmen from base 19.0–20.5 (19.6), tarsus 14.4–15.7 (15.0) mm.

Females (10 from Chiriquí and Costa Rica), wing 86.7–92.3 (88.8), tail 68.7–70.4 (69.4), culmen from base 19.0–20.5 (19.6), tarsus 14.4–15.7 (15.0) mm.

Resident. Found locally in the Subtropical Zone and the lower edge of the Temperate Zone on Volcán Barú in Chiriquí. This inhabitant of the higher mountain forests was little known among early collectors. The first record for Panamá was a bird in the Salvin-Godman collection taken by Arcé, labeled only "Chiriquí." This is listed by Sclater (Cat. Birds Brit. Mus., vol. 14, 1888, p. 236) and by Salvin and Godman (Biol. Centr.-Amer., Aves, vol. 2, 1889, p. 83) without detail except the brief description. It was first noticed regularly by W. W. Brown, Jr., when from January to April 1901 he collected 18 specimens near Boquete and on the slopes of the volcano above, at elevations ranging from about 1200 to over 2100 meters. These were recorded by Bangs without detail other than locality, date, and sex (Proc. New England Zool. Club, vol. 3, 1902, p. 39). Mrs. David-

son found a female at Barriles, near the Río Chiriquí Viejo, January 12, 1931, and one at Cerro Punta January 1 of the same year, the specimens being in the California Academy of Sciences. Blake (Fieldiana: Zool., vol. 36, 1958, p. 539) reported a series in the Mönniche collection from above Boquete at elevations ranging from 1580 to 1880 meters. He reported birds in breeding condition from May 13 to July 23.

Skutch (Publ. Nutt. Orn. Club, no. 7, 1967, pp. 79–82) has given details of life history from observations along the Cordillera Central, near Vara Blanca, and on the northern face of Volcán Irazú in Costa Rica. Here these flycatchers were around openings at the borders in the forests, not in the heavy stands of the interior. Each individual had favored, elevated perches where it watched for passing insects. These were captured on the wing, with the bird returning to its original perch. The usual call is "a rather loud, staccato *wic*, which is usually repeated several times in succession." He heard also a whistle that in the nesting season was combined with other sounds in a clear dawn song. Three nests were open cups placed near the outer ends of long branches. One contained a single egg (not described), the other two, nestlings. The first nest was a "broad, shallow cup that fitted like a saddle over the moderately thick branch. . . . The massive outer wall was composed of green mosses, liverworts and lichens . . . bound together with cobweb. The cup was thickly lined with fibrous rootlets and coarse vegetable fibers." During the nesting season the pewees became much excited when approached by Emerald Toucanets, well known as nest robbers.

Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, pp. 253–254) in Costa Rica also reported the species common in mountain forests where it was "the only abundant, high-perching, long-sallying flycatcher in the middle altitudes."

On the slopes of Cerro Pando, near El Volcán, Chiriquí, March 1954, I found a pair resting on branches in the tops of tall dead trees overlooking a valley. March 5, 1955, near Cerro Punta one chose the summit of a tall bamboo as a lookout point. In form, size, upright stance, dark coloration, and choice of lookout perches, these flycatchers strongly suggest the Olive-sided Flycatcher. The dark breast was a prominent mark even at some distance.

Zimmer (Amer. Mus. Nov. no. 1042, 1939, p. 2) has combined the three groups of large pewees, *Contopus pertinax*, ranging from southwestern United States to northern Nicaragua, *C. lugubris* of Costa Rica and western Panamá, and *C. fumigatus* of South America,

as a single species under the oldest name, *fumigatus*. From superficial examination this may seem reasonable, as the birds are similar in size and general appearance. However it is not fully verified. The crest in the *fumigatus* group is less developed (a distinction noted by Skutch when he saw the southern birds in the mountains of eastern Ecuador). Also this assemblage appears to have a slighter development of the bristles on the anterior part of the head. The true *fumigatus* group ranges north only to the higher elevations of the western Andes in northwestern Colombia. The bird of western Panamá is separated thus by the entire length of the Isthmus. Until details are better known the three groups may be regarded as separate specific entities.

[**CONTOPUS OCHRACEUS** Sclater and Salvin: Ochraceous Pewee, Mosquero Aceitunado

Contopus ochraceus Sclater and Salvin, Proc. Zool. Soc. London, October 1869, p. 419. (Costa Rica.)

Size of the Dark Pewee, *Contopus lugubris* (length 155–170 mm.); ochraceous-olive, darker above, with crown, wings, and tail dusky; two buff wing-bars; lower surface paler ochraceous-olive, with an indefinitely indicated darker breast.

A rare species known from Volcán de Irazú and Turrialba, with a few other reports in Costa Rica.

An early specimen, No. 497632, in the Rothschild collection in the American Museum of Natural History, marked "E. Museo Dalmas," has a rectangular green tag stamped "Chiriquí," and on the reverse, "R. 71.6.a.B.M." In search in the collections of the British Museum (Natural History) I found only two specimens of this bird, both collected by Underwood, one marked "Irazu," the other "Estrella de Cartago." There was no record for the year 1871. The appearance of the specimen in New York is closely similar to those in London prepared by Underwood. The record without other verification is too dubious to be accepted for Panamá.

Eugene Eisenmann on February 29, 1960, at 2130 meters on the Boquete trail above Cerro Punta, had a brief sighting of a flycatcher that may have been this species, but the identification was not certain. There have been other uncertain reports.]

CONTOPUS VIRENS (Linnaeus): Eastern Wood Pewee, Papamoscas Oriental

Muscicapa virens Linnaeus, Syst. Nat., ed. 12, vol. 1, 1766, p. 327. (South Carolina.)

Medium size; above more greenish olive; axillars and under wing coverts white to pale grayish brown, tipped and edged with white; longest upper tail covert shorter, with the distance from tip to end of tail greater; mandible dull white to pale buff, except for tip.

Description.—Length 135–145 mm. Adult (sexes alike), above olive with a faintly greenish cast, slightly paler posteriorly, darker on the crown; wings dusky, with middle and greater coverts tipped with pale gray; secondaries broadly, inner primaries narrowly, edged with white; tail dark grayish brown to olive, with edges and tips of rectrices faintly grayer; bare edge of eyelids black, bordered by a very narrow line of white feathers; lores very slightly marked with white; side of head and neck somewhat grayer than back; throat white to yellowish white, lined indistinctly with pale gray; lower fore-neck, breast, and sides pale grayish olive, paler on sides and flanks; lower breast, abdomen, and under tail coverts pale yellowish white, with the central feathers indistinctly grayish olive; axillars and under wing coverts pale grayish olive, with white or yellowish white margins.

Juvenile, like adult, but tips of lesser wing coverts, and border of middle and greater coverts buff; much of upper surface narrowly tipped and dotted with pale buff, these markings remaining longest on hindneck, rump, and upper tail coverts; bill dark.

Measurements.—Males (10 from the breeding range, from South Carolina and Kentucky to New Jersey), wing 82.5–89.7 (85.9), tail 62.6–67.9 (65.5), culmen from base 15.7–17.0 (16.4), tarsus 12.9–13.7 (13.4), tip of longest upper tail covert to end of tail 33.9–36.8 (35.2) mm.

Females (10 from the breeding range from South Carolina and Kentucky to New Jersey), wing 79.2–83.6 (81.2), tail 60.9–63.9 (62.4), culmen from base 14.9–16.1 (15.5), tarsus 13.0–14.2 (13.4), tip of longest upper tail covert to end of tail 32.0–35.5 (34.1) mm.

Passage migrant from the north to and from winter quarters in northern South America. Common. In southward flight in Panamá from September 8 to November 20; northward in spring, March 18 to May 16. To 1850 meters near Cerro Punta and 2130 meters above Boquete, Chiriquí. Recorded from islas Pacheca, Bayoneta, and Saboga, Archipiélago de las Perlas, Isla Taboguilla in Bahía de Panamá, and Isla Escudo de Veraguas, off Bocas del Toro.

The dates cited are those of specimens collected, and of birds heard calling. Sight records without this verification, supposed to be of this bird, extend the fall movement from the end of August

to early December, and dates in the spring period somewhat earlier in March and later in May. There are no certain reports for the intervening "winter" months.

That the Eastern Wood Pewee is the most abundant of the two groups in Panamá is evident from the specimen records assembled in the course of my personal field work, where 26 of the 33 migrant Wood Pewees obtained are the present bird against 7 of the western group (listed under *sordidulus* and its races).

These northern migrants in Panamá are found especially in lowland and foothill localities, ranging in the borders of woodland and in scattered trees and shrubs in open areas. Eisenmann, who has had extensive experience with them, reports that though many remain silent some call at intervals, with notes that readily identify them as the eastern bird. They seek high, open perches, fly out to capture passing insects, and then usually circle gracefully to return to the lookout point. In this they behave as they do on their nesting grounds in the North. Those that I have collected in April in northward passage have been very fat.

While the migrant wood pewees as a whole are closely similar, they are separable into two groups, one eastern and one western, in their distribution in the breeding season. Those of the east (long known as *virens*) have the lower half of the bill (the mandible) pale white or buffy white, except for the narrowed point at the tip. The breast band is paler gray, often partly, sometimes wholly, divided in the center; lower breast and abdomen faintly yellowish white varying to very pale yellow; axillars and under wing coverts lighter in color, white to grayish brown tipped and edged with white. The gray of the dorsal surface in unworn condition has a faint greenish cast in its generally grayish olive hue. In the breeding season their range extends through eastern North America from southern Manitoba, Ontario, and Quebec to southeastern Texas, the Gulf Coast and central Florida. Through this extensive area they are uniform in color and size without appreciable variation.

The western bird, *Contopus sordidulus*, and its allied subspecies have the distal end (in some the greater part) of the mandible brown or blackish brown. Above and on the breast the widespread northern populations are much darker, being blackish brown to darker gray; southern birds, in Baja California and Guerrero, although pale, are gray with no greenish cast. These birds in their summer homes range from eastern Alaska and southern Yukon through western United States southward to Central America. All are migratory and winter

in northern South America. Dr. Allan Phillips points out another character to separate the eastern and western groups in which the distance from the distal end of the longest upper tail covert to the tip of the tail is greater in the eastern *virens* than in the assemblage of forms of the west. In addition, the longer song of two or three notes in the eastern birds is more attractive than the shorter, less musical call of those of the west.

While the two have long been treated as two species, recognized by this difference in voice as well as by their coloration, in the area where their ranges merge, the form of the call appears to intergrade. Mainly because of this, recently some have treated the complex as a single species under the specific name *virens*. As this seems still not definitely established the two here are listed as two species.

Recognition of wood pewees in Panamá in the field is complicated further by the presence of a distinct resident species *Contopus cinereus*, similar superficially in color to *virens*, but smaller, and in the hand with a different wing formula.

CONTOPUS SORDIDULUS Sclater: Western Wood Pewee,
Papamoscas Occidental

Medium size; like *Contopus virens*, but averaging darker, more olive above; distal end or, in some, all of the mandible dark; axillars and under wing coverts brown, varying in shade (but not white); distance from end of longest upper tail covert to end of tail less; in general, with the breast band dark gray, only rarely divided in the center; in most the lower surface whiter.

The breeding range of the species in western North America extends from central Alaska and Yukon south through western Canada, western United States, Baja California, and the southern mainland of México (Guerrero and Chiapas) and to the highlands of Honduras, possibly, but from present data uncertainly, to Nicaragua. It has been reported nesting also in Costa Rica and in western Panamá but without basis in definite record. A supposed breeding record in northwestern Colombia (De Schauensee, *Caldasia*, vol. 5, no. 26, 1952, p. 1199) refers to the resident race of *Contopus cinereus*.

Two additional forms described recently by Thomas D. Burleigh (Proc. Biol. Soc. Washington, 1960, pp. 141-146) appear to represent two areas of intergradation between the most northern form *saturatus* and *veliei* to the south. His proposed *C. s. amplus* appears close to *saturatus*, and *C. s. sicicola* to *veliei*. They require further study with additional material before recognition.

Specimens available include representation in Panamá as migrants of four races. The subspecies may be recognized from the brief descriptions that follow, through comparison and check with specimens.

As further discussion, *Contopus sordidulus* P. L. Sclater was described in 1859, with Orizaba, Veracruz, as the type locality. Its use here as the species name for the Western Wood Pewee follows that in current literature. (See Phillips and Parker, *Condor*, 1955, p. 244; Webster, *Indiana Acad. Sci.*, vol. 66, 1956, publ. 1957, p. 337; Phillips, in Phillips, Marshall, and Monson, *Birds of Arizona*, 1964, p. 91.) In current study of specimens no definite characters appear in those seen from northern and central México to distinguish them as a subspecific group from that currently recognized as *veliei* in the area from the International Boundary northward in Arizona and New Mexico. Sclater's type specimen of *sordidulus* from Orizaba in the British Museum (Natural History) should be examined carefully. If it is a bird of the assemblage now accepted as the Western Wood Pewee, then these will continue to be known as the species *sordidulus*. As the oldest name for this group it also may replace that current for one of the subspecies, possibly *veliei*.

CONTOPUS SORDIDULUS SATURATUS Bishop

Contopus richardsonii saturatus Bishop, *Auk*, vol. 17, no. 2, April 1900, p. 116. (Haines, Alaska.)

Characters.—Darkest of the forms; dorsal surface definitely darker, especially on the crown; breast and sides darker gray; abdomen white.

Measurements.—Males (10 from the breeding range in British Columbia, Washington, and Oregon), wing 83.4–90.0 (86.4), tail 60.8–66.3 (63.0), culmen from base 14.2–16.5 (15.3), tarsus 13.4–14.6 (13.7), tip of longest upper tail covert to end of tail 29.9–30.8 (30.2) mm.

Females (10 from the breeding range in Oregon, Washington, British Columbia, and Alaska), wing 79.5–88.3 (83.5), tail 59.7–63.8 (61.6), culmen from base 14.0–16.1 (15.0), tarsus 12.4–13.5 (12.8), tip of longest upper tail covert to end of tail 27.8–30.8 (29.7) mm.

Passage migrant from the north, apparently to winter quarters in northern South America; one record possibly of a wintering individual, March 13, 1971, on Cerro Quia, at the Colombian boundary in eastern Darién.

Two females collected September 14 and 22, 1961, at the head of

the Río Changuena in the mountains of northwestern Bocas del Toro, by R. Hinds working under the direction of Dr. Pedro Galindo, are identified as this race. A male, collected by Galindo, March 13, 1971, near the summit of Cerro Quia, Darién, is in full molt, indicating that it was a wintering individual.

CONTOPUS SORDIDULUS VELIEI Coues

Contopus veliei Coues, Proc. Acad. Nat. Sci. Philadelphia, vol. 18, March 1866, p. 61. (Mountains of Colorado Territory.)

Characters.—Lighter gray above and below than *saturatus*.

Measurements.—Males (10 breeding season birds from California), wing 82.6–89.4 (87.0), tail 61.0–65.7 (63.1), culmen from base 15.3–16.9 (16.1), tarsus 13.2–13.8 (13.4), tip of longest upper tail covert to end of tail 30.0–32.5 (31.6) mm.

Females (10 breeding season birds from California, Nevada, and Arizona), wing 80.5–86.5 (83.1), tail 57.2–64.9 (60.8), culmen from base 14.5–16.5 (15.5), tarsus 13.2–13.8 (13.4), tip of longest upper tail covert to end of tail 28.0–32.6 (30.4) mm.

Passage migrant from the north to winter quarters in northern South America; fairly common.

While it is assumed that most of the sight records identified by call notes may be this race, few actual specimens have been collected. Fall records in Panamá include the following: One taken in the Canal Zone on October 9, 1953, and one at Quiel, altitude 1640 meters above Boquete, Chiriquí, December 7, 1931. The last is the latest date for fall in Panamá. In northward movement, one was taken March 7, 1956, at 1370 meters on Cerro Pando, beyond El Volcán, Chiriquí; one March 2, 1971 at 790 meters on Cerro Quia, and another April 7, 1946 at Jaqué, in eastern Darién.

The specimens described by Burleigh as *Contopus sordidulus amplus*, as stated above, are considered intermediate between *veliei* and *saturatus*, but near *veliei*. It should be noted in connection with this allocation that of two listed (loc. cit., p. 145) as from the Panama Canal Zone only the male of "9 October 1953" is *C. s. veliei*. The female of "30 September 1953" is *Contopus virens*.

In the original description Coues wrote "we have been in the habit of designating these gray specimens as *Contopus Veliei* after Dr. Velie, who sent the first example from the mountains of Colorado Territory." This was Dr. Jacob W. Velie, physician, ornithologist, early secretary and curator of the Chicago Academy of Sciences.

The specimen mentioned, collected in summer 1864, was destroyed with the Academy collections in the Chicago fire of 1871.

CONTOPUS SORDIDULUS PENINSULAE Brewster

Contopus richardsonii peninsulae Brewster, Auk, vol. 8, no. 2, April (February 17), 1891, p. 144. (Sierra de la Laguna, Baja California, México.)

Characters.—Definitely paler gray above and below; bill longer and broader.

Measurements.—Males (10 from Baja California), wing 79.3–85.2 (82.8), tail 54.2–61.0 (57.7), culmen from base 17.0–18.8 (17.7, average of 9), tarsus 12.2–12.7 (12.5) mm.

Females (5 from Baja California), wing 77.3–81.2 (79.3), tail 55.7–58.8 (57.3), culmen from base 16.7–18.1 (17.3), tarsus 12.4–12.8 (12.6) mm.

Migrant from the north, in part passing to South America; abundance uncertain.

The few records include one of doubtful sex collected October 26, 1931, at Quiel, above Boquete, by R. R. Benson, and a female, with the body plumage partly in molt, taken February 15, 1966, on the headwaters of the Río Corotú, at the edge of the forest west of Puerto Armuelles, Chiriquí. The second specimen is small and, in general, pale in color, with bill especially broad, in which the culmen measures 17.3 mm. Another female in the American Museum of Natural History, shown to me by Eisenmann, was collected by E. S. Morton on Cerro Campana, Panamá, August 13, 1970. It was identified as the present race by Allan Phillips.

This race has its breeding ground in southern Baja California. In size and coloration it is closely similar to *griscomi*, differing in the larger, broader bill. As it is little known in its migrations, it is interesting to record a male taken by M. A. Carriker, Jr., September 4, 1946, at Buenos Aires, in central Norte de Santander, Colombia, now in the National Museum.

CONTOPUS SORDIDULUS GRISCOMI Webster

Contopus sordidulus griscomi Webster, Indiana Acad. Sci., vol. 66, 1957, p. 337. (Chilpancingo, Guerrero, México.)

Characters.—Paler; lighter gray on the dorsal surface, lighter below, in this resembling *C. s. peninsulae* but with bill shorter and narrower.

Measurements.—Males (2 from the type locality), wing 81.7, 85.0;

tail 55.8, 60.0; culmen from base 13.5, 15.0; tarsus 11.5, 11.6 mm.

Female (1 from the type locality), wing 80.6, tail 60.0, culmen from base 14.1, tarsus 12.0 mm.

Passage migrant from the north, probably to winter quarters in northern South America; abundance uncertain.

This form, resident in the breeding season in Guerrero, southwestern México, was named from a series from Chilpancingo and Cuapongo. It was believed to winter in South America, though no winter specimens were seen.

In our series there are two males, collected as migrants in western Chiriquí, both at an elevation of 1280 meters. The first, on March 17, 1954, was found on the Quebrada Santa Clara, midway between El Volcán and the Costa Rican boundary. The second, taken March 17, 1965, at Palo Santo on the western side of the Río Chiriquí Viejo, to the west of El Volcán, was heavy with fat. Both had completed the winter molt and are in fresh plumage. They are similar to two males and a female from Chilpancingo, available on loan from the original series in the California Academy of Sciences through the kindness of Robert Orr and Lawrence Binford. Measurements of these are listed above. The two migrants are like the three mentioned in bill form and size, but are faintly brighter in color due to their recent renewal of feathers. They measure as follows: Wing 84.0, 85.0; tail 59.2, 61.2; culmen from base 14.3, 15.0; tarsus in both 13.0 mm.

Two others, in the American Museum of Natural History, collected by E. S. Morton on Cerro Campana, Panamá, August 13, 1970, were sent by him to Eugene Eisenmann, who brought them to my attention. Both are males in worn plumage but not yet in molt. They have been identified as *griscomi* by Allan Phillips, in which I agree, from comparison with the other specimens available. They measure as follows: wing 84.0, 85.0; tail 55.8, 60.0; culmen from base 13.5, 15.1; tarsus 11.5, 11.6 mm.

Apparently this form may pass regularly through the mountain areas of the Republic. It may be identified only from specimens in hand.

**CONTOPUS CINEREUS (Spix): Tropical Pewee, Papamoscás
Tropical**

Platyrhynchus cinereus Spix, Av. Bras. vol. 2, p. 11, pl. 13, fig. 2, 1825.
(Rio de Janeiro, Brazil.)

A small, slender pewee with relatively long tail; crown cap darker than back; lores indistinctly grayish white.

Description.—Length 120–135 mm. Tenth (outermost) primary shorter than the sixth. Adult (sexes alike), upper surface plain olive, darker, often blackish, on the crown; rump and upper tail coverts brownish; a concealed tuft of white feathers on either side of rump; wings dusky; middle and greater coverts tipped with grayish white to brownish gray, secondaries edged distally with white to brownish gray; lores white to grayish white (the paler color often indistinct); a narrow line of white around eye; side of head and of neck, breast, and upper abdomen grayish olive; in some this color confluent across the breast; chin and throat white with the individual feathers pale gray centrally; lower breast and abdomen, and in some the central area of the breast, white to yellowish white; under tail coverts pale brown, in some edged with white; axillars and under tail coverts brownish white.

Juvenile, browner above, with feathers edged with buff to cinnamon-buff; wing coverts tipped widely with pale cinnamon-buff; chin brown, lower breast and abdomen whiter; tips of gray feathers of breast edged indistinctly with dull white.

This smaller species of wood pewee, resident in Panamá, in life appears similar to the migrants and so will rarely be identified as a separate kind. It is found through the Tropical Zone except in the savanna areas. Seen closely it may appear smaller, more slender, and with a small area of grayish white on the lores. Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 253) records that it may be known by "The almost invariable shaking of the tail on its return to a perch" after a sally to secure a passing insect on the wing. In the hand, it is readily identified from its congeners by the tenth outermost primary being shorter than the sixth, and by its smaller measurements. The species as a whole ranges in tropical America from southern México to northern Argentina. Two races are found in Panamá.

CONTOPUS CINEREUS BRACHYTARSUS (Sclater)

Empidonax brachytarsus P. L. Sclater, Ibis, ser. 1, vol. 1, no. 4, October 1859, p. 441. (Córdoba, Veracruz, México.)

Characters.—Similar in general to the migrant wood pewees of the north that are found in the Isthmus in passage to and from their winter homes in northern South America; somewhat smaller and more slender; may be identified when seen clearly by the grayish white lores. This race is definitely paler on back and breast than the one found on Isla Coiba.

Measurements.—Males (10 from Los Santos, Coclé, Canal Zone, Bocas del Toro, eastern Colón, and eastern Province of Panamá), wing 67.5–74.0 (70.7), tail 55.0–62.5 (59.7), culmen from base 14.2–16.5 (15.4), tarsus 12.5–13.8 (13.3) mm.

Females (10 from Los Santos, Bocas del Toro, Canal Zone, and eastern Province of Panamá), wing 66.1–72.2 (69.6), tail 53.1–60.6 (57.9), culmen from base 13.8–15.3 (14.5), tarsus 12.7–13.6 (13.2) mm.

Stone (Proc. Acad. Nat. Sci. Philadelphia, vol. 70, 1918, p. 267) quotes notes from Jewel that describe the iris as brown, maxilla black, mandible yellow, and feet black.

Resident. Common locally on the Pacific slope from western Chiriquí east to western Darién, including the Azuero Peninsula, except in the treeless savanna areas; on the Caribbean side from western Bocas del Toro to eastern Colón and the lower Chagres Valley; Isla Cébaco in Golfo de Montijo; ranging to 750 meters in hill country.

March 27, 1957, I found several in the border of the mangrove swamps below Tonosí, Los Santos, on the lower end of the Azuero Peninsula. One was taken near Chimán, eastern Province of Panamá, February 20, 1950. Salvadori and Festa (Bol. Mus. Zool. Anat. Comp. R. Univ. Torino, vol. 14, 1899, p. 5) record one from Punta de Sabana, on the lower Río Tuira in August 1895. Bond and de Schauensee (Acad. Nat. Sci., Philadelphia, Mon. 6, 1944, p. 38) report one from Garachiné, Darién, the most eastern record.

This small resident pewee is found in areas of thickets and scattered trees where usually it rests on rather low perches. It seldom enters tall heavy stands of forest except at the borders. Its smaller size and slender, less robust form may attract attention, but in life it is difficult to distinguish from the larger species of the north that visit Panamá in their migrations. When seen clearly near at hand, the small grayish white loreal area is distinctive in occasional individuals. In the hand, the species is easily identified by examination of the outer primaries, where the tenth (outermost) is shorter than the sixth. In the other wood pewees this outer primary is distinctly longer than the feather mentioned.

The only call that I have heard them utter is a low *swees sú*, being suggestive in tone of the calls of some species of *Empidonax*. Skutch (Pac. Coast Avif. 34, 1960, 322–327) in Costa Rica at dawn heard them giving a song composed of a steady repetition of a single note, *weet weet weet*, varied by a lower call *we-ye* that at times was continued briefly as a warbling sound.

He found the nests of this race placed from 2 to 10 meters from the ground on small horizontal branches, or in a more or less upright fork. They were flattened cups, built by the female, of small bits of gray lichen, fibrous material, and cobweb, with a lining of fine grass. The two or three eggs in a set were "dull white, with a wreath of bright brown and pale lilac blotches about the thick end and a few small spots of the same colors scattered over the remaining surface. Two eggs measured 16.7×13.5 and 17.5×13.5 millimeters." Though the males regularly fed the females while on the nest they did not share in the duty of incubation. However, they were active, with snapping bills, in driving out any birds that happened to perch briefly in the nesting tree, even flycatchers of much larger size. Newly hatched young "bore rather thick, whitish down."

Nesting in Panamá appears to be somewhat irregular. Paired birds with enlarging gonads were taken from the first week in February to early March. General G. Ralph Meyer found a nest with two eggs, so far advanced that they could not be saved, on Madden Road, Canal Zone, June 23, 1941. Hallinan (Auk, 1924, p. 317) flushed one from a nest (though apparently empty) on November 3, 1915, near New Culebra, Canal Zone.

Stomachs of those that I have examined have held remains of miscellaneous small insects, which the birds take on the wing.

CONTOPUS CINEREUS AITHALODES Wetmore

Contopus cinereus aithalodes Wetmore, Smithsonian Misc. Coll., vol. 134, no. 9, July 8, 1957, p. 65. (Isla Coiba, Panamá.)

Characters.—Decidedly darker, more olive than *C. c. brachytarsus*, both above and below; edge of wing cinnamon.

Measurements.—*Males* (11 from Isla Coiba), wing 65.2–71.5 (68.7), tail 54.0–61.1 (57.0), culmen from base 14.8–15.9 (15.4), tarsus 11.5–12.9 (11.9) mm.

Females (9 from Isla Coiba), wing 63.2–68.4 (66.5), tail 52.8–57.9 (55.4), culmen from base 14.7–16.1 (15.3), tarsus 11.5–12.9 (12.0) mm.

Resident. On Isla Coiba and Isla Ranchería, off the Pacific coast of Veraguas.

In addition to the series taken in 1956 from which this race was described, there are four in the British Museum (Natural History) collected by H. J. Kelsall on the St. George Expedition August 31 to September 4, 1924. Dr. Eisenmann and E. S. Morton

found them common on Coiba and on Isla Ranchería in early October 1965. Two were taken by Morton on October 9.

In the original description it was noted that these small flycatchers were found usually on low perches in areas of open forest, where they had clear view in their watch for small flying insects. When these were sighted the bird darted out to seize them, often with a clearly heard snap of the bill, and then turned gracefully to return to a perch, often the one from which it had made its sally. They were especially common along forest trails, and at times were found in the thickets behind the coastal beaches. It was rare to note one in the higher tree tops. At the time of my visit in January and early February they were silent.

EMPIDONAX FLAVIVENTRIS (Baird and Baird): Yellow-bellied Flycatcher, Moscareta Barriga-Amarilla

Tyrannula flaviventris W. M. and S. F. Baird, Proc. Acad. Nat. Sci. Philadelphia, vol. 1, nos. 28-39, July-August (September 18), 1843, p. 283. (Carlisle, Cumberland County, Pennsylvania.)

Small; greenish olive above, yellowish underneath, with a faintly indicated dark band across the breast.

Description.—Length 118-130 mm. Adult (sexes alike), upper surface greenish olive, with crown somewhat darker; wing coverts dull black, middle and greater coverts tipped broadly with yellowish white; distal ends of secondaries edged with yellowish white; primaries dull grayish brown, with slightly paler outer edges; tail grayish brown, with outer webs, and in some the tips paler; lores mixed yellowish white and dull gray; a pale yellowish white ring around the eye; side of head like back, becoming paler on sides of neck and body; center of throat dull yellowish white, with the feathers faintly grayer centrally; upper breast light yellowish olive; lower breast, abdomen, and under tail coverts pale yellow; axillars and under wing coverts pale yellow, the outer coverts changing to dull gray; inner webs of wing feathers grayish buff.

Measurements.—Males (10 in June, July, from northern New York to Newfoundland), wing 65.2-68.5 (67.4), tail 51.2-54.9 (53.2), culmen from base 13.1-14.1 (13.7), tarsus 16.0-16.5 (16.2) mm.

Females (10 in June, July, from northern New York to Newfoundland), wing 61.1-65.9 (63.4), tail 47.3-50.8 (49.5), culmen from base 12.7-14.0 (13.3), tarsus 15.8-16.1 (15.9) mm.

Winter resident, migrant from the north. Common on the Pacific

slope in Chiriquí, mainly in the highlands, but ranging to Puerto Armuelles, Bugaba, Cerro Flores, San Félix, and Las Lajas east to Veraguas, including the lower end of the Azuero Peninsula. Casual eastward to Coclé, the Canal Zone, and Darién (Cerro Pirre); to 1980 meters on the slopes of Volcán Barú. On the Caribbean side recorded on the Boquete trail, and at Guabo, Bocas del Toro; Calovévora, Veraguas; and in the northern Canal Zone on Barro Colorado Island, and at the former Lion Hill Station.

Early reports of this species are few and uncertain. Sclater and Salvin (*Proc. Zool. Soc. London*, 1864, p. 360) include it, with no comment, in a list of birds that came to Salvin through his visit to McLeannan at Lion Hill, Canal Zone, in March and April 1863. At about this same time, Lawrence (*Ann. Lyc. Nat. Hist. New York*, vol. 7, 1863, p. 8) included it in his final account (part IV) of McLeannan's collections. These two reports, and a sight record October 17, 1944, on Barro Colorado Island by Arthur Allen, appear to be the basis for recording the species from the Canal Zone. Griscom (*Bull. Mus. Comp. Zool.*, vol. 69, 1929, p. 178) reported a male taken by R. R. Benson at Cana on Cerro Pirre, Darién, which is the only other vagrant record to date. The earliest record for fall arrival is one taken by Benson at El Villano near Santiago, Veraguas, September 8, 1924; the latest for spring, April 13 at Guabo, Bocas del Toro, and April 14 at Cana, Darién.

In 1966 I collected single individuals on six different days from February 7 to March 12 near Puerto Armuelles, Chiriquí. In none of these was there any indication of building fat for the migration period ahead. Two were taken on the Río Guánico, at Las Palmitas, Los Santos, January 25 and 27, 1962, and four on Isla Cébaco, in the lower Golfo de Montijo, Veraguas, January 16 to 20, 1965. One was secured in eastern Chiriquí at Las Lajas, February 14, and two near San Félix February 16 and 17, 1956. My most eastern record was one taken on the Pacific slope near the head of Río Mata Ahogada, east of El Valle, Coclé, March 31, 1951. They were common in the highlands of Chiriquí from El Volcán westward to the Costa Rican boundary near El Sereno, ranging down the slopes to above Buena Vista at 700 meters elevation.

These flycatchers ranged regularly in thickets and second growth along the banks of streams, like the Chiriquí Viejo, in undergrowth in open woodland over the mountain slopes, and especially in thickets bordering meadows. They were invariably alone, moved rather quickly to rest under cover of leaves, and there remained quiet until

ready to shift about again. Rarely, in the beginning of March I heard them calling, a low note, *wee-soo*, given with some emphasis. I found it difficult in the cover that they often frequented to distinguish them from small native flycatchers. Most of those taken in March were molting, this including the feathers of the wings.

They ate insects, the usual food of this species, and also small berries. On the whole they were quiet in their movements, and so did not attract attention.

**EMPIDONAX VIRESCENS (Vieillot): Acadian Flycatcher,
Moscareta Verdosa**

Platyrhynchos virescens Vieillot, Nouv. Dict. Hist. Nat., nouv. éd., vol. 27, December 1818, p. 22. (Near Philadelphia, Pennsylvania.)

Empidonax griseigularis Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 7, 1862, p. 471. (Atlantic slope, Panama Railroad, Canal Zone, Panamá.)

Small; grayish olive-green above, two pale buff or white wing bars; a white eye-ring.

Description.—Length 125–140 mm. Adult (sexes alike), above grayish olive-green, with crown faintly darker; wings grayish brown to dusky; middle and greater coverts tipped with buffy white or buff, forming two prominent wing bars; secondaries edged narrowly with the same; tail grayish brown, with the outer webs of the outer pairs of feathers faintly paler; lores mixed with dusky and whitish (often indistinctly); a white eye-ring; sides of head and neck like back, fading below into the paler color of the throat, which is yellowish white; upper breast and sides shaded with pale grayish olive; rest of under surface yellowish white, usually more yellow on the abdomen and on the under tail coverts; axillars and under wing coverts pale yellow; inner webs of wing feathers edged with grayish buff.

Measurements.—Males (10 in breeding season, from South Carolina and Tennessee north to Pennsylvania), wing 73.5–77.6 (75.6), tail 57.6–61.7 (59.7), culmen from base 14.8–16.0 (15.4), tarsus 15.7–16.3 (15.9) mm.

Females (10 in breeding season, from Georgia to Kentucky and New York), wing 68.1–71.6 (69.9), tail 53.0–56.6 (54.9), culmen from base 14.5–15.7 (15.0), tarsus 14.6–15.7 (15.1) mm.

Winter visitor from the North. Common; mainly through the lowlands, less frequently to 1760 meters at Cerro Punta and Nueva Suiza, Chiriquí; 1250 meters on Cerro Tacarcuna, Darién; Isla Taboguilla.

Acadian Flycatchers begin to arrive early in September (Barro

Colorado Island, September 6, 1960, Willis) and remain to late April or early May (Barro Colorado Island, May 1, 1961, Willis). The record for Isla Taboguilla is of one taken March 18, 1952.

The Acadian Flycatcher is widely distributed, found through undergrowth and the lower limbs in more open forest, coming also to thickets along the borders of fields and pastures. In the main it ranges under leaf cover, perching on small branches from which it sallies to capture flying insects or, less often, to seize those moving over twigs and leaves. The prey is small and covers a wide variety of species. Small berries are eaten also, but seem to form only a minor part of the winter food. The birds range singly as scattered individuals, though in October and March, two or three may be found in the same area, but not closely associated. Willis (Living Bird, 1966, pp. 193–195) in observations on Barro Colorado Island found them associated with moving ant swarms with some regularity. They call occasionally, usually a single explosive note, accompanied by a twitch of the tail. On the whole, they live in these tropical forests much as they do on their northern nesting grounds.

Two-thirds of the specimens in the considerable series in the National Museum from Panamá and Colombia, collected over a period of 60 years, are females, which suggests a separation of the sexes in their migrations. Traylor (Auk, 1968, p. 691) found that all, immature and adult, have a complete molt between December and April when in their winter range.

The birds vary considerably in the amount of yellow on the under surface so that the brighter ones suggest *Empidonax flaviventris*. While in life there may be confusion between them, in comparison of specimens the present species differs in being paler yellow on the abdomen, with the chest band lighter gray. The wing, tail, and bill in *virescens* also are slightly longer.

EMPIDONAX ATRICEPS Salvin: Black-capped Flycatcher,
Moscareta Gorraneira

Empidonax atriceps Salvin, Proc. Zool. Soc. London, March 24 (=November) 1870, p. 198. (Volcán de Chiriquí, Panamá.)

Small, slender; above, olive-brown with crown black; tail relatively long, distinctly notched at tip; nostril completely exposed.

Description.—Length 105–115 mm. Adult (sexes alike), crown and hindneck blackish brown; back, scapulars, and rump olive to olive-brown; upper tail coverts darker; wings dull black; greater and

middle coverts tipped lightly with grayish to dull white; secondaries and inner primaries edged and tipped lightly with dull white; tail grayish brown, with outer web of outer rectrix white; a definite white eye-ring, interrupted in center above; bare edge of eyelids black; lores indistinctly grayish; side of head grayish brown, fading below into the dull grayish buffy white of chin and throat, the latter lined indistinctly with dull white; breast and sides pale grayish olive-brown; rest of under surface pale buffy yellow; axillars and under wing coverts dull buffy white, becoming dull buff on edge of wing; inner webs of wing feathers edged with dull buff.

Juvenile, back dull reddish brown; wing bands cinnamon-buff; chin and throat dull white; chest band cinnamon-buff; abdomen, flanks, and under tail coverts faintly buffy white.

A female, taken at 2650 meters on the west face of Volcán Barú, Chiriquí, March 4, 1965, had the iris dark brown; maxilla black; tip of mandible fuscous; base of mandible dull brownish yellow; tarsus, toes, and claws black; inside of mouth orange.

Measurements.—Males (10 from western Chiriquí and Costa Rica), wing 58.6–62.7 (60.5), tail 49.0–53.5 (51.3), culmen from base 11.0–12.0 (11.6), tarsus 16.0–16.5 (16.2) mm.

Females (10 from western Chiriquí and Costa Rica), wing 56.1–57.4 (56.7), tail 46.6–48.9 (47.6), culmen from base 10.2–11.8 (11.0), tarsus 15.7–16.3 (16.0) mm.

Resident. Found locally on the mountain slopes of western Chiriquí in the upper Subtropical and Temperate zones from 1800 to over 3000 meters; recorded at Mirador (below 2750 meters) on the Caribbean slope in Bocas del Toro.

Above Cerro Punta I found several of these attractive flycatchers in a pasture partly grown with brush, where sun warmed the mist-filled air. They rested on low perches half a meter above the ground or sought protection in a small depression where there was shelter from the cold wind. On another day one perched on small twigs projecting from a deadfall in a recently made clearing in heavy forest. At rest they twitch the tail quickly, while watching alertly for passing insects.

Little has been recorded regarding this species other than color descriptions or the listing of specimens. Schönwetter (Handb. Ool., lief. 15, 1968, p. 106) listed three eggs in the Nehr Korn and British Museum collections, with measurements of 17.5–18.0 × 13.5–14.7 mm. attributed to "Costa Rica, W. Panamá."

**EMPIDONAX MINIMUS (Baird and Baird): Least Flycatcher,
Moscareta Menor**

Tyrannula minima W. M. and S. F. Baird, Proc. Acad. Nat. Sci. Philadelphia, vol. 1, nos. 28-29, July-August (September 18), 1843, p. 284. (Carlisle, Cumberland County, Pennsylvania.)

Empidonax pectoralis Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, December 1866, p. 402. (Lion Hill Station, Panama Railroad, Canal Zone, Panamá.)

Small; a prominent white eye-ring, and two white wing bars; brownish olive above.

Description.—Length 116–125 mm. Sixth (outermost) primary with outer web narrowed toward the tip. Adult (sexes alike), upper surface brownish olive, with rump and upper tail coverts slightly paler, and centers of the crown feathers darker; wings dusky, with greater and lesser coverts tipped with buff or buffy white, forming two light bands; secondaries edged and tipped with dull white; tail grayish brown, the outer feathers edged with brownish white; a broad white or brownish white eye-ring; lores dull white mixed with dusky; rest of side of head and of neck like back, fading ventrally into the lighter color of throat and neck; rest of under surface dull white, or pale yellowish white, with breast shaded with brownish gray; axillars and under wing coverts white to pale yellowish white; inner webs of wings pale buffy to yellowish white.

Measurements.—Males (10, taken in breeding season, North Carolina to Montana), wing 61.0–67.2 (63.7), tail 51.5–57.5 (53.7), culmen from base 12.2–13.4 (12.8), tarsus 15.8–16.5 (16.1) mm.

Females (10, taken in breeding season, North Carolina to Montana), wing 59.8–64.3 (61.4), tail 50.0–53.7 (51.2), culmen from base 11.7–14.2 (12.7), tarsus 15.6–16.5 (16.0) mm.

Migrant; rare winter visitor from the North. Apparently casual in occurrence.

The species was long known in Panamá only from specimens collected early by James McLeannan. One of the first, sent to George N. Lawrence from the old Lion Hill Station on the railroad, was described as a new species under the name *E. pectoralis*, as it was not recognized that it was a migrant (see citation above). Three others collected by McLeannan, now in the British Museum (Natural History), are labeled Panamá without other locality. One originally was in the Salvin-Godman collection, the other two in the Sclater collection. Bangs (Auk, 1901, p. 363) recorded a male collected by W. W. Brown, Jr., October 16, 1900, at David, Chiriquí. We have another, a female, received from Colonel F. S. Blanton, taken at

Farfan Beach, Canal Zone, October 5, 1953. Notes from Eisenmann cite the record of another netted at Almirante, Bocas del Toro, on October 19, 1965, by banders working for Loftin. This bird, small in size (wing 63.5 mm measured flat), distinct eye-ring, and olivaceous upper surface, was identified as a Least Flycatcher, banded and released.

The Least Flycatcher, common in winter south through Honduras and El Salvador, is recorded by Slud as rare in Costa Rica. Only stragglers appear to reach Panamá.

EMPIDONAX FLAVESCENS FLAVESCENS Lawrence:
Yellowish Flycatcher, Moscareta Amarillenta

Empidonax flavescens Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, 1865, p. 133. (Barranca, Costa Rica.)

Empidonax flavescens floresae Griscom, Amer. Mus. Nov., no. 280, September 10, 1927, p. 10. (Cerro Flores, 1220 meters, eastern Chiriquí, Panamá.)

Empidonax flavescens chitrae Griscom, Amer. Mus. Nov., no. 280, September 10, 1927, p. 10. (Chitra, 915 meters, eastern Veraguas, Panamá.)

Small; a distinct white eye-ring; yellowish green above; yellow under surface, with buff across breast.

Description.—Length 120–130 mm. Adult (sexes alike), above deep yellowish green; lesser wing coverts like back; rest of wings grayish brown to dusky; middle and greater coverts tipped widely with buff to cinnamon-buff, forming two broad bands; primaries edged narrowly with light olive; secondaries edged with buff to buffy white; tail dark grayish brown, edged with yellowish green; bare rim of eyelids black; a prominent white or pale yellowish white eye-ring; side of head and neck yellowish olive-green; auricular area with faint yellowish shaft lines; chin and upper throat yellow or yellowish white, in some suffused laterally with grayish; breast yellowish olive; rest of lower surface pale yellow; a concealed tuft of white to yellowish white on flanks over tibia; axillars and under wing coverts pale yellow; edge of wing buff to cinnamon-buff; inner edge of wing feathers pale buff.

Juvenile, brownish olive-green above; tips of wing coverts and edging of secondaries cinnamon-buff; chest pale cinnamon-buff; lower breast and abdomen white to yellowish white washed with buff on the sides.

Measurements.—Males (10 from Chiriquí), wing 67.5–70.8 (69.1), tail 52.3–55.5 (53.7), culmen from base 13.1–14.7 (14.1), tarsus 16.0–16.5 (16.3) mm.

Females (10 from Chiriquí), wing 58.6–64.4 (62.7), tail 47.5–

52.0 (50.4), culmen from base 13.0–14.2 (13.6), tarsus 15.5–16.5 (16.0) mm.

Resident. Locally common in western Panamá from the upper edge of the Tropical Zone through the subtropical region from the Costa Rican boundary east on the Pacific slope along the central mountain range to eastern Veraguas (Chitra), and on the Caribbean side to northern Veraguas (Calovévora); to 2225 meters on the Boquete trail above Cerro Punta, and 2040 meters above Boquete (Casita Alta).

These small flycatchers range in undergrowth in highland forests, partly in areas of rather dense growth, partly where the cover is more open. They are alert in seizing small insects on the wing, and also pick off those resting or moving over twigs or leaves. In such movements they are quick and graceful, often raising the feathers at the back of the crown as a pointed crest. Usually they perch low, a meter or two above the ground or, in open areas, may range to 8 or 10 meters or more. The call is a low and sibilant *wee siu*. Skutch in Costa Rica heard males uttering these notes continuously in a dawn-song that ceased before sunrise.

Near El Volcán ovaries in females showed development by mid-February. In Costa Rica Skutch (Publ. Nutt. Orn. Club, no. 7, 1967, pp. 84–85) reported nests with eggs at the end of April. One of these was "in a deep fissure in the side of a living cypress tree in an open grove," a second was "in an open niche in the side of a large, spreading epiphyte-laden tree standing alone in a pasture." The third was a meter or more above the base of a cut bank "beside a little-used roadway between pastures." The nests "were bulky masses of green moss, or of mosses and liverworts, interlaced with a few fibrous rootlets, horsehairs, or similar building materials." The open cup in one held three eggs "dull white, speckled and blotched with pale brownish cinnamon, thickly on the broader end, more sparingly elsewhere." They measured 17.1×14.0 , 17.6×14.0 , and 17.5×14.2 mm. Blake (Condor, 1956, p. 387) described two nests collected by Mönniche near Lérida, above Boquete April 13 and May 26, 1932, one with three eggs, the other with two. They were "dull creamy white, with chestnut-rufous spots and blotches concentrated chiefly at the larger end." Measurements of one clutch: 18×14.5 , 18×14.5 , 18.5×14 mm.

According to Skutch, only the female incubated. The male did not feed her, though he remained nearby, and occasionally during her absence examined the eggs, clinging to the bark of the tree, or hover-

ing before the nest. Later, when the young appeared he shared in their care. When the young left the nest, for a time they rested on a small branch, pressed closely against one another.

The allocation of the *flavescens* group is a matter of argument as to its status. Some regard it as a separate species, others as a part of the *Empidonax difficilis* complex. The birds of western Chiriquí are like those of Costa Rica, the type locality of *flavescens* Lawrence. The characters on which two races were named by Griscom, *floresae* from eastern Chiriquí and *chitrae* from the mountains of Veraguas, are duplicated in an extensive series from western Chiriquí and Costa Rica so that the proposed forms are not recognized. *Empidonax flavescens* here is regarded as a distinct species in accordance with discussion by Zimmer (Amer. Mus. Nov., no. 1605, 1953, pp. 3-7).

EMPIDONAX ALBIGULARIS AUSTRALIS Miller and Griscom:
White-throated Flycatcher, Moscareta Barbiblanca

Empidonax albigularis australis Miller and Griscom, Amer. Mus. Nov., no. 159, February 16, 1925, p. 5. (San Rafael del Norte, Nicaragua.)

Small; under tail coverts, tibia, edge of wing, and under wing coverts buff; brownish olive above, with upper tail coverts buffy brown.

Description.—Length 118-125 mm. Adult (sexes alike), upper surface brownish olive, with the crown darker, rump and upper tail coverts somewhat olive-buff; wings dusky, middle and greater coverts edged with buffy white, forming two bars; secondaries edged with buffy white; tail dusky brown; outer web of the outermost rectrix edged narrowly with dull white; rectrices tipped lightly with dull buffy white; a narrow ring around eye dull white; lores with a spot of grayish white; side of head and of neck grayish brown; throat and foreneck white; a slightly marked band of buffy olive-brown across the breast; abdomen and under tail coverts light buffy yellow; lower flanks and tibia light cinnamon-buff.

Juvenile, darker brown on back, crown and cheeks; whiter on lower surface, without a distinct breast band; tibia, wing bars, and edge of wing cinnamon-buff; under tail coverts faintly buff.

Measurements.—Males (8 from Nicaragua, Costa Rica, and Chiriquí), wing 60.5-62.3 (61.5), tail 49.6-54.5 (52.3), culmen from base 13.4-14.7 (13.9), tarsus 16.1-16.7 (16.4) mm.

Females (6 from Honduras, Costa Rica, Chiriquí, and Canal Zone), wing 57.9-61.1 (58.9), tail 50.3-53.0 (51.1), culmen from base 13.8-14.6 (14.1), tarsus 16.0-16.7 (16.3) mm.

Weight, ♂ 9.1 grams (Hilty and Leck).

Resident. Rare; recorded in the highlands of Chiriquí above Boquete, and near Nueva Suiza; casual in the lowlands at Chiriquicito, Bocas del Toro, and in the Canal Zone.

Slater and Salvin (Proc. Zool. Soc. London, 1864, p. 360) received one from McLeannan, presumed to have come from near the Lion Hill station on the Panama Railroad. The specimen, now in the British Museum (Natural History), is labeled female, but without other data. Another lowland specimen, in the Museum of Comparative Zoology, is a female from Chiriquicito, Bocas del Toro, taken by F. H. Kennard, March 26, 1926. A male in the American Museum of Natural History was collected April 23, 1968, at about 1870 meters elevation, above Nueva Suiza, by S. Hilty and C. Leck. Of three adults in the Mönniche collection in the Chicago Natural History Museum, a male was taken at Lérica, June 23, 1936, and two females at Velo, June 13 and 15, 1933. A fully grown juvenile male came from Lérica, June 27, 1936.

Eisenmann, in manuscript notes, said of this species that "it evidently breeds in the Chiriquí highlands," where he heard one singing at Alto Lino, at about 1200 meters elevation, on July 19 and 20, 1964. The bird mentioned, resting on a wire passing above a brushy area, "uttered an explosive buzzy, but not loud *pseeyp* or *kzeyp*. As it sang it raised the head and neck and elevated the crown feathers slightly."

The only account of nesting in this species that I have seen is that of Dickerman (Condor, 1958, pp. 259-260, fig. 2) who collected a pair of the race *Empidonax albigularis timidus*, with their nest, near El Salto, Durango, in northwestern México on July 7, 1956. The nest, placed about a meter above the ground, in a crotch in a small willow beside a stream, was a thick-walled cup built of dried grasses, lined with similar but finer materials. The three eggs (in the collection of the Minnesota Museum of Natural History) are "creamy, with a wreath or crown of burnt umber spots and splotches circling the larger end." The accompanying photograph indicates that they vary from subelliptical to short subelliptical in form. They measure 17.2×13.2, 17.8×12.5, and 17.3×13.1 mm. Goldman (Smithsonian Misc. Coll., vol. 115, 1915, p. 142) gives the elevation at El Salto as ranging from about 2315 to 2550 meters.

While White-throated Flycatchers nowhere are common, they range widely from México to Panamá. Early information on them was scanty, with confusion in names applied to them. As a whole

there appear to be two forms in México, with one of them ranging south to Guatemala. A third subspecies is found from Honduras to Panamá. Under present understanding these three subspecies may be recognized as follows:

Empidonax albigularis albigularis Sclater and Salvin.

Empidonax albigularis Sclater and Salvin, Ibis, vol. 1, no. 2, April 1859, p. 122. (Dueñas, Guatemala.)

Empidonax axillaris Ridgway, in Baird, Brewer, and Ridgway, History of North American Birds, Land Birds, vol. 2, January 1874, p. 363 (in Key). (Orizaba, México.)

Somewhat browner above, and in the breast band; averaging paler throughout.

Measurements.—Males (1 from Guatemala, 6 from Orizaba, México), wing 59.2–63.4 (61.2), tail 52.9–57.2 (54.8), culmen from base 13.6–14.8 (14.1), tarsus 15.5–16.8 (16.0) mm.

Females (2 from Orizaba, México), wing 57.5, 58.9; tail 51.3, 53.7; culmen from base 14.2, 14.3; tarsus 16.2, 16.5 mm.

Eastern México to Guatemala.

Empidonax albigularis timidus Nelson

Empidonax timidus Nelson, Auk, vol. 17, no. 3, July 1900, p. 263. (El Salto, Durango, México.)

Brown like *E. a. albigularis*, but paler.

Measurements, male (type), wing 61.7, tail 54.7, culmen from base 13.3, tarsus 16.5 mm.

Northwest México.

Empidonax albigularis australis Miller and Griscom

Empidonax albigularis australis Miller and Griscom, Amer. Mus. Nov. no. 159, February 16, 1925, p. 5. (San Rafael del Norte, Nicaragua.)

Somewhat darker, more olive in general coloration; dorsal surface darker; breast band slightly more olive.

Honduras through Nicaragua and Costa Rica to the highlands of Chiriquí; accidental in the Canal Zone.

For measurements, see above.

**EMPIDONAX ALNORUM Brewster: Alder Flycatcher,
Moscareta Verdusca**

Empidonax traillii alnorum Brewster, Auk, vol. 12, April 1895, p. 161. (Upton, Maine.)

Small; throat white; a slightly indicated dark band across the breast; larger than the Least Flycatcher, *Empidonax minimus*, with white eye-ring narrower, less evident.

Upper surface dark olive-green. (Song, recorded on the northern nesting grounds, with three syllables, *fee-bee-o.*)

Description.—Length 128–140 mm. Sexes alike. Above dark olive-green, faintly browner on the rump and upper tail coverts; crown usually slightly darker than the back; wings dusky brown; lesser coverts like back; middle and greater coverts tipped with pale olive-brown to pale buffy brown, forming two distinct wing bars; secondaries edged with the same color; inner primaries bordered lightly with pale buffy white; tail dark grayish brown, with outer rectrix edged with dull white, some or all of the others tipped faintly with dull white; throat white; a band across chest, including the adjacent sides, pale brownish to olive-gray; rest of under surface, including under wing coverts, white, tinged more or less with pale yellow, especially in freshly molted birds.

Measurements.—Males (10 from the northern breeding grounds in Alaska, Montana, Athabaska, Labrador, and Maine), wing 70.3–75.9 (73.8), tail 56.8–62.2 (59.3), culmen from base 13.4–15.5 (14.5), tarsus 16.2–16.8 (16.4) mm.

Females (10 from the northern breeding grounds in Alaska, Yukon, Mackenzie, Labrador, and Maine), wing 66.0–70.8 (68.2), tail 53.7–57.6 (54.9), culmen from base 13.9–15.5 (14.6), tarsus 15.7–16.9 (16.2) mm.

Passage migrant from the North. Probably fairly common, but as yet known definitely in Panamá from the few specimen records cited below.

From present information this flycatcher breeds from Alaska and Canada, southward and eastward to New England. The earliest report for Panamá is a female in the Museum of Comparative Zoology, taken April 11, 1904 by W. W. Brown, Jr., on Isla Saboga in the Pearl Islands. I collected a male April 14, 1947, in the valley of the Río Imamadó, a tributary of the Río Jaqué, near the Colombian border in southeastern Darién. Other records are of individuals in migration that have landed at night on ships in the Gulf of Panamá. The first of these is a female that I captured May 11, 1921, at sea off Punta Mala when a passenger on a Grace Line steamer en route from the west coast of South America to New York via the Panamá Canal. Three others, sexed as females, in the collection of the University of Miami, were collected by L. Holthuis, May 8, 1967, when they landed on the deck of the *R. V. Pillsbury* at 7°50' N Latitude, 78°30' W Longitude, near the coast of eastern Darién.

In collections made for the National Museum by M. A. Carriker,

Jr., in Colombia there are two, male and female, taken at Socarré on the upper Río Sinú, Department of Córdoba, April 12, 1949; and two, also male and female, at Simití, Department of Bolívar, April 2 and 12, 1947. Another male April 21, 1952, came from San Agustín, Department of Huila, far to the south near the head of the Río Magdalena. These are assumed to have been collected on or near their wintering grounds. It is not certain that this species winters in Panamá, as the records for April, from Isla Saboga and eastern Darién, may be of birds that were in transit from a more southern wintering ground.

While long considered a subspecies of *Empidonax traillii*, it has been shown recently, especially from studies originated by R. C. Stein, that *alnorum* is marked by its characteristic three-noted song, usually written *fee-bee-o*, while in the *traillii* group this is of two syllables, *fitz-bev*.

Gorski, (Auk, 1971, pp. 429-431) near Iquitos, Perú, from October 31 to November 3, 1968, recorded regular response to playback of the three-syllabled call, but from this had no reaction to the two-syllabled song, *fitz-bev* of nominate *traillii*, an indication of a South American winter home for the *alnorum* population.

Where the nesting areas of *alnorum* and *traillii* join, as in northern New York and southern New England, the two may be found together, but living as separate entities that are not known to hybridize. From this the two are treated as separate species. The A.O.U. Committee on Classification and Nomenclature suggests that where specific identification between the two is not made, the group term "Traill's Flycatcher" be used.

In this present study, identification of specimens from Panamá has been made through details of dorsal coloration. Differences in comparative length of the fifth primary may be useful in separating individuals on the northern nesting grounds. But this may not be certain in those from Panamá where the outer primaries, even in April, may not have attained their full growth, since these birds have their complete annual molt while in the south.

**EMPIDONAX TRAILLII (Audubon): Traill's Flycatcher,
Moscareta Aceitunada**

Small. In general like *E. alnorum*, but browner or grayer, less greenish, above.

Description.—Length 125-140 mm. Varying from olive-brown to grayish brown and grayish above, separated in races through differ-

ences in this coloration. Song with two syllables, usually written *fitz-bew*.

Through its wide distribution in the breeding season to the south of that of *Empidonax alnorum*, four geographic races have been recognized in this species. All are migrant, moving south to live for the period of northern winter in Central America and northern South America.

Like the related *E. alnorum*, all have the complete annual molt during the winter season, so that many of the migrant specimens seen at that season are imperfect in color and plumage through wear or the process of feather renewal. From this, identification of some specimens to subspecies may be difficult or uncertain. Comparative color differences of the forms are outlined in the accounts that follow. Measurements cited have been taken from adult birds collected on or near their northern nesting grounds.

Gorski (Auk, 1969, pp. 745-747), in December and January of the winter season of 1967-1968, used recordings of the two- and three-syllabled songs, made on their northern nesting grounds, in playback at several localities in central Panamá. Response came from several individuals to the two-syllabled "fitz-bew" of *traillii*, near Gamboa, Canal Zone, and at La Jagua, near Pacora, eastern Province of Panamá. In many experiments there was no reaction to the three-syllabled call of *alnorum*. During the mid-winter period the birds appear to have local distribution as none responded at a number of apparently favorable localities.

As a group (including *E. alnorum*) these flycatchers are fairly common in Panamá through the Tropical Zone, with some ranging higher in the lower Subtropical Zone. They are found mainly in thickets and at the borders of forests, less often in undergrowth in densely forested areas. While not especially shy, ordinarily they are inconspicuous because of their quiet habits and the heavy cover in which they live. Their usual call, heard occasionally, is a low *whit*, with limited carrying power.

Stomachs of those that I have examined have held insects only. I have not seen them visiting berry-laden feeding trees.

EMPIDONAX TRAILLII TRAILLII (Audubon)

Muscicapa traillii Audubon, Birds Amer., Folio, vol. 1, 1828, p. 45; Orn. Biogr., vol. 1, 1831, p. 236. (Arkansas Post, Arkansas County, Arkansas.)

Darkest dorsally of the races; more olive-brown above than *E. alnorum*, with slight, if any, greenish hue.

The measurements listed have been taken from males collected on their northern breeding grounds.

Measurements.—Males (10 from Pennsylvania, Maryland, New Jersey, and New York), wing 70.0–74.6 (71.7), tail 54.5–59.0 (56.2), culmen from base 13.6–15.3 (14.6), tarsus 16.1–16.9 (16.5) mm.

Females (2 from Indiana and Illinois), wing 67.0, 68.0, tail 53.0, 54.5, exposed culmen 11.0, 11.5, tarsus 14.5, 16.0 mm.

Migrant from the north, not common; recorded (from specimens) from October 30, through the winter season in December, to May 11.

Those of this race that I have seen from Panamá include an adult female, that had not yet begun the molt, from Barro Colorado Island, Canal Zone, October 30, 1956; an adult male with molt commencing, from Almirante, Bocas del Toro, December 11, 1960; a male that had renewed most of its plumage, from Tonosí, Los Santos, March 23, 1957; and one in full dress from Curundu, Canal Zone, May 11, 1963.

Records in the collections made by Carriker in Colombia include a male from Nuquí on the coast of Chocó, March 1, 1951, another from Tierra Alta, near the Río Sinú, Córdoba, February 17, 1949, male and female from Villa Felisa, Norte de Santander, October 23 and November 1, 1947; and one that I secured at Nazaret, eastern Guajira, April 29, 1941.

Two males of this race in the Museum of Comparative Zoology were taken by W. W. Brown, Jr., on Isla Saboga, Archipiélago de las Perlas, April 12 and 13, 1904.

EMPIDONAX TRAILLII BREWSTERI Oberholser

Empidonax traillii brewsteri Oberholser, Ohio Journ. Sci., vol. 18, no. 3, January 1918, p. 93. (Cloverdale, Nye County, Nevada.)

Somewhat dark grayish brown; not as olive in hue as nominate *traillii*, and averaging slightly smaller.

Measurements.—Males (4 from Washington and California), wing 66.9–69.1 (67.9), tail 54.4–58.4 (56.5), culmen from base 14.3–14.9 (14.6), tarsus 16.1–16.6 (16.4) mm.

Females (4 from Washington and California), wing 62.8–67.7 (65.1), tail 52.2–56.6 (55.2), culmen from base 14.3–15.9 (15.1), tarsus 16.1–16.7 (16.2) mm.

Migrant from the north, possibly present during the winter season.

The only specimen definitely identified from Panamá that I have seen is a male with molt nearly complete, that I collected at Pesé, Herrera, March 30, 1948.

Others of this form, all males, from northern Colombia, include one from Punto Muchimbo, on the lower Río San Juan, Valle, January 11, 1951, two from Regeneración, Bolívar, February 10, 1948, and one from Nazaret, eastern Guajira, April 29, 1941.

EMPIDONAX TRAILLII ADASTUS Oberholser

Empidonax traillii adastus Oberholser, Sci. Publ. Cleveland Mus. Nat. Hist., vol. 4, no. 1, September 19, 1932, p. 3. (Hart Mountain, northern end of Warner Valley, 20 miles northeast Adel, Oregon.)

Definitely grayer than *brewsteri*, slightly darker throughout than *extimus*.

Measurements.—Males (8 from Oregon, Idaho, Montana, and Utah), wing 67.7–72.0 (69.9), tail 54.8–60.0 (57.4), culmen from base 14.5–17.9 (15.8), tarsus 16.4–16.9 (16.5) mm.

Females (8 from Oregon, Idaho, and Utah), wing 65.2–69.0 (67.3), tail 53.9–58.6 (55.9), culmen from base 14.2–16.1 (15.2), tarsus 16.0–16.7 (16.4) mm.

Migrant from the north; fairly common as a winter resident in the lowlands; one record at 600 meters elevation on Cerro Pirre.

This form, recorded from September to April throughout the lowlands of Panamá, is fairly common through the winter season. I have found it in undergrowth, usually near streams. One from Cerro Pirre, Darién, is a female taken by E. A. Goldman in second growth jungle, March 23, 1912.

The Carriker collections from northwestern Colombia include two females from Río Viejo, February 20 and 23, and male and female from Norosí March 10 and 13, 1947, all in the Department of Bolívar; and a female from Pueblo Nuevo, Córdoba, January 22, 1949.

EMPIDONAX TRAILLII EXTIMUS Phillips

Empidonax traillii extimus Phillips, Auk, vol. 65, no. 4, October 22, 1948, p. 512. (Feldman, lower San Pedro River, Arizona.)

Definitely close in hue to *adastus* but paler; lightest in dorsal color of the races.

Measurements.—Male (1 from New Mexico), wing 70.4, tail 62.6, culmen from base 15.5, tarsus 16.5 mm.

Females (6 from Arizona and New Mexico), wing 63.6–69.2 (67.1), tail 53.1–58.3 (56.3), culmen from base 14.6–16.0 (15.5), tarsus 16.1–17.0 (16.4) mm.

Migrant from the north. Recorded from September 8 to May 26; fairly common through the winter months; found at 725 meters in the mountains of Bocas del Toro.

Specimens were collected as follows: San Félix, Chiriquí, February 21, 1956, female; Gatun, Canal Zone, May 8 and 15, 1911, two females; Portobelo, Colón, May 26, 1911, female; and El Real, Darién, January 25, 1964, female. A record of especial interest is a female collected September 8, 1961, at an elevation of 725 meters in the upper valley of the Río Changuena in western Bocas del Toro.

The present race and *E. t. adastus* apparently are equally common and widely distributed during winter throughout the Isthmus, and also in Colombia. Specimens from the latter country were collected by Carriker in the Department of Bolívar, at La Raya, January 19 and 30, 1948, and Norosí, February 28, 1947; Pueblo Nuevo, eastern Córdoba, January 22, 1949; and near El Difícil, Magdalena, December 27, 1946. I secured males at Nazaret, Guajira, on April 26 and May 1, 1941.

**MITREPHANES PHAEOCERCUS (Sclater): Tufted Flycatcher,
Moscareta Moñuda**

Mitrephorus phaeocercus P. L. Sclater, Proc. Zool. Soc. London, pt. 27, May 1859, p. 44. (Córdoba, Veracruz, México.)

Small, with a pointed crest; greenish back, cinnamon-brown breast, light buff or yellow abdomen; a partly concealed white tuft on either side of rump.

Description.—Length 115–122 mm. Adult (sexes alike), upper surface greenish olive; crown slightly darker than the back, with indistinct darker shaft lines; a distinct, but partly concealed white tuft on either side of rump; wings dusky; middle and greater coverts tipped with whitish to buff; secondaries edged distally with dull white to light olive; tail dusky grayish brown, tipped faintly with cinnamon-buff; sides of head dull cinnamon-buff to buffy olive; foreneck and breast cinnamon-brown; lower breast and abdomen cinnamon-buff to yellow; axillars and under wing coverts buff to cinnamon-buff.

Juvenile, upper surface dull, dark reddish brown, tipped with cinnamon-buff, these lighter markings forming an indistinct band across the hindneck; tips of middle and greater coverts cinnamon-brown; lower surface darker than in adult.

The species ranges widely through mountain areas from northern México south through Central America, western Colombia, and Ecuador. A close relative, *Mitrephanes olivaceus*, is found in Perú

and Bolivia. The northern bird varies considerably through its wider distribution, so that seven geographic races are recognized in the latest revision (Webster, Auk, 1968, pp. 287–303). Three of these are found in Panamá. While Webster suggests placing *Mitrephanes* in a linear sequence between *Contopus* and *Empidonax*, it seems more appropriate here to list it following them, because of the extensive northern range and the migratory habits of the majority of the other two.

MITREPHANES PHAEOCERCUS AURANTIIVENTRIS
(Lawrence)

Mitrephorus aurantiiventris Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, 1865, p. 173. (Tabacales, San José, Costa Rica.)

Characters.—Somewhat darker cinnamon-buff on foreneck and breast, with this color, in paler shade, extending over the abdomen, flanks, and under tail coverts; tarsus slightly longer.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 58.6–62.7 (60.5), tail 49.0–53.5 (51.3), culmen from base 11.0–12.0 (11.6), tarsus 16.0–16.5 (16.2) mm.

Females (10 from Chiriquí and Costa Rica), wing 56.1–57.4 (56.7), tail 46.6–48.9 (47.6), culmen from base 10.2–11.8 (11.0), tarsus 15.7–16.3 (16.0) mm.

Resident. Found locally in upper Tropical and Subtropical Zone forests of the mountains of western Chiriquí, from Boquete west through El Volcán and Cerro Punta toward Costa Rica, at about 1200 to 2150 meters.

In the main, these birds range in the undergrowth of humid mountain forests, where they are not rare, but are restricted locally in occurrence. Fortunately they are adaptable, as they are able to adjust to the growths that replace the original forest when this has been cut. They may range also in fairly open areas where there are scattered trees in pasturelands.

The narrowly pointed crest gives them an alert appearance, and identifies them when their colors are not clearly seen. In form and actions in general they are similar to Wood Pewees. It is usual to find them on lookout perches rather near the ground, where they watch alertly for passing insects. These are captured expertly by a dash in the air, when the bird circles to return to its lookout point. The projecting branches of a fallen tree near the ground are favored locations, but also they may range higher, even into the tree crown.

Like the small resident Wood Pewees of the lowlands, the tail often is shivered as the birds return to a perch.

Eisenmann describes their calls as "a piping *pip-pip-pip-pip* varying in the number of notes, and occasionally uttered at a faster pace." He remarks that the notes suggest those of the much larger Dark Pewee, but are higher in pitch.

Skutch (Publ. Nuttall Orn. Club, no. 7, 1967, pp. 86-90) in an account of this race in Costa Rica (where in addition to its mountain range it occurs at lower elevations in humid forest) found nests built in pendant loops of vines, often adjacent to growths of ferns, mosses, and other epiphytes. The exterior of the shallow nest cup was formed of mosses gathered from nearby branches. The lining was of branching lichens. In building, the female worked alone, with the male resting and calling nearby. The eggs, seen by means of a mirror attached to a slender stick, "were two, dull white, with a conspicuous wreath of brownish white around the thicker end." The male occasionally brought an insect and fed his mate, but did not assist otherwise during incubation. The female on the nest kept sharp watch for insects, and when one passed near, often flew directly from her position on the eggs to seize it, usually returning immediately to her post. As the nest was inaccessible, no measurements of the eggs were made. They were taken by some predator before hatching.

MITREPHANES PHAEOCERCUS VIVIDUS Griscom

Mitrephanes aurantiiventris vividus Griscom, Amer. Mus. Nov., no. 280, September 10, 1927, p. 11. (Chitra, 1220 meters, Veraguas, Panamá.)

Characters.—Foreneck and breast slightly paler, ranging from a color almost identical with that of *M. p. aurantiiventris* from Veraguas and Coclé, to one definitely paler in Darién; abdomen distinctly yellowish buff to yellow; dorsal surface lighter green; tarsus slightly shorter.

The markings of the lower surface show a cline from darker in Veraguas and Coclé to paler eastward on Cerro Tacarcuna.

A male collected on Cerro Malí, Darién, March 1, 1964, had the iris dark brown; maxilla black; mandible honey yellow; tarsus and toes fuscous-black; claws black; gape and inside of the mouth, including the tongue, honey yellow.

A female from this locality, taken on March 16, was similar. Another female from the head of the Río Guabal, Coclé, March 3,

1962, also had the iris dark brown; maxilla black; mandible dark honey yellow, with a tiny area at the pointed tip fuscous; tarsus and toes dark brown; claws black.

Measurements.—Males (10 from Coclé, Province of Panamá, and Tacarcuna, Darién), wing 59.5–64.0 (62.3), tail 48.5–53.5 (51.4), culmen from base 11.0–12.8 (12.0), tarsus 12.0–12.8 (12.3) mm.

Females (7 from Veraguas, Coclé, and Tacarcuna, Darién), wing 57.1–61.3 (58.6), tail 46.7–51.0 (49.4), culmen from base 11.4–12.2 (11.8), tarsus 12.3–12.6 (12.4) mm.

Resident. Found locally, in small number, on the mountains of eastern Veraguas (from both Pacific and Caribbean slopes), and of northwestern Coclé; Cerro Campana, western sector of the Province of Panamá; and Cerro Tacarcuna, Darién (including the eastern face in Chocó, Colombia).

Benson collected one on the Río Calovévora, on the Caribbean slope of Veraguas, September 3, 1926. My first specimen was a female, taken at 650 meters elevation at Las Peñitas at the head of Río Guabal, on the trail leading to the Caribbean lowlands of northern Coclé. Four from El Valle were collected March 29, 1951, at an elevation of 760 meters in heavy forest along a small stream at the northern end of the Cerro La India Dormida. A few days earlier, on March 21, I had secured one and saw another at 1000 meters elevation on the south face of Cerro Campana. Here, a deadfall that had made a small opening in the forest offered suitable low perches, where two of these flycatchers rested, on the watch for passing insects.

From Darién, on the base of Cerro Tacarcuna, we have three taken at the ancient village site at 575 meters, and on the high mountain ridge of Cerro Malí at 1280 meters. These birds at times varied from the usual habit of low perches to range in the high tree crown when this faced a small clearing. The height from the ground emphasized their tiny size, less evident in those encountered near at hand and lower down.

Webster, in his revision of this species (Auk, 1968, p. 301) with only part of the material now available, assigned the few seen from the Tacarcuna area to the race *eminulus*. Additional specimens now available indicate clearly that birds of this area are the subspecies *vividus*. Those of Veraguas, from which the subspecies was described, show some affinity to *aurantiventris* in the more cinnamon hue of the foreneck and breast. Birds from Cerro Campana and Cerro Tacarcuna, which are definitely paler cinnamon on the breast

and clearer yellow on the lower breast and abdomen, may be regarded as more typical. It will be noted that *vividus*, in general, has a lower altitudinal range. It is interesting that none have been taken as yet on Cerro Azul.

MITREPHANES PHAEOCERCUS EMINULUS Nelson

Mitrephanes eminulus Nelson, Smithsonian Misc. Coll., vol. 60, no. 3, September 24 (September 27), 1912, p. 13. (Cana, Darién, Panamá.)

Characters.—Foreneck and upper breast pale buff; lower breast, sides, and abdomen clear yellow; slightly duller green above. Distinctly duller colored than *M. p. vividus*; tarsus shorter as in that form.

Measurements.—Males (6 from Cerro Pirre, Darién, and Chocó, Colombia), wing 59.0–61.3 (60.2), tail 49.7–56.8 (51.8), culmen from base 11.1–12.0 (11.6), tarsus 11.2–12.8 (12.3) mm.

Females (3 from Cerro Pirre, Darién), wing 54.5–58.2 (57.3), tail 46.5–48.6 (47.4), culmen from base 11.3–12.5 (12.0), tarsus 11.8–12.2 (12.0) mm.

Resident. Rare, on Cerro Pirre, Darién.

This form was described from three males and two females collected near Cana, Darién, by E. A. Goldman, at elevations of 550 to 760 meters. Benson, in 1928, secured a male and two females.

A note by Goldman speaks of one taken from a low limb in heavy forest. In three of the stomachs preserved from his specimens I identified a variety of small insects, including numerous kinds of beetles, a winged ant, other small hymenoptera, and Homoptera. A small caterpillar indicated that occasionally this flycatcher may take other than flying insects.

A male of this race collected by M. A. Carriker, Jr., on the Río Nuquí, at the base of the Serranía de Baudó, on the western slope of central Chocó, Colombia, marks an extension from the previously known range. It is the first record for Colombia.

TERENOTRICCUS ERYTHRURUS FULVIGULARIS (Salvin and Godman): Ruddy-tailed Flycatcher, Moscareta Colicastaña

Myiobius fulvicularis Salvin and Godman, Biol. Centr.-Amer., Aves, vol. 2, pt. 73, February 1889, p. 58. (Santa Fé, Veraguas, Panamá.)

Very small; tail and under surface cinnamon-buff.

Description.—Length 90–100 mm. Rictal bristles nearly as long as bill. Adult (sexes alike), crown, hindneck, and back grayish olive, with the forehead and lower back tinged with buffy cinnamon; rump

cinnamon-rufous; wings dusky; wing coverts and broad edgings on secondaries cinnamon; primaries edged narrowly with buff; upper tail coverts and tail cinnamon-rufous; side of head grayish olive, with a narrow line of cinnamon-buff around the eye; lores whitish; chin and upper throat pale cinnamon-buff; rest of under surface, including the under wing coverts, axillars, and inner margin of secondaries ochraceous-buff.

In several males the iris varied from reddish brown to dark brown; maxilla and tip of mandible from dark neutral gray to black; rest of mandible from flesh color to pale yellow; tarsus and toes from pale brown to buffy brown and dull honey yellow; claws mouse brown to neutral gray.

In one female the iris was dark brown; maxilla and tip of mandible dull black; base of mandible flesh color; upper half of tarsus dull reddish brown, shading to fuscous on lower section and toes; claws dark neutral gray.

Measurements.—Males (10 from Chiriquí to Darién), wing 48.9–51.8 (50.4), tail 37.5–40.2 (39.4), culmen from base 8.7–10.7 (9.8), tarsus 15.2–16.5 (15.8) mm.

Females (10 from Chiriquí to Darién), wing 45.3–48.9 (47.4), tail 34.2–38.8 (36.6), culmen from base 9.5–10.8 (10.0), tarsus 13.2–14.7 (13.9) mm.

Resident. Widely distributed but not abundant. Found in forested areas throughout the Tropical Zone; adaptable, as where the original forest has been cut these birds may be found in taller stands of second growth.

In lowland Chiriquí I found a few in 1966, back of Puerto Armuelles, and others in 1956, in a narrow band of coastal forest in the eastern part of the province at Las Lajas. It is known also from the forested western side of the Azuero Peninsula, but not from the eastern slope in Los Santos or Herrera, nor from the open, lowland savannas from Coclé eastward in the western Province of Panamá. In this area it seems to follow the foothills inland. It lives also on Cerro Campana, in the northern Canal Zone, and on Cerro Azul, and from the lower Bayano area, beyond Chepo, continues to the Colombian boundary in Darién. On the Caribbean slope, it is widely spread from western Bocas del Toro east through the lower Chagres area to far eastern San Blas.

These tiny birds usually are found singly, occasionally in pairs, resting quietly on open perches 3 or 4 meters above the ground in the heavy shade of tall forest. Rarely, I have observed them moving

more actively, though briefly, with little flocks of other small forest birds. Their low calls, with slight carrying power, are rendered by Eisenmann as a sibilant *pséoo-see*. In the nesting season in March and April, when pairs may be seen, they make a curious, low rattling sound by fluttering the wings slightly as they rest quietly on a perch. On one occasion I saw two in an attractive display in which both wings were suddenly extended and thrust upward vertically for a second and then folded quickly.

Information on their breeding is detailed in an account by Skutch (Pac. Coast Avif., no. 34, 1960, pp. 534-538), mainly from observations on Barro Colorado Island between March and May. He writes that "the pensile nest is attached to the end of a slender, drooping twig, to a thin, dangling vine, or beneath a palm frond." The female worked alone fastening fibrous materials to the end of the hanging support, and then pushed into this mass to make a rounded space in which the nest was formed with additional fibers and bits of leaves. One nest on Barro Colorado had a rounded base tapering upward for a length of 230 mm to its point of suspension. "A roughly spherical chamber occupied the lower third of the structure. This was entered through a round doorway in the side, above which was a visorlike projection" that afforded shelter from rain. Another nest was frailer in construction. Two sets, each of two eggs, were seen, these being white with scattered irregular blotches of chocolate that joined to form a heavy wreath around the large end. Three of the eggs measured 15.9×11.9 , 15.5×11.9 , and 15.9×11.1 mm. Incubation and subsequent care of the young were duties of the female alone, with no male in attendance. Young at hatching had pink skin and were without down.

From his observations Skutch concluded that this flycatcher "does not form pairs, and the female receives no aid in attending the nest."

While *Terenotriccus* currently is placed near the genus *Empidonax*, some of its actions, especially the elevation of the wings, are suggestive of *Pipromorpha*. In preparing specimens, I have noted that the pattern of the dorsal pterylosis is peculiar, as is that of the tarsus with its slight indication of scutellation.

**PRAEDO AUDAX Nelson: Black-billed Flycatcher,
Moscareta Piquiprieta**

Praedo audax Nelson, Smithsonian Misc. Coll., vol. 60, no. 3, September 24 (Sept. 27), 1912, p. 15. (Cana, 550 meters elevation, Cerro Pirre, Darién.)

Small; greenish olive above; yellowish on lower surface; two buff wing bars; a white line from lores to above eye.

Description.—Length 120–126 mm. Adult (sexes alike), above dull greenish olive; side of head and lores dull, dark gray, with the eyelids edged with white, and an obscure white line on the upper margin of the loreal space, running from the eye toward the base of the nostril; wings dull black; middle and greater coverts and secondaries edged with buffy white producing two prominent bars; outer webs of secondaries darker buff; tail feathers edged obscurely on the outer webs toward the base with buffy brown; throat whitish; breast with a broad band of greenish olive; lower breast and abdomen clear light yellow, or in some yellowish white; edge of wing yellow.

A male, collected January 30, 1961, at 450 meters on the base of Cerro Pirre, had the bill fuscous-black, changing to fuscous on the base of the mandible; iris dark brown; tarsus and toes fuscous.

Measurements.—Males (10 from eastern Province of Panamá, Darién, and northern Colombia), wing 57.8–64.9 (60.3), tail 51.2–57.6 (53.8), culmen from base 13.4–13.9 (13.6), tarsus 14.3–15.6 (14.9) mm.

Females (5 from eastern Province of Panamá and northern Colombia), wing 57.6–62.0 (59.4), tail 50.2–53.5 (51.1), culmen from base 13.0–14.0 (13.3), tarsus 13.5–15.5 (14.5) mm.

Resident. Known in Panamá near San Antonio, beyond Chepo on the lower Río Bayano, eastern Province of Panamá, and on Cerro Pirre, Darién.

The species was described from two males taken by E. A. Goldman at 550 meters elevation near Cana, Cerro Pirre, March 19 and May 22, 1912. Another male, secured by Rex Benson at the type locality, June 25, 1928, is in the collections of the Museum of Comparative Zoology. A male and two females collected by Austin Smith are marked "Port Antonio, Río Chepo," March 16, 20, and 23, 1927. Two of these, male and female, are now in the Peabody Museum at Yale, and the third, a female, in the American Museum of Natural History. The locality is on the lower Río Bayano, 5 kilometers southeast of Chepo.

The only other record to date is of a male that I found on January 30, 1961, at 450 meters elevation on the southern slope of Cerro Pirre, near the headwaters of the Río Setegantí. It was with a scattered group of small birds that ranged through the tops of the lower undergrowth in heavy forest. It was alert and active in moving through the branches, and I was interested to note that in perching, the body was held less upright than is usual in species of *Empidonax*, which otherwise it resembles superficially. The stomach of one of

those taken by Goldman was filled with remains of small- and medium-size beetles, and bits of a hymenopteran.

The species is represented in collections made by Carriker in Colombia, from Socarré, Department of Córdoba; Santa Rosa and Colosó, Department of Bolívar; and Casacará, Department of Magdalena.

The series seen as a whole includes five males and two females from Panamá, and five males and three females from northwestern Colombia. Those from Panamá appear slightly smaller, and also have the breast band faintly grayer, the throat somewhat grayish, and the yellow of the abdomen and sides slightly paler. Measurements of the five males are as follows: wing 57.8–58.9 (58.1), tail 51.2–53.2 (52.2), culmen from base 13.4–13.9 (13.6), tarsus 14.7–15.2 (14.9) mm.

The Colombian birds, in which the throat is whiter, the breast band faintly darker, and the yellow faintly brighter, measure as follows: Wing 60.6–64.9 (62.4), tail 53.8–57.6 (55.4), culmen from base 13.5–13.9 (13.6), tarsus 14.3–15.6 (14.9) mm.

With additional material it may prove that two subspecies may be recognized.

Griscom has listed this species in the genus *Aphanotriccus*, but it should be noted that while there is a general resemblance in form of bill, and particularly in the small feet, the rictal bristles in *audax* are definitely shorter and less developed. For the present I prefer to recognize *Praedo* as a separate genus.

MYIOBIUS SULPHUREIPYGIUS AUREATUS Bangs: Sulphur-rumped Flycatcher, Moscareta Rabadilla Azufrada

FIGURE 42

Myiobius xanthopygus aureatus Bangs, Proc. New England Zoöl. Club, vol. 4, March 19, 1908, p. 27. (Divalá, Chiriquí, Panamá.)

Small; olive-green above, with yellow rump; a cinnamon-brown band across breast; abdomen yellow.

Description.—Length 115–125 mm. Adult male, crown, hindneck, back, and scapulars, dark greenish olive; posterior half of crown with a partly concealed patch of yellow to slightly orange-yellow; rump pale yellow; upper tail coverts and tail slightly brownish black; side of head light olive-buff; lores similar but buff partly obscured by dark tips of the feathers; wings dusky, the primaries and secondaries edged indistinctly with dull brown; chin and throat pale grayish yellow; breast and sides tawny-brown; abdomen and flanks light

yellow, the flank feathers elongated; under tail coverts pale dull yellow, mixed faintly with dull brown; axillars and under wing coverts pale yellowish white; inner webs of wing feathers edged lightly with pale dull brown (a marking absent in some).

Adult female, like the male, but usually with the area of the crown

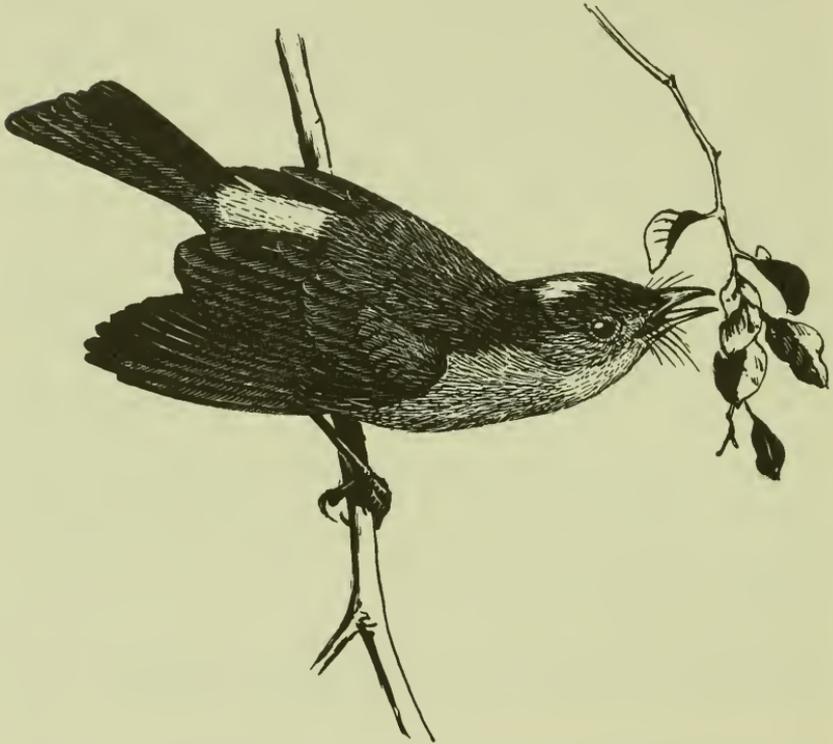


FIGURE 42.—Sulphur-rumped flycatcher, moscareta rabadilla azufrada, *Myiobius sulphureipygius aureatus*.

patch indicated by a wash of dull rufous-brown on the bases of the feathers, rarely with a partly developed yellow patch.

Juvenile, similar to the adult, but with the brown of breast and sides paler.

A female, taken at Armila, San Blas, February 22, 1963, had the iris dark brown; maxilla and tip of mandible dull black; rest of mandible flesh color; tarsus and toes dark neutral gray; claws dull black.

Measurements.—Males (10 from Panamá), wing 64.5–68.3 (66.3),

tail 50.9–56.5 (52.9), culmen from base 13.3–14.8 (14.1), tarsus 17.7–18.6 (18.0) mm.

Females (10 from Panamá), wing 59.0–62.4 (60.3), tail 48.0–54.8 (50.2), culmen from base 13.0–14.2 (13.5), tarsus 16.0–17.2 (16.5) mm.

Resident. Of irregular occurrence in forested areas of the Tropical Zone, on the Pacific slope. Recorded from western Chiriquí from near the Costa Rican boundary (Puerto Armuelles) east along the base of the volcano (Bugaba, Divalá), and to 1200 meters elevation (Serenó) near the boundary with Costa Rica; along the mountains in Veraguas (Calobre, Santa Fé); on Cerro Campana; Cerro Azul and Cerro Chucantí, eastern Province of Panamá; in eastern Darién from Garachiné, the lower Sambú Valley, and the slopes of Cerro Pirre and Cerro Tacarcuna to Jaqué. On the Caribbean slope recorded on the upper Río Changuena, Bocas del Toro; Calóvévora in northern Veraguas; El Uracillo, northern Coclé; and the lower Río Chagres drainage (including the northern Canal Zone), eastward through the Comarca de San Blas to the Colombian boundary.

While found frequently in company with *Myiobius atricaudus*, it is more restricted in distribution, seeming to be less common both in the drier regions of the Pacific slope, and the wetter ones of the Caribbean side, in the area west of the Canal Zone.

These are active birds, often associated with moving groups of other small forest species, usually as single individuals, and not with others of its own kind. In its almost constant movements, it spreads the tail and often droops the wings as it moves quickly through trees and undergrowth. In this it is as active as any warbler. Its food is small insects, taken on leaves or in the air. The only calls that I have heard from it are sharply uttered chipping notes. Skutch, in a detailed account of the species (Pac. Coast Avif., no. 34, 1960, pp. 539–551), rarely recorded it giving a low song of several repeated notes. In southwestern Costa Rica he reported two aberrant, apparently partially melanistic individuals in which the sides of the breast were black.

The birds, as stated, ordinarily range alone, rarely associated in pairs. Nest construction and care of the young are duties of the female alone. The closed nest is attached to the tip of a pendant branch, swinging free in some small open area, often above a forest stream, from 2 or less to 6 or more meters above base level. In Skutch's observations the bird began by attaching fibers as a tuft at the end of the supporting branch or vine. As work progressed the "lower

half was occupied by a rounded structure, entered through a circular opening in its side . . . concealed in front and on both sides by an apronlike projection continuous with the outer walls." The two eggs in a set were white to grayish white spotted with chocolate, most heavily as a wreath at the middle or on the larger end. Size ranged from 19.1×12.7 , 17.5×13.5 , and 18.7×12.3 mm. The young at hatching were dark in color of skin, and without down.

The body in these birds is strong and heavily muscled. The head is rather large, and the neck slender so that in preparing specimens it is difficult to expose the skull.

In a review of the forms of *Myiobius barbatus* found in Perú, Zimmer (Amer. Mus. Nov., no. 1042, 1939, p. 9), with only limited discussion, remarked "that it seems probable, therefore, that *sulphureipygus* and *aureatus* deserve inclusion in the *barbatus* group" and proceeded to list the specimens that he examined on this basis. This assumption has been accepted currently by other authors, but it is one that to me is not substantiated. The form of this group from Panamá is listed as a distinct species, pending additional information.

MYIOBIUS VILLOSUS VILLOSUS Sclater: Greater Black-tailed Flycatcher, Moscareta Colinegra Grande

Myiobius villosus P. L. Sclater, Proc. Zool. Soc. London, vol. 28, May 1860, p. 93. (Nanegal, 1220 meters, west slope of Pichincha, Ecuador.)

Small; like *Myiobius sulphureipygus aureatus* but darker in color and larger.

Description.—Length 130–140 mm. Rictal bristles very long; when pointed forward in adult males extending 4 mm beyond the tip of the bill. Adult male, similar in general to *Myiobius a. atricaudus* but larger, with longer rictal bristles and larger bill; duller green on sides of crown, hindneck, scapulars, wing coverts, and back; rump slightly paler yellow; upper tail coverts and tail black; a large yellow crown patch, shading in some to orange; wings dusky, secondaries and inner primaries edged narrowly with dull brown; lores and sides of head dusky, the auricular region with shaft lines of dull white; throat dull buffy white; lower foreneck, upper breast, sides, and flanks dull cinnamon; center of lower breast and abdomen pale yellow; under tail coverts rather dull yellowish white; tibiae olive-brown; axillars and under wing coverts pale yellowish white; edge of wing dull yellowish brown; inner webs of wing feathers edged narrowly with dull cinnamon-brown.

Female, slightly duller colored throughout, with lesser development of rictal bristles; crown patch dull cinnamon.

A male, taken on Cerro Tacarcuna, Darién, March 2, 1964, had the iris dark brown; maxilla and tip of mandible black; base of mandible pale horn color; tarsus and toes dull brown; claws fuscous-brown.

Measurements.—Males (10 from Darién, Colombia, and Ecuador), wing 69.8–72.6 (71.0), tail 58.1–61.8 (59.6), culmen from base 14.8–16.1 (15.7), tarsus 18.1–19.4 (18.6) mm.

Females (7 from Darién and Colombia), wing 62.6–69.1 (65.1), tail 53.8–58.8 (56.2), culmen from base 14.3–16.0 (15.2), tarsus 17.0–18.8 (17.9) mm.

Resident. Rare in forests in the Subtropical Zone on Cerro Tacarcuna, Darién.

The first specimen, a male, was caught March 2, 1964, in a mist net set in green forest at 1460 meters elevation on the higher ridges of Cerro Tacarcuna, near the international boundary with Colombia. On March 7, C. O. Handley, Jr., captured a female in a net at 1250 meters spanning the channel of a small stream on the headwaters of Río Tacarcuna. These two specimens appear similar to those of the northern Andes to the south in northwestern Colombia.

MYIOBIUS ATRICAUDUS Lawrence: Lesser Black-tailed
Flycatcher, *Moscareta Colinegra Menor*

Myiobius atricaudus Lawrence, *Ibis*, ser. 1, vol. 5, April 1863, p. 183. (Atlantic slope, Panama Railroad, Canal Zone, Panamá.)

Small; greenish above, with yellow rump and black tail; pale yellow below, with a faintly darker breast band.

Description.—Length 118–130 mm. Adult male, above greenish olive; crown faintly darker than back; a partly concealed yellow crown patch; rump pale yellow; wings brownish black, with faint olive edgings; upper tail coverts and tail black; side of head slightly paler than crown; chin and throat pale buffy yellow, changing to light buffy olive on foreneck and upper breast; lower breast and abdomen pale yellow; tibia and under tail coverts grayish olive; axillars and under wing coverts dull white.

Adult female and immature male like adult male but with crown patch smaller.

Adult males, iris dark brown; basal half of maxilla brownish black, becoming black at the tip; mandible flesh color; tarsus dark brownish neutral gray; toes and claws brownish to dusky neutral gray.

Female, iris dark brown; maxilla and tip of mandible fuscous-

black; rest of mandible dull whitish; tarsus and toes fuscous; claws black.

Measurements.—Males (10 from Canal Zone and western San Blas), wing 59.5–64.6 (61.7), tail 56.2–60.8 (58.3), culmen from base 12.3–13.4 (13.0), tarsus 18.2–18.7 (18.3) mm.

Females (10 from Canal Zone, eastern Colón and western San Blas), wing 55.9–58.5 (57.0), tail 53.2–56.6 (54.8), culmen from base 12.0–13.2 (12.5), tarsus 16.2–16.9 (16.5) mm.

Weight of adult male 11.6 grams (R. S. Crossin).

Resident. Locally common in Tropical Zone forests. Recorded on the Pacific slope from eastern Chiriquí (San Félix) and Veraguas eastward, through the Azuero Peninsula; one record for Coclé (Natá, December 28, 1888); appears again in the southern Canal Zone and continues eastward through Darién to the Colombian boundary; recorded at Cana on Cerro Pirre. On the Caribbean side, recorded in Bocas del Toro (Almirante), northern Veraguas (Calovévora), northern Coclé (El Uracillo), and western Colón on the Río Indio, east through the northern Canal Zone, the Chagres Valley, and Comarca de San Blas to the Colombian boundary.

As a species *M. a. atricaudus* seems more restricted in its distribution than *M. s. aureatus*, as it does not appear to range in mountain areas above the lower foothills. Though not known at present in western Chiriquí, it is possible that it may occur there as it is found in southwestern Costa Rica. In Veraguas in 1953 I found it fairly common from Zapotillo and Puerto Vidal east to the Río San Pablo at Soná. Aldrich collected it in 1932 on the Río Mariato on the western side of the Azuero Peninsula. On the eastern side and southern end I secured specimens near Tonosí and Pedasí, Los Santos, and recorded it as common in Herrera. To the eastward it appears next in the southern Canal Zone, and continues then through the Pacific slope through eastern Darién.

The Black-tailed Flycatcher is a bird of woodland cover, found in the undergrowth of heavy stands of forest, but ranging also into more open areas, even those of small extent. It also is found in second-growth stands when these have increased beyond thicket size. Normally the birds flit through undergrowth and the lower treecrown as actively as any warbler. Males display constantly by opening the tail fanlike, and drooping the wings. And often they posture and turn so that the somewhat fluffed yellow rump shows as a bright spot of color. The display mainly is one of motion and contrasting color. In it they are strongly suggestive of the Redstart, *Setophaga ruticilla*,

a species of eastern United States and Canada, common in Panamá as a winter visitor.

The food appears to be small insects, taken on the wing or seized from leaves and twigs in active foraging. Only rarely have I observed one resting quietly on a shaded perch in forest, in the manner usual for most small flycatchers.

Its calls are rather sharp chipping sounds, without great carrying power, varied rarely with low warbling notes. All are heard so seldom that the main impression from acquaintance with the species is that of its almost incessant activity.

In central Panamá, Black-tailed Flycatchers were in breeding condition by the beginning of April. Nesting may continue rather long, as A. O. Gross (Wils. Bull., 1964, p. 251) recorded nests with eggs on Barro Colorado Island in June, July, and as late as August 13, 1925.

They do not associate in pairs, and nest-building and care of eggs and young is the task of the female alone. The nests are irregularly rounded masses, roughly ball-like in form, suspended from the tip of a slender branch or vine, over some open space, frequently above a small forest stream or other water. They are made of rootlets, soft fibers, small bits of leaf and other vegetation, with loose ends hanging irregularly down from the sides, so that the whole suggests a mass of plant material caught and held at random rather than the planned structure of a bird. The entrance to the cup that holds the eggs is at one side beneath hanging material so that the bird in incubation, eggs, or young are hidden from above and the side. Two eggs in a set collected by E. A. Goldman at Portobelo, Colón, June 1, 1911, have the ground color uniform vinaceous-cinnamon, with a narrow wreath of snuff brown around the larger end, and fine dots of this darker color scattered over the surface. In form they are subelliptical with measurements of 17.1×12.0 and 17.9×12.6 mm. Another set of two, also from Goldman, taken at Matachín, Canal Zone, on the left bank of the Río Chagres opposite Gamboa (now submerged in Gatun Lake), May 6, 1911, are similar in form, but have the base somewhat paler, light vinaceous-cinnamon, so that the dark band around the larger end is in greater contrast. One egg measures 17.4×12.1 mm. The other is broken.

The species ranges from western Costa Rica (mainly in the southwest) through Panamá and across northern Colombia to the lower Magdalena Valley. In a considerable series collected by Carriker in Colombia some average faintly paler, but most appear too closely

similar to those of Panamá to warrant separation. In an early survey Todd (Proc. Biol. Soc. Washington, vol. 30, 1917, p. 4) proposed the name *suffusus* with the type locality Turbaco, Bolívar. But in a later review (idem, vol. 35, 1922, p. 35) Todd himself was uncertain as to the validity of such a race.

MYIOPHOBUS FASCIATUS FURFUROSUS (Thayer and Bangs):
Bran-colored Flycatcher, Moscareta Pechirrayada

Myiobius naevius furfurosus Thayer and Bangs, Bull. Mus. Comp. Zool., vol. 46, September 1905, p. 152. (Isla Saboga, Archipiélago de las Perlas, Panamá.)

Small, brown above, breast streaked, wings black with two white bars.

Description.—Length 110–120 mm. Adult male, above dull cinnamon-brown; crown somewhat darker, with an extensive, mainly concealed yellow crown patch, tipped lightly distally with dark orange; rump paler, sandy brown; wings black; greater and middle coverts tipped rather broadly with grayish or buffy white, forming two well-marked bands; inner primaries and secondaries edged and tipped with dull white; tail deep grayish brown; outermost rectrix and terminal margins of others dull buffy white; side of head and neck grayish brown, lores and feathers of eyelids partly grayish or buffy white; anterior under surface pale yellowish buff, with the abdomen and under tail coverts more yellow; breast and sides streaked heavily with grayish brown; flanks and tibiae cinnamon-brown; axillars and under wing coverts pale buff, with edge of the wing darker; inner webs of wing feathers pale dull buff.

Adult female, similar to the male, but with the hidden crown patch definitely smaller; streaking on breast and sides less extensive.

Juvenile, upper surface and wing bars rufous-brown; without a crown patch.

Immature, somewhat duller rufous-brown on back, wing markings and edgings, and tips of tail; more rufous-orange in the crown patch.

The iris is brown, maxilla black, mandible flesh-colored, and tarsus and toes black.

Measurements.—Males (10 from Isla San José, Chiriquí, Veraguas, and Canal Zone), wing 53.0–57.9 (55.0), tail 45.1–52.0 (49.7), culmen from base 12.2–13.6 (13.0), tarsus 15.5–16.5 (16.0) mm.

Females (10 from Islas San José and Saboga, Chiriquí, Veraguas, Coclé, Province of Panamá, and Canal Zone), wing 51.1–55.4 (52.4), tail 45.6–49.2 (47.6), culmen from base 12.1–13.5 (12.5), tarsus 15.3–16.2 (15.7) mm.

Resident. Found locally in the Tropical Zone on the Pacific slope from western Chiriquí (to 1340 meters elevation near El Volcán), eastward in eastern Chiriquí, Veraguas, Coclé, and the Canal Zone to the lower Río Bayano (San Antonio); on the Caribbean slope in the lower Chagres Valley in the Canal Zone. (To date it has not been recorded on the Azuero Peninsula.) Islas del Rey, Saboga, San José, and La Vivienda, in the Archipiélago de las Perlas.

In general appearance and actions these small birds appear similar to species of the genus *Empidonax*. They are found usually at the borders of thickets, often in brush-grown valleys but not in heavy forest. Here they rest quietly on watch for flying insects which they take on the wing. They also visit berry-bearing shrubs to eat the drupes. The stomach of one shot near Corozal in the Canal Zone in mid-June held fragments of several small beetles, a Lygaeid, ants, and other hymenoptera.

As the bird rests, the tail often is vibrated. The usual call is a low *wheesp* varied to a quickly uttered little song, *whee seety seety*. Eisenmann, in the suburbs of Panama City, heard them giving a clear but monotonous repetition of a single note, *weeb, weeb, weeb*. Females, that I thought may have been near their nests, as they rested on a low perch, occasionally fluttered the wings and uttered low chattering calls.

While found usually in the lowlands in western Chiriquí, they ranged to 1340 meters near the Río Chiriquí Viejo. In eastern Chiriquí, Mrs. Davidson secured one near Chame. In Veraguas, Arcé collected them at Calovévora, which indicates occurrence on the Caribbean slope. On the Pacific side they have been found at Santa Fé, Castillo, and San Francisco. I saw and collected several near Soná, and near Río de Jesús. In Coclé, they ranged among bushes in an abandoned field near El Valle, and below, in the edge of the western sector of the Province of Panamá along the road above Espino. They were in pairs regularly and were in breeding condition in April and May.

In the Perlas Islands they were found on Isla San José, but we did not fully realize their abundance until access trails to remote areas of the island had been completed by the engineers. W. W. Brown, Jr., collected the first specimens on Islas del Rey and Saboga; Murphy (Auk, 1945, p. 117) secured a male on Isla Vivienda, May 23, 1941.

This form extends to the west beyond Chiriquí in southwestern Costa Rica, where Skutch (Pac. Coast Avif., no. 34, 1960, pp. 340-

348) has made interesting observations on their nesting. Nest building began in late March and April. The birds ranged in pairs, with the male regularly in attendance, but with building and incubation by the female alone. When the young hatched, the male aided in bringing food, given in part, however, to the female. The nests were small cups suspended in forks at the end of small branches. Occasionally attachment was to twigs or to a vine on one side and a leaf on the other. The latter ordinarily failed when the leaf connection shriveled. Males were active in nest defense, regularly threatening much larger birds, when however their irritation usually was disregarded.

The eggs, two in a set, "are dull white or pale buff, with a wreath of reddish brown speckles or blotches around the thick end, and sometimes a few spots of the same color scattered over the remaining surface." Measurements of 12 averaged 17.3×13.0 mm, with extremes of 19.1×13.5 and 16.3×11.9 mm. The young bore gray down at hatching.

The nominate form, *M. f. fasciatus*, found in Colombia, is somewhat larger, darker in color above, whiter, less yellowish below, but with somewhat heavier streaking on the breast. The following measurements of 10 males from northern Colombia, in comparison with those above of *furfurosus*, will serve to indicate the slight size difference:

Males (10 from Antioquia, Magdalena, Guajira, and Norte de Santander), wing 58.2–64.0 (60.9), tail 51.6–57.2 (55.4), culmen from base 12.4–13.5 (12.8), tarsus 16.6–17.6 (17.1) mm.

ONYCHORHYNCHUS MEXICANUS FRATERCULUS Bangs:
Royal Flycatcher, *Atrapamoscas Real*

FIGURE 43

Onychorhynchus mexicanus fraterculus Bangs, Proc. New England Zool. Club, vol. 3, March 31, 1902, p. 86. (Santa Marta, Magdalena, Colombia.)

Medium size; brown, with a prominent crest, reddish orange in male, orange in female.

Description.—Length 155–170 mm. A conspicuous, elongate crest, expanding laterally. Adult male, crest centrally orange-red, tipped with black spots, edged distally with violet to steel blue; forehead narrowly dusky brown, with a whitish spot on the basal feathering back of the nostril; side of crest, back of head, back, upper rump, scapulars and wings olive-brown; middle and greater wing coverts and tertials with small distal triangular spots of buff; lower rump and

upper tail coverts buffy yellow; tail tawny-ochraceous, brownish distally, tipped lightly with buff; chin and throat buffy white, rest of under surface ochre-yellow; upper breast barred lightly with olive-brown; tibia barred narrowly and spotted with olive-brown; axillars and under wing coverts pale buff; inner margins of wing feathers pale cinnamon-buff.



FIGURE 43.—Royal flycatcher, *atrapamoscas real*, *Onychorhynchus mexicanus fraterculus*, male.

Adult female, with the crest orange to orange-yellow; otherwise like the male.

Juvenile, crown feathers somewhat elongated in a rounded crest that is light orange basally, barred distally with black, and tipped with buff; back of head and hindneck pale buff, barred with dusky; back and scapulars light olive-brown, barred distally with black and buff; rump buff; rectrices pale cinnamon-buff, with the outer webs shading to dusky; under surface pale cinnamon-buff, with the breast barred and spotted with dusky.

Immature, both sexes, back and scapulars tipped narrowly with buff and barred with black.

A female, taken at Pucro, Darién, February 3, 1964, had the iris mouse brown; maxilla fuscous; mandibular rami dull honey yellow; rest of mandible dull wood brown, changing to horn color on the basal half of the gonyx; tarsus and toes honey yellow; claws yellowish brown; inside of mouth, including the tongue, orange.

Measurements.—Males (19 from Costa Rica and Panamá), wing 82.4–86.7 (84.2), tail 65.2–69.7 (67.3), culmen from base 24.3–28.0 (25.6), tarsus 16.3–17.8 (16.9) mm.

Females (17 from Costa Rica and Panamá), wing 75.0–78.8 (77.3), tail 58.0–66.4 (61.9), culmen from base 22.6–26.2 (24.2), tarsus 15.4–16.7 (16.0) mm.

Resident. Found locally, singly or in pairs, in Tropical Zone forests and thickets, both original and second-growth.

The Royal Flycatcher is widely distributed on both Pacific and Caribbean slopes throughout the lowlands and foothills, frequently near small streams. In Chiriquí, Arcé sent specimens to Salvin from the base of the volcano, and Mina de Chorchá. W. W. Brown, Jr., in July 1901, collected three at Bugaba, and Mrs. Davidson took a female near San Félix in the eastern area of the province. In Veraguas, Arcé collected it near Santa Fé, and Benson at Chitra. Eisenmann reports seeing it at El Valle in Coclé. The only record from the Azuero Peninsula is a male that I collected, and another that I saw, on March 17, 1957, on the Quebrada Escotá, near Pedasí, Los Santos. W. W. Brown, Jr., secured four near Panamá City in May 1904. Elsewhere in the southern Canal Zone it has been recorded at Curundu, Albrook Field and Paraiso. From here eastward to Colombia there are numerous records, including Cana, on Cerro Pirre, and the base of Cerro Tacarcuna. On the Caribbean side, in Bocas del Toro, I collected a female in Water Valley south of Almirante, January 20, 1958. It is known in northern Veraguas from Calóvévora, and in northern Coclé I found it at El Uracillo on the upper Río Indio in February and March 1952. There are numerous records for the northern Canal Zone, and it has been found in eastern Colón. In western San Blas, in January and February 1957, it was fairly common in the borders of swampy woodland near Mandinga, and Wedel collected it at Ranchón and Puerto Obaldía near the boundary with Colombia.

Royal Flycatchers range ordinarily in heavily shaded undergrowth, where they rest quietly with body erect in the usual flycatcher pose,

on the open perches common to birds of this family. Occasionally one may fly out to capture an insect on the wing, or from a branch or leaf. But rarely have I noted them active in movement. It is certain that often they are not observed because of the dim light in which they rest and their rather inactive habits. The voice is so low that it attracts little attention. A female called *pree-o* rather plaintively. Another varied this to *tsee-a*, others uttered plaintive, whistled calls.

They appear to be quite sedentary, as one banded by Horace Loftin near Curundu, Canal Zone, on February 23, 1964, was recovered two years later, on February 25, and again on April 1, 1966, in the same area. One banded near Gamboa by Prince Philip, Duke of Edinburgh, in November 1964, was caught again on October 6, 1966.

The handsome crest normally shows merely as a line of color on the back of the head, as the birds perch or fly. Barbour (Bull. Mus. Comp. Zool., vol. 65, 1922, p. 216) described a display, seen in two wounded birds, in which the "mouth opened wide, the great crest fully expanded, and then the head was slowly waved from side to side." I noted this action personally in a wing-tipped bird at the base of Cerro Chucantí, eastern Province of Panamá, March 15, 1950. As I held the bird in my hand it spread the crest widely and threw it far forward, at the same time compressing the nape feathers laterally into a straight sharp edge down the back of the neck. The bird then rotated the head from side to side in a swinging motion during which it turned through an arc of 180°. With this the bill was opened widely, and the tongue flicked, a curious and interesting performance. Dr. Eisenmann has given me notes of similar displays as birds caught in mist nets are handled. While this may be regarded as a threat function, it may be a nervous reaction or presented otherwise in normal courtship display.

Skutch (Pac. Coast Avif., no. 34, 1960, pp. 516-533) found that nest construction, incubation, and the care of the young were by the female alone. While the male regularly accompanied his mate, his activities were solely those of a guardian, in which he attacked intruders. Young are hatched with the skin bare, without down.

Lawrence made the first report of the curious nest of this species from notes supplied by Galbraith (Ann. Lyc. Nat. Hist. New York, vol. 7, 1862, p. 329). One found by E. A. Goldman in heavy jungle near Matachin, in the Chagres Valley near Gamboa (now submerged in Gatun Lake), on May 6, 1911, hung pendant from a slender twig of a small tree above a stream in a narrow ravine. It was formed from

leaves and stems wound loosely around the branch for a distance of a meter. The nest cup was in a somewhat enlarged portion below the center, with the opening 60 mm wide, about 130 mm in diameter, and the cavity about 60 mm deep. The whole was frail and unfinished in appearance. It held two eggs, one of which was broken. The other is subelliptical in form, with the entire shell suffused with dull reddish brown as a heavy covering over most of the surface, except for the lower quarter. It measures 20.4×14.4 mm. Another nest, collected by Storrs Olson and J. Wiese, May 9, 1966, at Mile 12, between Gamboa and Summit Gardens, Canal Zone, hung pendant from the tip of a branch 2 meters above a small stream. It is slender and cylindrical, about 80 cm long by 10 to 15 cm in diameter, made of long bits of rootlets, grass stems, and other slender fibers, through which dry leaves and other bits of vegetable material are interspersed, the whole interlaced loosely but firmly, and narrowed at the lower end to a tail-like streamer. Immediately above this is an opening in the side to the ball-shaped nest, which is wholly enclosed. In this there was a fledgling bird with wings beginning to develop, and an addled egg. This egg, closely similar in color, pattern, and subelliptical form to the one taken by Goldman, measures 19.7×15.2 mm.

As a species this flycatcher ranges from southern México through Central America to central Colombia and northwestern Venezuela.

The race *fraterculus*, described from the Santa Marta region of northern Colombia, differs only slightly from the nominate form. In average size it is somewhat smaller, and in Colombia is somewhat paler buff on the lower surface, with the dark streaking on the breast heavier. Those found from Costa Rica through Panamá, while in size they average about like those of Colombia, are variable in color and marking of the lower surface. For comparison there is included a set of measurements of the nominate form, *O. m. mexicanus*: Males (13 from Veracruz, Tabasco, Oaxaca, and eastern Guatemala), wing 86.7–93.6 (89.8), tail 70.5–76.0 (73.4), culmen from base 25.2–29.3 (27.8), tarsus 17.4–18.7 (17.9) mm.

Females (7 from Veracruz, Tabasco, Oaxaca, and eastern Guatemala), wing 79.8–83.5 (81.3), tail 65.0–69.6 (67.1), culmen from base 24.8–26.1 (25.5, average of 6), tarsus 17.0–18.0 (17.2) mm.

De Schauensee (Birds of South America, 1966, p. 359) has included all of the Royal Flycatchers from México through Panamá as races under the species name *Onychorhynchus coronatus* (Müller), a proposal that should have further study where the two groups, *mexicanus* and *coronatus*, meet in southeastern Colombia and eastern

Venezuela. While undoubtedly the two are closely related, the typical *coronatus* population differs from that of *mexicanus* in being decidedly darker. In addition, it is heavily cross-banded on the lower surface, including the under tail coverts, has the tail shorter, and the bill shorter and narrower.

Measurements of *O. c. coronatus* are as follows: Males (25 from southeastern Colombia, eastern Venezuela, Guyana and northeastern Brazil), wing 72.0–80.9 (77.3), tail 55.0–63.6 (59.5), culmen from base 21.0–25.0 (22.7), tarsus 14.4–15.9 (15.3) mm.

Females (7 from Amapa and Pará), wing 69.0–74.2 (71.5), tail 55.0–60.0 (57.9), culmen from base 21.3–24.0 (22.2), tarsus 14.0–15.8 (14.6) mm.

From available data the considerable series of the two groups appear so clearly distinct that *mexicanus*, with its southern race *fraterculus*, is treated here as a separate species.

PLATYRINCHUS CORONATUS SUPERCILIARIS Lawrence:
Golden-crowned Spade-bill, Piquichato Coronadorado

FIGURE 44

Platyrrhynchus superciliaris Lawrence, Ibis, vol. 5, no. 18, April 1863, p. 184.
(Lion Hill, Panama Railroad, Canal Zone, Panamá.)

Small; short tail, broad, flat bill; pale, with throat yellow.

Description.—Length 80–90 mm. With stiff bristles at the side of the bill. Adult male, center of crown yellow, bordered broadly by russet-brown, with a narrow line of black at either side; forehead dull olive, with shaft lines of dull yellowish white; lores dull yellowish white; hindneck, back, scapulars, rump, upper tail coverts, and lesser wing coverts plain olive; wings, including middle and greater coverts, dusky, the feathers edged narrowly with light brown; a narrow superciliary and circlet around eye pale yellow; cheeks olive-yellow, bordered above and below by patches of black; lower surface light yellow, with the sides, upper breast, flanks, and tibiae washed with olive; axillars and under wing coverts grayish white; inner webs of wing feathers edged narrowly with dull brown.

Adult female, similar, but with crown cinnamon-rufous or orange-rufous. The crown patch of the male is indicated in some by a central tinge of yellow.

Juvenile, with the crown olive, somewhat darker than the greenish olive of the back, without central markings; side of head and line over eye buff, with the dark patches as in adult; under surface light yellow to gray.

A male, collected near the Candelaria Hydrographic Station, on the Río Pequení above Madden Lake, March 6, 1961, had the iris mouse brown; maxilla black; mandible neutral gray, with a narrow line of dull white along the anterior two-thirds of the cutting edge, and on the distal hook on the maxilla; tarsus neutral gray tinged with pale brown on the upper half; toes and claws neutral gray. In another male, at Armila, San Blas, February 22, 1963, the iris was dark



FIGURE 44.—Golden-crowned spade-bill, piquichato coronadorado, *Platyrrinchus coronatus superciliaris*.

brown; hook on tip of maxilla, and mandible dull yellowish gray; rest of maxilla black; gape honey yellow; tongue and corneous area of the inside of the mouth surrounding the internal nares honey yellow; rest of inside of mouth, extending on the inner surface of the mandible back to the level of the tip of the tongue, black, with a narrow outer line of dull grayish white; tarsus and toes neutral gray; claws neutral gray tipped with dull white.

Measurements.—Males (10 from Bocas del Toro, Pacific slope of Veraguas, Province of Panamá, and Darién), wing 53.7–57.4 (55.7),

tail 21.0–25.5 (23.7) culmen from base 11.2–13.3 (12.3), tarsus 13.5–14.9 (14.0) mm.

Females (10 from Pacific slope of Veraguas, Province of Panamá, Darién, and San Blas), wing 49.4–53.9 (51.3), tail 19.2–22.8 (20.8), culmen from base 11.7–12.9 (12.3, average of 9), tarsus 12.7–14.4 (13.5, average of 9) mm.

Resident. Locally fairly common in forested areas in the Tropical Zone from the Canal Zone eastward through Darién and San Blas (to Puerto Obaldía); recorded in lesser numbers through western Panamá (Santa Fé, Bugaba) to the Costa Rican boundary; to 850 meters on Cerro Campana, and 900 meters on Cerro Pirre.

These birds are small in size but heavy in body, the relatively large wings and abbreviated tail presenting an unusual outline as the bird rests on a low branch near the ground, erect in usual flycatcher pose. The short, broad bill may be visible in outline as they turn the head. In active movements, when they may cling momentarily to the side of an upright stem, they may suggest an ant-shrike. Usually they are encountered singly, or in pairs, rarely, with scattered companies of other forest birds. And more rarely, among the birds capturing insects over raiding ant swarms. Normal haunts are swampy woodlands, or elsewhere low down near the ground in heavily shaded forest. The usual call is a chirping sound, suggesting that of some insect. This may be varied by a low trill, a common song in the forests that they frequent, but one with slight carrying power, heard only when the bird is near. As they move about the wings may be fluttered occasionally.

The oil gland in these birds, for their size, seemed unusually large. In a female taken at the mouth of the Río Paya, February 15, 1959, the transverse diameter across the lobes was 15 mm.

Skutch (Pac. Coast Avif. no. 34, 1960, pp. 332–339) describes a display, apparently unique among flycatchers, in which the bird in flight produces with its wings “a peculiar sound somewhat like that . . . made by twanging a tightly stretched rubber band.” Carriker (Ann. Carnegie Mus., vol. 6, 1910, p. 729) described the nest, seen in Costa Rica, as a well-formed cup placed from 1 to 2 meters above the ground in a small upright fork made of “fine bark fibres, moss, and rootlets, and lined with coarse, black hair-like fibres of one of the common ferns. A tuft of fibres of irregular length trailed from the bottom, and the outer walls were slightly decorated with lichens and spider-webs.” Skutch found that the female alone built the nest and incubated the eggs, but that the male aided in feeding

the young. The two eggs that make the set are described as dull white to buff, with spots or blotches of light or bright brown, and lilac. Skutch gives the average in 16 eggs as 16.4×13.4 mm. The young at hatching are pink-skinned and without down.

James A. Karr, near Gamboa, found a nest with two eggs on July 4, 1969. A nest of similar form and location, apparently that of the previous year, was seen nearby.

As a species, *Platyrrinchus coronatus* ranges from northern Honduras through Central America and South America to Brazil and northern Bolivia. In the four subspecies currently recognized, the race *superciliaris* is distinguished by brighter yellow on the lower surface, and paler coloration on the back.

PLATYRRINCHUS MYSTACEUS NEGLECTUS (Todd): White-throated Spade-bill, Piquichato Gargantiblanco

Platyrrinchus albogularis neglectus Todd, Proc. Biol. Soc. Washington, vol. 32, June 27, 1919, p. 114. (La Colorada, Boyacá, Colombia.)

Small; tail short; bill broad, flat; darker, with throat white.

Description.—Length 90–95 mm. Adult male, crown dark olive, with a large, partly concealed central area of bright yellow, in some tinged with buff, the feathers in part tipped with olive; hindneck, back, scapulars, lesser wing coverts, alula, and rump brownish olive to somewhat reddish brown; upper tail coverts averaging somewhat paler; wings dusky, edged with somewhat reddish brown; middle and greater coverts tipped with brown, forming rather indistinct wing bars; primary coverts dull black; tail dusky, edged lightly with brown; lores and side of head dusky; a dull white streak on upper edge of loreal area; a prominent ring around eye, and an indistinct spot on the auricular area, brownish buff; bare edge of the somewhat enlarged eyelids, black; line down ramal area buff; throat and foreneck white; chest, sides, and flanks buffy brown; lower breast and abdomen pale yellow; under tail coverts dull white; axillars and under wing coverts yellowish white, the latter centrally dull brown; inner webs of wing feathers edged with dull brown.

Adult female, similar to male, but crown patch lacking, or, rarely, very slightly indicated.

Juvenile, without crown patch; more reddish brown above.

A female, taken at El Volcán, Chiriquí, March 15, 1965, had the iris very dark reddish brown; cutting edge of mandible dull yellowish white; rest of bill black; gape, a line inside the mouth around the inner edge of the mandible, and the tongue dull light orange; tarsus

and toes pale neutral gray; claws brownish white. A male, collected on the same day, was similar.

Measurements.—Males (10 from Chiriquí and Darién), wing 58.2–62.3 (60.1), tail 27.6–32.8 (31.3), culmen from base 12.5–13.9 (13.2), tarsus 17.0–18.5 (17.9) mm.

Females (10 from Bocas del Toro, Chiriquí, and Darién), wing 52.3–58.9 (54.5), tail 20.7–30.8 (27.2), culmen from base 12.4–13.8 (13.0), tarsus 15.4–16.9 (16.1) mm.

Resident. Locally fairly common in forested areas in the upper Tropical and lower Subtropical Zones. Chiriquí: Cerro Punta, El Volcán, Barriles, Boquete, Lérída, Quiel, Cerro Flores. Bocas del Toro: in the higher elevations on the Holcomb Trail, beyond Boquete (with one record from the lowlands near Almirante). Veraguas: Calovévora, Santa Fé, Chitra, Calobre, Cerro Montuosa, northwestern Azuero Peninsula. Province of Panamá: Cerro Compana. Darién: Garachiné, Cerro Pirre (Cana), old Tacarcuna village site, Cerro Nalí, Cerro Tacarcuna (1250 meters), La Laguna (900 meters).

Specimens in the Salvin-Godman collection in the British Museum were taken in Veraguas by Arcé at Calovévora on the Caribbean slope, and Calobre on the Pacific side. Salvin (*Proc. Zool. Soc. London*, 1870, p. 196) in an early account of Arcé's collections, listed it also from Chitra, where it was taken later by Benson.

This species, rather closely similar to *Platyrrinchus coronatus*, is readily identified by its white throat and olive (olive and yellow in the male) crown, with no trace of cinnamon-brown. In the hand it appears slightly heavier in body, but otherwise is similar in form.

Like its companion, found mainly at lower elevations, it ranges in the undergrowth in heavy forest alone or in pairs. A male, captured in a mist net, in my hand expanded the yellow area in the crown laterally and vertically so that it made a handsome show. I noted them moving rather quickly through the undergrowth when feeding, uttering a sharp, chipping call.

A single bird, a female, taken January 22, 1958, at sea level in a dark, wet thicket in Water Valley near the bay at Almirante, Bocas del Toro, is the only record for this locality. I found these birds elsewhere only above 900 meters elevation in mountain areas, both in Chiriquí and in Darién.

Dr. Alexander Skutch (in litteris, 10/15/70), has sent me the following description of a nest found April 21, 1938, near Vara Blanca, Costa Rica, at 1700 meters. The "neat, compact structure, shaped like an inverted cone, rested in a V-shaped, upright crotch in a

slender shrub growing in forest. The outside was plastered all over with thin, papery pieces of decaying leaves, white in color, or nearly so, making the exterior very light-colored and conspicuous. Some of these leaves hung down untidily, draping around the supporting stem. There was also a fragment of snake skin in the outer layer of the nest. The middle layer of nest material was of light-colored plant material, with a lining of black fibers that contrasted sharply with the white exterior. The nest was 75 mm. high (not including the loose, dangling tail), with the interior cup 70 mm. in diameter, 40 mm. wide and 30 mm. deep. The single egg (probably the set was incomplete) was white, with a yellowish tinge (like old parchment), with a scarcely perceptible wreath of a faint rufous tone. It measured 19.1×14.7 mm. Two days later the nest was empty."

In preparing specimens, the relatively large size of the eyes was obvious, as they projected laterally considerably beyond the side of the cranium. In one, the width of the skull with the skin removed was 14 mm, with the transverse diameter 10 mm.

The species, divided into numerous subspecies, ranges from southern México through Central America and South America to Paraguay, and Misiones in northeastern Argentina.

CNIPODECTES SUBBRUNNEUS PANAMENSIS Zimmer: Brown
Flycatcher, Moscareta Castaña

Cnipodectes subbrunneus panamensis Zimmer, Amer. Mus. Nov., No. 1043,
September 20, 1939, p. 10. (Barro Colorado Island, Canal Zone, Panamá.)

Size medium; dull brown, whitish or yellowish on abdomen.

Description.—Length 140 mm in female to 180 mm in male. Basal phalanx, and proximal third of second phalanx of middle toe adherent to basal segment of outer toe. Adult male with the seventh to the tenth (outermost) primaries with basal section of shafts somewhat arched and twisted, and the distal area of the outer webs modified in structure. Male and female alike in color; crown, back, scapulars, and rump olive-brown; upper tail coverts and tail russet; wings dusky; middle coverts tipped, and greater coverts tipped and edged with buffy brown; inner secondaries edged broadly with buff, changing to buffy brown externally; primaries margined narrowly with grayish to grayish brown; throat and upper foreneck indistinctly whitish; sides of neck and breast olive-brown, usually somewhat paler and brighter than back; abdomen dull buffy white to pale yellow; under tail coverts dull cinnamon-brown; axillars and under wing coverts pale buffy brown to pale cinnamon; inner margins of

under surface of secondaries cinnamon-buff, changing to whitish on the primaries.

An adult male, taken at Mandinga, San Blas, February 12, 1957, had the iris light wood brown; maxilla black; mandible flesh color; gape, inside of mouth, and tongue bright honey yellow, with two elongate, dusky spots on either side of the premaxillar area, anterior to the inner narial opening; tarsus and toes dull neutral gray. In another male (from the form of the wing still in its first year of age) collected at the old Tacarcuna village site, Darién, March 7, 1964, the iris was orange brown, the maxilla black, mandible ivory white, tarsus and toes brownish neutral gray. A female, at the mouth of the Río Tuquesa, Darién, March 28, 1959, had the iris brownish orange; maxilla black; mandible flesh color; gape and inside of mouth, including the tongue, rather dull orange (without the spots described in the adult male); tarsus and toes neutral gray.

Measurements.—Males (10 from Coclé, Colón, Province of Panamá, Darién, and San Blas), wing 88.7–97.1 (93.4), tail 78.5–86.5 (82.2), culmen from base 17.8–18.8 (18.3), tarsus 17.9–18.9 (18.5) mm.

Females (10 from Coclé, Canal Zone, Province of Panamá, and Darién), wing 71.3–76.1 (73.4), tail 62.8–67.8 (65.8), culmen from base 16.5–17.8 (17.2), tarsus 16.5–17.6 (16.9) mm.

Resident. Uncommon, in forested areas in the Tropical Zone; on the Pacific slope from the southern Canal Zone and Chepo eastward through Darién; on the Atlantic side from the valley of the Río Indio (El Uracillo, northern Coclé; Chilar, western Colón) eastward through San Blas.

Usually these birds rest quietly in the undergrowth on low perches where they may be partly concealed among leaves. They may allow close approach, and, unless attention is attracted by the curious, explosive call, may not be seen. The note has a trilling, or rattling quality that is difficult to describe. While frequently alone, they also are found in pairs, when, if seen clearly, the larger size of the males is obvious. Both sexes have a display, noted occasionally, in which one wing is extended straight up, full length above the back, like that noted commonly in *Pipromorpha*. The female, as stated, is appreciably smaller than the adult male. Males in their first year may be smaller than those fully adult.

Dr. Alexander Skutch (in litteris 10/15/70) has kindly sent me the following account of an observation of this species, on Barro Colorado Island:

March 28, 1935, I found one building a nest in moderately heavy forest near a small stream. It was about 2 meters from the ground, attached to a long, slender aerial root, hanging down from high in the treetop. Newly begun, it was an accumulation of dried inflorescences of *Myriocarpa yzabalensis*, a species of Urticaceae. The nest grew slowly, as it was April 4 before the bird began to separate the dangling fibers to form a nesting chamber. And on April 17 the builder was still lining this chamber. When nearly finished the nest slipped from the end of the slender supporting root and fell. Although I fastened it in its original position, it was abandoned.

The structure had grown to a length of nearly a meter, with a diameter of 175 mm. Midway the material had been spread apart to form the nesting chamber. In the small proportion of total bulk actually occupied by the nesting chamber this nest may be compared to that of the Royal Flycatcher. It differed chiefly in its more homogeneous material, more regular form, and greater diameter.

Only one bird, assumed to be a female, worked on it.

Zimmer (Amer. Mus. Nov., no. 1043, 1939, pp. 10–12, fig. 1) has described the curious curved form of the wing. In this the four outer primaries of the adult male "have the basal part of the shafts arcuate, very strongly on the tenth. In addition, the terminal part of these feathers is twisted upward and outward. All of the primaries are more or less twisted in shape and position, so that in the closed wing their outer margins are lifted away from each other, and come into close contact only basally and near their tips. The 7th and 8th primaries are further modified in another way. About two-thirds of the distance toward the tip of the feather the outer web is abruptly narrowed and the inner web equally abruptly widened, with a spot of brighter color and a slight disintegration of the web on the outer web at the point of change. On the inner web . . . there is a dark submarginal line. . . . Along this line, the vane of the feather bends readily, but between it and the shaft it is unusually stiff."

Although I have had these birds frequently under observation, I have noted no apparent use of this unusual structure.

TOLMOMYIAS SULPHURESCENS FLAVO-OLIVACEUS
(Lawrence): Yellow-olive Flycatcher, Moscareta Azufrada

Rhynchocyclus flavo-olivaceus Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, May 1863, p. 8. (Lion Hill Station, Panama Railroad, Canal Zone, Panamá.)

Rather small; bill broad; back olive-green; abdomen yellow; tail slightly longer.

Description.—Length 120–129 mm. Adult (sexes alike), crown and hindneck somewhat grayish olive-green; back, scapulars, lesser wing coverts, rump and upper tail coverts bright olive-green; wings

dusky; outer webs of greater and middle coverts tipped and edged with sulphur yellow; primaries edged with yellowish olive-green, the edgings changing on the secondaries to light yellow; tail grayish brown, edged with olive-green; a grayish white line above the lores extending to a narrow ring around the eye on upper and lower eyelids; an indistinct dusky spot at anterior angle of eye; auricular region dull olive-green, with shaft lines of pale yellow; chin and throat light yellowish gray, changing to light yellowish olive-green on upper breast and sides; rest of under surface clear sulphur yellow; edge of wing bright sulphur yellow; axillars, under wing coverts and edgings of primaries pale yellow.

A female, shot at El Copé, Coclé, February 24, 1962, had the iris light grayish brown; maxilla black; mandible ivory-white; tarsus light fuscous-brown; tips of claws black; inside of mouth with palate black to fuscous; lower surface, ivory-white (of the same shade as the outer surface of the mandible).

Measurements.—Males (10 from Chiriquí, Veraguas, Coclé, Los Santos, Canal Zone, and Province of Panamá), wing 63.8–69.5 (65.2), tail 52.3–58.6 (55.2), culmen from base 13.3–15.9 (14.4), tarsus 17.5–18.8 (18.1) mm.

Females (10 from Chiriquí, Veraguas, Coclé, Los Santos, Canal Zone, and Province of Panamá), wing 60.2–64.7 (63.4), tail 51.0–55.5 (53.6), culmen from base 14.2–15.4 (14.6), tarsus 17.5–18.5 (17.9) mm.

Weight of ♀, 11 grams (G.V.N. Powell).

Resident. Fairly common locally; on the Pacific slope, from western Chiriquí, mainly in the lowlands of the Tropical Zone, but to 1600 meters above Boquete, east through Veraguas, Coclé, and the Azuero Peninsula to the lower Río Bayano (Chepo), Chimán, and the Río Majé. On the Caribbean side from the Río Indio, western Colón, through the northern Canal Zone, to Mandinga, western San Blas.

They are found mainly in open forest, usually in undergrowth, but occasionally in taller trees, and are encountered also in open scrub and along the borders of clearings. In eastern Chiriquí I found them near the coast at Las Lajas and also on the Río San Félix, where they had been taken earlier by Mrs. Davidson. In the early collections made by Arcé they were recorded from Santa Fé and Calovévora in Veraguas, and later by Benson at San Francisco, El Villano, and Chitra. In 1953 I found them fairly common near Soná, especially along the Río San Pablo. In 1951 at El Valle, Coclé, they ranged in the open forest of Cerro Gaital, and farther east in western Province of

Panamá on Cerro Campana and at the base of Cerro Chame. East through the Canal Zone they occurred along the Río Pacora, at La Jagua, in the scrub forest near the Río Bayano at Chepo, and near Chimán. The most eastern records are from near Chimán and the head of tidewater on the Río Majé.

On the Caribbean slope Arcé's records include Calovévora, and I found them on the Río Indio at El Uracillo on the upper reaches in northern Coclé and at Chilar, lower down in western Colón. In the northern Canal Zone, the type of the race was taken near Lion Hill by McLeannan. It is reported on Barro Colorado Island and elsewhere at Juan Mina, and near Gatun. Near Mandinga, in western San Blas, they ranged in the undergrowth in swampy woodland. The call is a low sibilant note, not audible except near at hand.

Skutch (Pac. Coast Avif., No. 34, 1960, pp. 496-506) writes of the nest of the closely allied race *T. s. cinereiceps* in Costa Rica, that it is built by the female alone. He describes it as a rounded structure, swinging freely from a slender, leafy twig of a tree or vine, built of slender black vegetable fibers, bound together by cobweb. He writes that it "resembles a chemist's retort, hung so that the tubular neck is vertical or nearly so and its opening points toward the ground." Carriker (Ann. Carnegie Mus., vol. 6, 1910, p. 725) described the eggs as "creamy-white, with a slightly rufous tinge, speckled, chiefly about the larger end, with cinnamon-rufous." Two eggs are laid. Measurements are 21×14 and 20.5×14 mm.

Skutch described the newly hatched young as dark skinned without down. The male assists in care of the young, which are fed insects, and occasionally berries. Females are recorded sleeping in the nest before the eggs are laid, and continuing to use it but alone for a period after the young leave. Later, like the male, she sleeps in the open without shelter.

Article 32(c) of the International Code of Zoological Nomenclature in its second section rules that a name published originally with a hyphen "is to be corrected by the deletion of the mark." The sub-specific term *flavo-olivaceus* of the present species is unusual in its formation, and one awkwardly written without the hyphen. It is noted that Article 26(c) provides for this separation where a Latin letter is used. The present case may be justification for an additional exception in the use of a hyphen.

TOLMOMYIAS ASSIMILIS FLAVOTECTUS (Hartert):
Yellow-margined Flycatcher, Moscareta Amarilleja

Rhynchocyclus megacephala flavotectus Hartert, Nov. Zool., vol. 9, December 16, 1902, p. 608. (San Javier, Esmeraldas, Ecuador.)

Rhynchocyclus marginatus Lawrence, Proc. Acad. Nat. Sci. Philadelphia, December 1868 (April 1869), p. 429. (Lion Hill, Canal Zone, Panamá.)

Rather small; similar to the Yellow-olive Flycatcher, *T. s. flavo-olivaceus*, but dorsal color darker, especially on the head, and tail slightly shorter.

Description.—Crown and hindneck dark mouse gray; slightly paler on forehead; back, scapulars, lesser wing coverts, rump and upper tail coverts plain olive-green; wings dull black; middle wing coverts tipped, and greater coverts and inner secondaries edged broadly, with yellow; primaries and outer secondaries edged narrowly with olive-yellow; a narrow supraloral white line extending back from the base of the nasal feathering; a narrow white line around the eyelids, interrupted by a dusky spot at the anterior angle of the eye; tail grayish brown, edged with olive-green; chin, foreneck, upper breast, and sides pale gray, with a faint tinge of yellow; rest of under surface light yellow; a dusky spot on the under primary wing coverts; rest of under wing coverts, axillars, and inner edge of wings yellowish white.

A male collected at Cañita, on the lower Río Bayano, eastern Province of Panamá, February 8, 1962, had the iris pale mouse brown; maxilla black; mandible brownish white; tarsus and toes dark neutral gray; claws black. A female, at Pucro, Darién, January 31, 1964, had the iris mouse brown, maxilla black, mandible dull white, shaded with dull brown for the anterior half on the sides; tarsus and toes bluish neutral gray; claws black.

Measurements.—Males (10 from Coclé, Province of Panamá, Canal Zone, and San Blas), wing 63.5–66.8 (64.2), tail 48.3–52.5 (50.6), culmen from base 12.6–14.2 (13.8), tarsus 15.7–16.9 (16.3) mm.

Females (10 from Chiriquí, Canal Zone, and Darién), wing 58.6–63.2 (60.4), tail 44.7–48.5 (47.1), culmen from base 13.3–14.2 (13.8), tarsus 15.7–16.8 (16.3) mm.

Resident. Found locally in the Tropical Zone in humid forests; on the Pacific slope from the Canal Zone east through Darién, with single records farther west for western Chiriquí and Cerro Campana. On the Caribbean side in Bocas del Toro, near Almirante, northern Veraguas, and from the Río Indio, eastern Colón, and the Canal Zone to the Colombian boundary in San Blas.

The only present record for Chiriquí is one specimen taken by Dr. Frank Hartman, March 12, 1951, on Cerro Pando, beyond El Volcán. On March 8 of this same year I secured a male in heavy forest at 850 meters on Cerro Campana. On the Caribbean side at Almirante,

Kennard collected one February 28, 1926, and Austin Smith one April 24, 1927. One in the British Museum marked Calovévora, Veraguas, was taken by Arcé in 1869. On the upper Río Indio I found one in heavy forest near El Uracillo, on the northern slope of Coclé, on March 2, 1952. In the northern Canal Zone the bird has been recorded on Barro Colorado Island and elsewhere.

Hasso von Wedel secured specimens in eastern San Blas at Permé, Ranchón, and Puerto Obaldía. At the latter locality I collected one as it moved quietly in a leafy tree top on February 17, 1963. I have found them common only in eastern Darién. Near Jaqué on the coast I saw them in pairs in thickets of guava along the Río Jaqué, and also in tall, swampy forest. In 1959 we found them in pairs in late February and early March in the forest along the Río Tuira at the mouth of the Río Paya. And later on the Río Pucro farther inland in 1964 I saw them alone, and once in company with a moving band of small birds in the forest.

On Barro Colorado, April 6, 1948, I saw one carrying nesting material, but did not locate the site. I have seen no record in literature of the form of the nest or of the eggs.

RHYNCHOCYCLUS OLIVACEUS BARDUS (Bangs and Barbour):
Olivaceous Flatbill, Piquichato Aceitunado

Craspedoprion olivaceus bardus Bangs and Barbour, Bull. Mus. Comp. Zool., vol. 65, September 1922, p. 216. (Cerro Sapo, Darién, Panamá.)

Medium size; bill broad, flat; olive-green above; breast light gray, faintly streaked with yellow; abdomen yellow.

Description.—Length 135–150 mm. Bill broad and flat, width at base almost equal to length; tenth primary in males with outer web stiffened, and tips of the barbs recurved, so that they feel roughened to the touch of a finger drawn along the edge. Adult male, upper surface from forehead to upper tail coverts, including lesser wing coverts and tibiae, olive-green; wings dusky, primaries with outer webs light olive-green; middle and greater wing coverts and inner secondaries tipped and edged with olive-yellow; tail grayish brown, with outer webs olive-green; a narrow white eye-ring; ear coverts basally dull olive-yellow; foreneck and upper breast, pale grayish olive, streaked indistinctly with light yellowish olive-green; rest of under surface light yellow; central spot on center of lesser under wing coverts dull olive-green; rest of under wing coverts and axillars pale yellow.

Female, like male, but with outer web of tenth primary smooth.

In a male from Cañita, Panamá, on the lower Río Bayano, taken

February 8, 1962, the iris was mouse brown; bare lower eyelid yellowish green; maxilla black, except at gape, which, like the mandible, is dull buffy white; tarsus and toes dull neutral gray; claws black; under side of toe pads pale yellowish. Another male, from Armila, San Blas, February 28, 1963, differed in having the iris warm brown; gape honey yellow; tarsus and toes bluish neutral gray; claws fuscous-black. In other details, in the inside of the mouth, the inner face of the mandible and the tongue were yellowish orange; inner surface of maxilla dusky at margin, shading to dull honey yellow in center. In a female, from El Real, Darién, January 27, 1964, the iris was dark brown; maxilla black, mandible dull ivory-white; tarsus and toes bluish neutral gray; claws fuscous-brown.

Measurements.—Males (10 from Colón, Province of Panamá, Canal Zone, Darién, and San Blas), wing 70.8–74.7 (73.4), tail 56.5–64.6 (60.4), culmen from base 15.8–17.0 (16.2), tarsus 17.1–18.6 (17.9) mm.

Females (10 from Canal Zone, Province of Panamá, Darién, and San Blas), wing 67.2–72.6 (70.2), tail 53.5–58.1 (55.4), culmen from base 15.6–17.1 (16.6), tarsus 17.5–18.2 (17.9) mm.

Resident. Fairly common in forested areas; on the Pacific slope from the Canal Zone to eastern Darién (Jaqué); on the Caribbean side, from the Río Indio (Chilar), western Colón, east to eastern San Blas (Puerto Obaldía).

In their forest haunt they range from the undergrowth up to the lower tree crown, occasionally coming out into partly cleared areas. They are found singly or in pairs, occasionally with several loosely associated. Single birds may join traveling flocks of the smaller forest birds. Alone, they may move rather rapidly among the branches, or may rest quietly, merely turning the head about.

Stomachs that I examined held insect remains. Goldman recorded one seizing small flying insects in the air. The call is a low *whis* or *whees*, with little carrying power. Eisenmann recorded the song as a "very thin, but musically sweet, though monotonous, *tee-tee-tee-tee*." Skutch (Anim. Kingd., vol. 59, 1956, p. 52) wrote that flycatchers of the genus *Rhynchocyclus* "build retort-shaped nests" that differ from those of the Yellow-margined Flycatcher (*Tolmomyias assimilis*) in having large dead leaves in walls. He reports that they sleep in these nests and suggests that some of these structures may be constructed especially for this purpose. On Barro Colorado Island, Gilliard found a nest April 13, 1937, with young about four days old.

While the nest is known, no description of the eggs of this northern race of the species has been found.

**RHYNCHOCYCLUS BREVIROSTRIS (Cabanis): Eye-ringed
Flatbill, Piquichato Oscuro**

Medium size; bill broad, flat; breast dark gray, indistinctly streaked with whitish; generally similar to the Olivaceous Flatbill but darker, with the ventral markings of foreneck, breast, and sides darker and heavier.

Description.—Length 145–160 mm. Adult male, outer margin of 10th primary lightly serrate; upper surface from base of bill to upper tail coverts, including lesser wing coverts, deep olive-green; wings dusky, with primaries, secondaries, and greater wing coverts edged with yellowish olive-green; tail dark grayish brown, edged with deep olive-green; eye-ring white, wider and more prominent than in *R. olivaceus*; lores faintly blackish; auricular region faintly dusky posteriorly, paler anteriorly; foreneck, upper breast, sides, tibiae, and under tail coverts dull olive-green; chin and throat faintly grayish; lower breast and abdomen yellow, becoming paler, whiter at sides; outer under wing coverts dusky, forming a distinct spot; rest pale yellow; edgings of under wing feathers pale brownish white, whiter laterally toward the tips.

Adult female, like male but outer margin of 10th primary smooth or very faintly serrate; color pattern somewhat duller.

These are birds of Tropical and lower Subtropical Zone forests, that in my experience in Panamá have been less abundant than the related *Rhynchocyclus olivaceus*. Two races are found in the Republic, one in the west, the other in the east.

RHYNCHOCYCLUS BREVIROSTRIS BREVIROSTRIS (Cabanis)

Cyclorhynchus brevirostris Cabanis, Arch. Naturg., vol. 13, bd. 1, heft 2, 1847, p. 249. (Jalapa, Veracruz, México.)

Characters.—Somewhat paler, both above and below; dorsal surface very faintly lighter; breast and foreneck lighter, with the abdomen faintly deeper yellow.

Measurements.—Males (10 from Chiriquí), wing 78.7–83.7 (80.5), tail 66.1–74.2 (70.1), culmen from base 15.1–16.2 (15.7), tarsus 18.2–18.8 (18.7) mm.

Females (10 from Honduras, Costa Rica, Chiriquí, and Veraguas), wing 72.0–78.0 (75.2), tail 59.3–66.8 (62.8), culmen from base 14.1–16.6 (15.7, average of 9), tarsus 18.0–18.8 (18.4) mm.

Resident. Found locally on the Pacific slope in tropical and lower subtropical forests from western Chiriquí, east through Veraguas, including the western side of the Azuero Peninsula, to Cerro Cam-

pana, western Province of Panamá; to 1600 meters on Silla de Cerro Pando west of El Volcán, and 1675 meters above Boquete; on the Caribbean slope recorded at Calovévora, Veraguas.

In Chiriquí I have taken it in forest at 1190 meters above Santa Clara near the Costa Rican boundary, and at 1280 meters near El Volcán. (A report of one collected by W.W. Brown, Jr., at 2280 meters above Boquete appears questionable.) One in the British Museum was collected in 1869 by Arcé on the base of the volcano at Bugaba. In Veraguas early records by Salvin, from specimens now in the British Museum, include Santa Fé on the Pacific side, and Calovévora on the Caribbean slope. May 16, 1953, I collected a laying female in gallery forest at Arena, 15 kilometers west of Soná. Aldrich (*Scient. Publ. Cleveland Mus. Nat. Hist.*, vol. 7, 1937, p. 105) found them in February 1932, on the Río Mariato in the northwestern Azuero Peninsula. March 13, 1951, I collected a male in forest at 850 meters on the south face of Cerro Campana, western Province of Panamá. As the species is found on the Caribbean slope in Costa Rica, it may be expected in Bocas del Toro (though not yet recorded). The two specimens in the British Museum taken by Arcé, labeled Calovévora, come from farther east on the Caribbean slope. It should be noted also that Lawrence (*Ann. Lyc. Nat. Hist. New York*, vol. 7, 1861, p. 329) listed it with a query as taken by Galbraith and McLeannan on the Atlantic slope of the Canal Zone, and later (*idem*, 1862, p. 473) confirmed the identification as valid.

On the few occasions that I have encountered this species I have seen single individuals in heavy forest where they moved or rested quietly, on the watch for insects on the leaves. They ranged from the undergrowth to the lower treecrown. Slud (*Amer. Mus. Nat. Hist.*, vol. 128, 1964, p. 263) in Costa Rica found them on occasion in company with moving bands of other small forest birds. He describes the call as a harsh, explosive note, and remarks further that this bird was "regularly attracted to driving army ants. It may then perch only a foot from the ground and, sitting quietly as usual amid the commotion, look up and about in round-eyed lethargy."

The range of this nominate form of the species extends north to Veracruz, México. Though it is reported to leave the northern area after the nesting season, details of the migration are not known. Wagner (*Ver. Überseemuseum Bremen, Reihe A, bd. 2, December 1953, pp. 211-212*) has reported in some detail that both sexes molt the primaries during the nesting season.

Skutch (*Pac. Coast Avif.*, no. 34, 1960, pp. 508-513) describes the

nest as similar to that of the Olivaceous Flatbill but much bulkier, made of coarser materials. Those recorded have been placed from $2\frac{1}{2}$ to nearly 11 meters above the ground. The nest is a rounded, elongated mass of fibrous materials, mixed with many dead leaves, that hangs free from the tip of a branch or vine. The rounded inner chamber has a tubular entrance projecting below the bottom. As eggs were seen only by means of a mirror, none were measured. A fragment of shell that had fallen outside was "pale reddish brown, mottled with a dark shade of reddish brown in a wreath around the thick end." The young at hatching had pink skins and "sparse but rather long, gray down." Empty nests are used as sleeping quarters, and outside the nesting season others are built especially for that purpose. These often are less substantial, with the entrance spout shorter or absent.

RHYNCHOCYCLUS BREVIROSTRIS HELLMAYRI Griscom

Rhynchocyclus brevirostris hellmayri Griscom, Bull. Mus. Comp. Zool., vol. 72, January 1932, p. 352. (Cana, Darién.)

Characters.—Darker both above and below. Darker olive-green above; breast and foreneck darker; abdomen somewhat duller yellow.

Measurements.—Males (3 from Darién), wing 79.1–87.0 (82.8), tail 64.0–73.2 (69.2), culmen from base 16.0–17.0 (16.5), tarsus 18.2–19.0 (18.6) mm.

Females (8 from Darién), wing 75.0–78.5 (76.8), tail 62.2–65.9 (62.5), culmen from base 15.7–17.6 (16.7), tarsus 18.2–19.1 (18.6) mm.

Resident. Recorded on the Pacific slope in Darién, from Cerro Pirre, Cerro Malí, the upper Río Jaqué, and Cerro Nique. (Found also on the east face of Cerro Tacarcuna in the drainage of the Río Cutí, in Chocó, Colombia.)

The first specimens of this race were two females collected by E.A. Goldman, May 3 and 5, 1912, at 1370 and 1525 meters elevation, near the head of Río Limón, on Cerro Pirre. R. R. Benson in 1928, collecting for the Museum of Comparative Zoology, took two males and four females in that area, these subsequently forming the series from which Griscom described the race. The bird was recorded again on this mountain through a male secured August 10, 1965, in a collection made by Dr. Pedro Galindo for the Gorgas Memorial Laboratory. He secured others on June 9, 1963, on Cerro Malí, and March 18, 1972, at 700 meters on Cerro Nique.

On April 7, 1947, on the upper Río Jaqué, Darién, I collected a

female in gallery forest near the base of the hills toward Las Peñitas, above the lower course of the Río Imamadó. This was at the northern end of the trail leading across the hills toward Colombia. It was the only one seen. The related species, *R. o. bardus*, was common through the slightly lower adjacent forests at the mouth of the Imamadó, and along the Río Jaqué in this area.

In view of this, it has been interesting to consider the thesis of Haffer (Auk, 1967, pp. 354–362) concerning allopatric species pairs of birds in adjacent Colombia, as related to *R. brevirostris* and *R. olivaceus*. (To his data on the lowland occurrence of *brevirostris* the preceding accounts give additional localities in Veraguas, and those above in eastern Darién.) In further comment, the record by Cassin (Proc. Acad. Nat. Sci. Philadelphia, vol. 12, 1860, p. 144) where he listed "*Cyclorhynchus brevirostris*," is based on three specimens of *Rhynchocyclus olivaceus mirus* in the U.S. National Museum, taken by A. Schott, attributed only to the "Survey of the Atrato R. New Granada. Lt. R. Michler, U.S.A." These ancient skins are flattened, somewhat faded so that the buff edgings of the wings are paler, but with the upper tail coverts distinctly olive-brown, and the tail with browner edges, so that they are identified without hesitation as the subspecies *mirus*. There is no indication in them of hybridization between the two species under discussion.

TODIROSTRUM NIGRICEPS Sclater: Black-headed Tody-flycatcher, *Moscareta Enana Cabecinegra*

Todirostrum nigriceps P. L. Sclater, Proc. Zool. Soc. London, pt. 23, May 16, 1855, p. 66, pl. 84, fig. 1. (Santa Marta, Magdalena, Colombia.)

Very small; crown, hindneck, and side of head black; breast yellow.

Description.—Length 75–83 mm. Adult (sexes alike), crown and hindneck black; upper back and scapulars yellowish olive-green; lower back and rump grayish olive-green; upper tail coverts the same, or in some partly white; wings black; middle and greater coverts tipped and edged with yellow; inner primaries also edged with yellow, this becoming nearly white on inner secondaries; tail fuscous, margined narrowly with olive-green; side of head black (like pileum) with lower auricular area lined lightly with white; throat and upper foreneck white; tibia black, tipped with dull yellow; rest of under surface including edge of wing yellow, paler on under tail coverts; under wing coverts paler yellow; under surface of primaries edged with dull white.

A male, collected near Pacora, Panamá, March 23, 1961, had the

iris dark wood brown; maxilla black; extreme tip of mandible mouse brown; line along gonys dull wood brown, shading on either side to the black of rest of the mandible; tarsus and toes dusky neutral gray. A female, at Charco del Toro, Panamá, March 21, 1950, had the iris dark brown; bill black above, dark neutral gray below, with a line of light neutral gray along the inner margin of the gonydeal rami; tarsus and toes light neutral gray; claws black. Another female, from Pucro, Darién, February 6, 1964, also had the iris dark brown; bill wholly black; tarsus and toes dusky neutral gray.

Measurements.—Male (10 from Costa Rica, Panamá, and northwestern Colombia), wing 38.2–39.9 (38.9), tail 24.0–26.8 (25.1), culmen from base 12.8–13.8 (13.2), tarsus 14.0–15.2 (14.7) mm.

Females (10 from Panamá and northwestern Colombia), wing 36.3–39.3 (37.7), tail 22.8–25.2 (24.0), culmen from base 12.3–13.5 (13.0), tarsus 13.7–15.4 (14.5) mm.

Resident. Found in forested areas in the Tropical Zone; recorded on the Pacific slope from the southern Canal Zone east through eastern Province of Panamá and Darién; on the Caribbean side from Bocas del Toro to northern Coclé, Canal Zone, and eastern Colón.

Both Benson and Austin Smith collected this species near Almirante, and the latter secured a male at Chiriquí Grande (in the Havemeyer collection at Yale, labeled "Chiriquicito Grande"). February 14, 1958, I took a male on Shepherd Creek, below Almirante. I collected another February 27, 1952, near El Uracillo, northern Coclé, on the upper Río Indio. Eisenmann recorded it near Piña in the northwestern border of the Canal Zone. Early records were made by McLeannan at Lion Hill. Ridgely recorded it at Río Piedras, eastern Province of Colón, in January 1968. In the southern Canal Zone, Eisenmann and N.G. Smith found it on the K-6 road July 13, 1964. To the eastward, I secured one March 23, 1961, on the Río Santo east of Pacora in the upper La Jagua area. At Pucro, near the Río Pucro, Darién in 1964, I collected a female February 6 and a pair February 7.

Although these are forest birds, they come out regularly into brushy areas that are more open. I found one in an old banana plantation, another in low trees along a trail at the border of a weed-grown pasture, and another in a low tree top covered with vines at forest border. Near Pucro one came into shade trees over a cacao plantation. On another occasion a pair rested side by side on an open branch in gallery forest. One fluttered out to another perch for a few seconds, and then returned to the side of its mate. It is probable that they are more common than these few records indicate, as their tiny size renders them inconspicuous.

Dr. Skutch (in litteris, November 20, 1970) has given me the following notes on breeding in this species as recorded near the Río Puerto Viejo, in the Caribbean lowlands of northern Costa Rica. A nest found May 10, 1968, in a cedar tree (*Cedrela*) growing isolated in a pasture, was 6 meters above the ground and less than 2 centimeters from a small vespiary of large black wasps. "The hanging pear-shaped nest had a side entrance shielded by a visor-like projection from the wall. It was made of felted fibrous materials and seed down apparently largely of the balsa tree. Although similar in form to the nest of *T. cinereum*, it was shorter, with less pendant 'tail,' and was attached to a thicker branch, and better concealed. . . . Only the female incubated, sitting for intervals that rarely exceeded a quarter of an hour and were usually much shorter. The male often escorted her back and forth, spent much time resting near the nest, and occasionally went to the doorway to look in. He uttered a low, measured *chip chip chip chip*, similar to, but more resonant than the ticking note of *cinereum*. The female often voiced a very low, soft trill when entering her nest or sitting in it." (See also Skutch, Publ. Nuttall Orn. Club 10, 1972, pp. 153-155.)

Eisenmann, in manuscript notes describes a nest that, in company with N. G. Smith, he found July 13, 1964 near the K-6 road in the Canal Zone, as a globular structure of brown fibers with the entrance on the side. J. A. Allen (Bull. Amer. Mus. Nat. Hist., vol. 21, 1905, pp. 286-287) described an egg collected by Mrs. H. H. Smith at Bonda, near Santa Marta, Colombia, June 6 (year not stated) as "ovate, clear white, with a few yellowish brown or rust-colored specks over the larger end." It measured 16×11 mm.

Though it is evident that *nigriceps* is allied to *T. pictum*, *T. chrysocrotaphum*, and others of this genus in small size and general appearance, the action of Zimmer (Amer. Mus. Nov., no. 1066, 1940, pp. 2, 4) in placing these as races of *T. chrysocrotaphum*, requires further consideration. As indication of this it is noted that *nigriceps* differs somewhat from the others in pattern of markings, and also in more slender form of wing and tail feathers.

TODIROSTRUM CINEREUM FINITIMUM Bangs: Common
Tody-flycatcher, Moscareta Enana Común

Todirostrum cinereum finitimum Bangs, Proc. Biol. Soc. Washington, vol. 17, May 18, 1904, p. 114. (San Juan Bautista, Tabasco, México.)

Very small; bill long, broad and flat; crown black, under surface yellow.

Description.—Length 90–100 mm. Adult male, forecrown black, extension posteriorly of this color, variable individually, merging into slate color on the nape, where streaked somewhat obscurely with black; back, scapulars, lesser wing coverts, and rump pale to dark olive-green, in some with the back near slate on the upper area; smaller upper tail coverts often yellowish; wings black, the middle and greater wing coverts and inner flight feathers edged and tipped with sulphur yellow; tail black tipped and edged with white; lores black, in some tipped lightly with yellowish white; side of head blackish slate to slate; under surface, including the malar region, under tail coverts, axillars, and under wing coverts yellow; tibia dull black, barred with brownish white; inner webs of remiges edged with brownish white.

Adult female similar, but usually with loreal and frontal area with more tipping of yellowish white (this found also in some males), and dorsal surface often paler, more grayish olive-green.

A male, taken at the Candelaria Hydrographic Station, eastern Province of Panamá, March 4, 1961, had the iris pale yellow; extreme tip of maxilla, lower half of mandibular rami, a line on the gonys, and tip of mandible ivory-white; rest of bill black; tarsus and toes dark neutral gray; claws black.

A female collected at El Potrero, Coclé, March 8, 1962, had the iris light yellow; maxilla black; mandible dull white with a faint grayish tinge; tarsus and toes as in the male.

Measurements.—Males (10 from Chiriquí, Veraguas, Herrera, Canal Zone, eastern Province of Panamá, Bocas del Toro, western Colón, and San Blas), wing 41.6–44.9 (43.2), tail 31.0–35.7 (33.7), culmen from base 14.9–17.8 (16.1), tarsus 17.9–18.8 (18.3) mm.

Females (10 from Chiriquí, Canal Zone, eastern Province of Panamá, and Bocas del Toro), wing 41.8–43.6 (42.4), tail 29.7–34.3 (31.5), culmen from base 15.2–16.5 (15.7), tarsus 18.1–18.9 (18.4) mm.

Resident. Common in open, bushy areas in the Tropical Zone; on the Pacific slope from western Chiriquí (Serenó, El Volcán, Puerto Armuelles) east through Veraguas and the eastern side of the Azuero Peninsula through Herrera to northeastern Los Santos (Monagre), the Canal Zone, and the adjacent area of the eastern Province of Panamá (Pacora, La Jagua, and Chepo); to Darién, at Boca de Cupe on the Río Tuira, and Cana (550 meters elevation) on Cerro Pirre. On the Caribbean side from western Bocas del Toro, northern Veraguas, Colón (Río Indio, Portobelo), northern Canal Zone, and San Blas (Mandinga, Puerto Obaldía); Isla Coiba.

While not abundant, these interesting small flycatchers are widely distributed so that they are seen regularly, usually in pairs. In lowland Chiriquí they are found from the Costa Rican boundary and the Burica Peninsula eastward through San Félix and Las Lajas to Veraguas and southern Coclé. In the Azuero Peninsula they were not encountered on the western side, but on the east ranged through Herrera to northern Los Santos (to Monagre on the coast south of the mouth of the Río de la Villa). Their eastern limit beyond the Canal Zone came at the lower Río Bayano (San Antonio beyond Chepo). On the Caribbean coast I recorded them in western San Blas at Mandinga and the mouth of the Río Cangandí. As Hasso von Wedel collected specimens at Puerto Obaldía it appears that they are distributed throughout this area. In Darién, E. A. Goldman collected a male near Cana on Cerro Pirre March 22, 1912, noting that the birds were found "sparingly in the second growth jungle." Benson secured two males there in 1928. Eisenmann has given me records of one from Boca de Cupe at the head of tidewater on the Río Tuira.

Usually they are seen moving alertly through open branches, often fluttering up among leaves to seize moving insects. More rarely, one may rest motionless, often on an elevated perch, for several minutes. The males especially, as they move about, raise the long tail above the level of the back, often spread it slightly, and jerk it quickly from side to side. In their active movements they are suggestive of gnatcatchers or wrens, rather than their more subdued relatives among the Tyrant Flycatchers. As they move about they call with sharp chipping notes, or with a very short musical trilling song. All of these sounds are low with slight carrying power. From numerous stomach examinations I have found their food to be small insects of a considerable variety, including many hymenoptera, diptera, beetles, and hemiptera. Occasionally one had eaten a small caterpillar, or a small moth.

The nest is large for the size of the bird, placed usually with no pretense of concealment. In a usual location, the structure swings from the tip of a hanging twig or vine, sometimes at the side of a thicket, occasionally over a trail, or above a small stream at elevations as low as a meter or two, or higher up to 8 or 9 meters from the ground. It is built by male and female working together, the construction proceeding slowly, often through a period of two weeks to a month. Long fibers are twisted around the supporting twig so that they dangle in a tangled mass. As this grows in size, the birds press other fibers into one side to form an opening, and then continue

until the irregular mass of the nest proper takes shape. Finally there is an elongated, hollow ball with an opening at the upper end, often with the upper margin projecting hoodlike as a guard against rain. The nest varies from 15 to 20 centimeters in length. Loose ends of the longer fibers hang untidily as a flattened, pendant tail, perhaps with a few dead leaves entangled in it. The eggs number two or three, and are white without gloss, usually plain, but often with tiny dots of warm brown. These markings may be widely scattered, with some so small that they are visible only through a lens, or more rarely, if abundant, grouped in open cap-shaped form over the larger end. In shape the eggs are surprisingly variable, from oval (found in many) to long oval, subelliptical, or rarely, even long elliptical. A usual size is 15.0×11.0 to 16.1×11.6 , with range to 17.7×11.3 or in one set, to 18.0×11.8 mm. This range is found in six sets from the southern Canal Zone collected by Major-General G. Ralph Meyer, from March 27 to May 17, 1941, and E.A. Goldman, at Miraflores, April 30, 1911, with two that I found at La Jagua, eastern Province of Panamá March 20 and 24, 1961.

Skutch (Pac. Coast Avif. no. 34, 1960, pp. 475–499) describes a dawn-song of “a slight sharp *tic* repeated over and over at varying rates, sometimes as often as 110 times per minute, and for many minutes together.” He recorded the female as incubating and brooding the young alone, but aided by the male in feeding the nestlings. The incubation period was 17 days in one nest, and 18 days in another. He heard both sexes regularly uttering a trilling song, to maintain contact between the pair.

The subspecies *finitimum* in its typical form, in México and northern Central America, differs in being more greenish above, as compared to the grayer nominate *cinereum* of northern South America. The population of Panamá is slightly intermediate, but on the whole is nearer *finitimum* in somewhat greenish dorsal hue, though many are faintly paler than typical individuals from México. The long series examined shows too much variation to warrant another name. Those from Isla Coiba, for example, all are closely similar to the more northern birds, though birds of the adjacent mainland show the variation mentioned.

As another slight difference, *Todirostrum cinereum cinereum* averages very slightly larger in wing and tail, as indicated by the following measurements from a Colombian series.

Males (10 from northern and western Colombia), wing 43.0–45.9 (44.5), tail 32.0–36.5 (33.8), culmen from base 14.8–17.1 (15.8), tarsus 17.8–18.9 (18.2) mm.

Females (10 from northern and western Colombia), wing 42.1–45.4 (43.6), tail 30.5–34.6 (32.1), culmen from base 14.0–16.7 (15.6), tarsus 18.0–18.8 (18.3) mm.

TODIROSTRUM SYLVIA SCHISTACEICEPS Sclater: Slaty-headed Tody-flycatcher, Moscareta Enana Gris

Todirostrum schistaceiceps P. L. Sclater, Ibis, vol. 1, October 1859, p. 444. (Oaxaca, México.)

A small Tody-flycatcher, with crown gray; breast gray, streaked with white.

Description.—Length 88–95 mm. Adult (sexes alike), crown slate, indistinctly lined with black, paler on nape; back, scapulars, lesser wing coverts, rump and upper tail coverts olive-green; wings black; middle and greater coverts tipped with olive-yellow; primary coverts, primaries and secondaries edged with yellowish olive-green, this changing to yellow on inner secondaries; tail black, edged with yellowish olive-green; lores dusky, with a superior line of white, extending back across upper eyelid; lower eyelid also white; suborbital and auricular area slate-gray; anterior lower surface light gray, streaked narrowly with white; center of lower breast and abdomen white or yellowish white; sides and flanks light olive-green; under tail coverts, axillars, and under wing coverts light yellow.

Immature, breast and foreneck lighter gray.

A male, collected at El Copé, Coclé, February 25, 1962, had the iris dark reddish brown; tip of bill grayish white, rest fuscous-black; tarsus, toes, and claws grayish brown.

Measurements.—Males (10 from Chiriquí, Veraguas, Herrera, Coclé, Province of Panamá and Canal Zone), wing 44.0–47.3 (45.3), tail 30.9–34.7 (33.0), culmen from base 12.1–14.8 (13.5), tarsus 18.2–18.8 (18.5) mm.

Females (10 from Chiriquí, Veraguas, Coclé, Colón, Canal Zone, and eastern Province of Panamá), wing 43.5–45.7 (44.5), tail 29.5–33.0 (31.3), culmen from base 12.1–14.8 (13.5), tarsus 18.2–18.8 (18.5) mm.

Resident. Fairly common; found locally in thickets and low second growth in the Tropical Zone lowlands; on the Pacific side from Chiriquí (Puerto Armuelles, Concepción, Buena Vista, to 820 meters elevation) east through Veraguas, the northeastern side of the Azuero Peninsula, southern Coclé, the western Province of Panamá, and the southern Canal Zone, to the Río Pacora and La Jagua, eastern Province of Panamá. On the Caribbean side uncommon in Bocas del

Toro (Changuinola, Almirante), Río Indio, western Colón, and the northern Canal Zone.

These small birds live in the cover of thickets in pastures, along the borders of fields, and in low growth at the open borders of forested lands. They seem more widely spread and somewhat more common therefore on the drier, more open Pacific slope than in the lush, denser growth of the Caribbean side where rainfall is heavier. The species was first reported from Panamá by Lawrence (Ann. Lyc. Nat. Hist. New York, vol. 7, 1862, p. 473) from a specimen received from McLeannan. Sclater and Salvin (Proc. Zool. Soc. London, 1864, p. 350) also listed it at this same early date, perhaps from this same specimen, which Lawrence had submitted to Sclater for advice as to its identity.

The Slaty-headed Tody-flycatcher differs decidedly in its manner of life from the two related species of the genus found in Panamá, as it is secretive, living in the main under cover, so that it is unusual to see it in the open. Its presence usually is made known by its croaking, toadlike call, low in tone, very similar to that of the small Bentbill Flycatcher, but shorter and less trilling in sound, accompanied by a low clicking note, not given by the other species mentioned. It was not until I had identified this call, heard on numerous occasions before I was able to trace it certainly to the author, that I realized the bird was fairly common over a considerable range. It seems probable that the species was little known to early naturalists as then its forest cover was more extensive. Suitable range for it certainly is now more abundant through clearing for cultivation, with extensive stands of second growth and of low shrubbery at the borders of fields and pastures. The birds move about readily, mostly in pairs, and may suggest gnatcatchers in their action. On other occasions, when moving in leisurely manner, they have suggested small vireos. When seen clearly I have noted that the distal ends of the tail feathers in males often are slightly expanded, compared to the faintly narrower outline of these feathers in females.

The notes of General G. Ralph Meyer record breeding in the Forest Reserve on Madden Road, Canal Zone, on July 23, 1941. The nest was suspended from the tip of a branch in a stand of small saplings, under cover, and not in open view like that of *Todirostrum cinereum*. The main structure was about 30 centimeters in length, made of grasses, with straggling wisps hanging a few centimeters below the lower end. The nest proper was of fine grass below a mass of heavy grasses, that looked as though it might serve to shed rain. There

was no visor or roof over the entrance like that found regularly in the nests of the more common species. The two eggs measured 16.5×12.7 , and 17.5×12.7 mm.

Skutch (Pac. Coast Avif. No. 34, 1960, pp. 490–495), in an account of this subspecies in southwestern Costa Rica, found that the nest built by male and female working together was closely similar to that of the common tody-flycatcher. While the structure was suspended so that it hung free at the tip of a branch, from a meter to 3 meters from the ground, the location was in cover of undergrowth. Nest building proceeded slowly. In seven nests examined he found two eggs, or two nestlings. The eggs were "white, with a wreath of chocolate spots and a sprinkling of the same over the remainder of the surface." The extremes measured 19.1×13.1 , 17.1×13.5 , and 17.1×12.7 mm. Incubation was by the females alone. At one nest the male did not approach the structure closely. At two others the males occasionally clung at the doorway to look inside, but did not enter. The incubation period was 18 or 19 days. The young at hatching had pink skin with small tufts of gray down on head and back.

The food is small insects, as in the related species.

**ONCOSTOMA CINEREIGULARE (Sclater): Northern
Bentbill, Piquitorcido Norteño**

Todirostrum cinereigulare P. L. Sclater, Proc. Zool. Soc. London, vol. 24, 1856 (January 26, 1857), p. 295. (Córdoba, Veracruz, México.)

Small; bill heavy, distinctly curved; breast gray.

Description.—Length 90–100 mm. Adult (sexes alike), crown dull slate-gray, the feathers with darker streaklike centers; hindneck, back, scapulars, rump, and upper tail coverts olive-green; wings dusky; lesser, middle, and greater wing coverts edged with olive-green; primaries and secondaries edged also, but usually with somewhat yellowish olive-green; tail dusky, edged with olive; lores more or less grayish white; side of head grayish; throat and foreneck grayish white, streaked with gray; chest and sides dull gray, lined with grayish white; rest of under surface light yellow, with the sides and flanks streaked and washed with olive; axillars and under wing coverts pale yellowish white; inner webs of wing feathers with dull whitish edgings.

In museum specimens the tarsus and toes are light yellowish brown.

Measurements.—Males (10 from Chiriquí, Bocas del Toro, Costa Rica, Guatemala, Honduras, and Chiapas), wing 50.0–52.9 (51.3),

tail 36.5–40.3 (38.7), culmen from base 12.2–13.4 (12.6), tarsus 14.2–15.9 (15.1) mm.

Females (10 from Costa Rica, Honduras, Tabasco, and Veracruz), wing 42.1–46.0 (44.2), tail 30.3–35.6 (32.0), culmen from base 11.4–12.8 (12.0), tarsus 14.0–14.9 (14.4) mm.

Resident. Not common. Recorded locally in Chiriquí and Bocas del Toro.

The earliest record, in Chiriquí, is a male in the British Museum (Natural History) taken at Bugaba by Arcé in 1869. A female in the California Academy of Sciences from San Félix was collected by Mrs. M. E. McClellan Davidson, December 7, 1931. From Bocas del Toro there is a female in the Peabody Museum from Chiriquí Grande (labeled "Chiriquicito Grande") collected by Austin Smith, May 5, 1927. Benson secured it at Almirante, March 5, 1958. I took a male in that area on the upper Quebrada Nigua, where my attention was attracted to it by its toadlike call. Others have been captured more recently in mist nets.

The species is one that ranges from México through Central America to western Panamá. It is found in thickets and undergrowth in open forest, where its presence may be known from its low calls. Usually these birds are shy, and are seen only on careful search in the undergrowth in which they live.

Skutch (Pac. Coast Avif. 34, 1960, pp. 555–558) found the female occupied alone in nest building and care of the young. Two nests seen in Costa Rica were rounded, somewhat elongated structures, suspended from a leaf or twig a few centimeters above the ground at the borders of thickets. They were made of light-colored fibers, with an inner chamber "entered through a narrow, round aperture in the side." One contained two nestlings. Alvarez del Toro, (Ateneo, no. 4, 1952, p. 15) in México recorded the eggs as white, and two in number. The observations of Skutch indicated that the curious notes mentioned were given only by males, that appeared to be resident in definitely limited areas in the thickets that they inhabited. He noted also that the food was "largely if not wholly of insects and spiders, which it usually plucks from the under surface of leaves." He believed that the relatively heavy, curved bill, differing from the flat, straight form of most flycatchers, was an adaptation to the capture of its food from such locations. In the National Museum collection there is an ancient specimen of *cinereigulare* labeled "Expl. on Isthmus of Panama S. & T. Rhoades, Lion Hill, near Aspinwall, J. McLeannan" that is the basis of error in records

of range for this species. The accession papers state that the specimen was received from Thomas Rhodes (not Rhoades) with correspondence dated February 20, 1866, and the information that skins "marked S. & T. R. were collected by my brother and myself during the month of Dec. last within six miles of Panama. The rest we bought of a Mr. McClellan [i.e., McLeannan] of Lion Hill near Aspinwall. It was our intention to have remained at least four months on the Isthmus." The brother became ill, they left suddenly for the north, and the brother's death came during the return journey. Rhodes wrote that "our sudden departure made us neglect making notes on the birds which we had intended even neglecting to mark the sex and the color of the eyes of some." The specimen in question must have been included from some other source as it is obvious from its appearance that it was not prepared by McLeannan. The locality therefore is not the Canal Zone.

**ONCOSTOMA OLIVACEUM (Lawrence): Southern Bentbill,
Piquitorcido Aceitunado**

Todirostrum olivaceum Lawrence, *Ibis*, vol. 4, January 1862, p. 12. (Lion Hill, Panama Railroad, Canal Zone, Panamá.)

Small; bill heavy, distinctly curved as in *O. cinereigulare*, but breast olivaceous.

Description.—Length 90–100 mm. Adult (sexes alike), upper surface, olive-green, crown with faint dusky central lines; wings dusky; lesser wing coverts olive-green, lined and spotted indistinctly with dusky; middle and greater coverts edged and tipped with olive-yellow; primaries and outer secondaries edged with olive-green, inner secondaries with greenish yellow; tail dusky, edged with olive-green; foreneck and breast olive-yellow, lined with dull olive-green; sides and flanks light olive-green, lined with pale yellow; under wing coverts and axillars pale yellowish white; under wing feathers edged with dull white.

A male collected at Chiva Chiva, Canal Zone, January 13, 1952, had the iris light yellow; bill dusky neutral gray, with the central area of the gonys whitish; tarsus light neutral gray; toes avellaneous; claws neutral gray. In another male, taken at the mouth of the Río Paya, February 1, 1959, the iris was very light orange-yellow; base of culmen and of gonys grayish white; rest of bill dark neutral gray; front of tarsus neutral gray; back of tarsus and toes mouse brown. In a third, at the Peluca Hydrographic Station, Panamá, February 25, 1961, the iris was light honey yellow; base of rami, and lower surface

of mandible, except at tip, pale brownish white; rest of bill black; tarsus and basal phalanges of anterior toes, the hindtoe, and all claws, neutral gray; rest of anterior toes pale neutral gray.

A female at Chimán, Panamá, February 16, 1950, had the iris ivory-yellow; gonyes brownish yellow; rest of bill brownish black; tarsus and toes grayish brown. Another female, at Juan Mina, Canal Zone, January 16, 1961, had the iris Marguerite yellow; base of mandibular rami, line along their lower margin, and also along gonyes, dull white; rest of bill dark neutral gray; tarsus, toes, and claws neutral gray. A third of this sex, collected at Pucro, Darién, January 30, 1964, had the iris pale orange; cutting edge of maxilla and mandible, base of gonyes, and lower margin of mandibular rami pale dull ivory-white; rest of bill black; tarsus dark neutral gray; toes brownish neutral gray; claws dull fuscous.

The tarsus and toes in *olivaceum*, in the long series of specimens available from the eastern half of the Isthmus and northern Colombia, are uniformly dark. Those of *O. cinereigulare* are light, faintly brownish yellow.

Measurements.—Males (10 from Canal Zone, eastern Province of Panamá, western Colón, northern slope of Coclé, and San Blas), wing 46.6–48.8 (47.4), tail 33.2–36.7 (34.7) culmen from base 12.1–13.3 (12.7), tarsus 15.0–15.9 (15.3) mm.

Females (10 from western Colón, Canal Zone, eastern Province of Panamá, Darién, and San Blas), wing 41.0–43.8 (42.5), tail 28.6–31.8 (30.3), culmen from base 11.6–12.8 (12.3), tarsus 13.9–15.1 (14.4) mm.

Resident. Locally common in the tropical lowlands, on the Pacific slope from the southern Canal Zone east through Darién; on the Caribbean side from the Río Indio in western Colón and northern Coclé, east through the Canal Zone, eastern Colón, and San Blas to Colombia; to Cana on Cerro Pirre.

These small birds live in the under story of forest areas, and range out also into low second growth through fields and pastures. Occasionally I have found them in tall, dense stands of grasses bordering thickets. Usually they are timid, so that their presence is known only from their calls, uttered by birds that remain hidden among the leaves. Rarely, I have found them on perches occasionally fairly high above the ground, in open branches in tall forest, when in movement they may suggest small vireos. It is usual to see one alone. Rarely, where two have been in company, I have found that they were male and female. Rarely also, I have noted one in company with

moving groups of small forest birds. It has been my impression that such association has been temporary for only short periods, and in limited movement in travel.

The voice is a low, rattling call, toadlike in sound. The trachea is much enlarged, the swelling beginning below the larynx, and ending immediately above the syrinx. This development in size resembles that found in *Lophotriccus pileatus*, but differs in *Oncostoma* by being compressed from side to side. While most of the calls come from males, they are given also by females, as I have determined from collected specimens. On one occasion, at Charco del Toro, two were calling persistently and chasing one another from perch to perch; both proved to be females.

An early account of the nest of this species is that of D. E. Harrowes (Auk, 1936, pp. 336-337), of one found August 7, 1933, on the Río Indio trail near Gatun. It was in dense, low jungle about a meter from the ground, "a small, flask-shaped structure . . . hung from slender twigs. The entrance was a small, round hole in one side near the top, with a 'roof' projecting out and serving to shelter it. . . . When discovered it contained one very small white egg . . . with a very few minute spots of red-brown about the larger end." Skutch (Pac. Coast Avif., no. 34, 1960, pp. 558-560) in late April 1935, on Barro Colorado Island, found a nest about 4 meters from the ground, hung from a slender branch in a small tree in the forest beside a little stream. It was about 140 mm long by 75 mm in diameter, and had a narrow, round opening leading to the inner chamber. It was "constructed almost wholly of very light-colored, soft fibers . . . lined with soft, buff-colored down from some kind of seed." On May 2 it held two white eggs "with a wreath of small blotches and fine scrawls of pale brown around the thick end, and a few such marks scattered elsewhere. . . . They measured 15.9×12.7 and 15.9×12.3 millimeters."

Beyond Panamá, *Oncostoma olivaceum* ranges across northern Colombia from the lower Río Atrato, Chocó, east in the middle Magdalena region from western Santander north to the Santa Marta area. Specimens from this area do not differ from the typical population of Panamá.

LOPHOTRICCUS PILEATUS LUTEIVENTRIS Taczanowski:
Scale-crested Pygmy-tyrant, Moscareta Cresta-Escamada

[*Lophotriccus squamicrostus*] *subsp. luteiventris* Taczanowski, Orn. Pérou, vol. 2, 1884, p. 231. (Chiriquí.)

Lophotriccus squamicrostus minor Cherrie, Proc. U.S. Nat. Mus., vol. 14,

September 4, 1891, p. 337. (Grecia, Alajuela, Costa Rica.)

Lophotriccus zeledoni Cherrie, Proc. U.S. Nat. Mus., vol. 14, September 4, 1891, p. 337. (Dota, San José, Costa Rica.)

Small; with straight, rather heavy bill; breast whitish to yellowish, streaked with gray; adult with prominent brown crest, spotted with black.

Description.—Length 90–100 mm. Adult, with a bushy crest in which the feathers become longer and broader posteriorly. Male, crest prominent, with the feathers especially large and broad at the tips; forehead and anterior area of crown grayish brown, in the latter area the feathers darker centrally; longer crown feathers black basally, tipped broadly with cinnamon-rufous; hindneck, back, scapulars, and rump olive-green; tail dusky, edged with olive-green; wings dusky; wing coverts dusky basally; lesser coverts edged with olive-green, middle and greater coverts tipped with grayish white to yellowish olive-green; primaries edged with olive-green; secondaries bordered more widely with yellowish white; side of head olive to light rusty brown; throat, foreneck, breast, and sides white to yellowish white; streaked rather broadly with gray to grayish olive; abdomen and under tail coverts white to yellowish white; tibia dusky, tipped at the tarsal joint with dull brown; axillars and under wing coverts white; inner margins of wing feathers edged with dull white.

Adult female, similar but crest less developed, with the feathers narrower distally; sides of head browner.

Immature, crest feathers not lengthened, broadened or expanded distally; crown and hindneck plain rusty brown; under surface less distinctly streaked with gray.

A male, taken near the base of Cerro Chucantí, eastern Province of Panamá, March 14, 1950, had the iris light orange-yellow; maxilla fuscous; base of gonys flesh color, rest of mandible dark neutral gray; tarsus and toes mouse brown. In one from Cerro Malí, Darién, February 21, 1964, the iris was pale orange; cutting edge of maxilla and mandible, and lower margin of mandibular rami, dull grayish white; rest of bill black; anterior face of tarsus pale neutral gray; posterior surface and toes pale brownish white; claws pale neutral gray. Another from Cerro Campana, western Province of Panamá, March 5, 1951, had the iris yellowish white, becoming somewhat orange around the pupil.

In a female from Cerro Campana the iris was as described for the male from that locality. In one collected at Palo Santo, near El Volcán, March 1965, the iris was yellow; lower margin of mandibular

rami and basal third of gonyes buffy white; narrow cutting edges of maxilla and mandible dull yellowish white; rest of bill black; tarsus, toes, and claws on inner and outer anterior toes, brown; claws on central anterior toe and on hind toe, fuscous.

Measurements.—Males (10 from Chiriquí, Veraguas, and Cerro Campana, western Province of Panamá), wing 47.0–51.5 (49.7), tail 33.2–39.2 (36.6), culmen from base 10.1–12.5 (11.9), tarsus 15.4–16.5 (15.9) mm.

Females (10 from Chiriquí, Veraguas, and Cerro Campana, western Province of Panamá), wing 43.2–46.5 (44.6), tail 28.0–35.3 (31.8), culmen from base 11.2–12.2 (11.6), tarsus 14.2–16.1 (15.1) mm.

Resident. Found on the Pacific slope in forested areas in the upper Tropical Zone from 450 to 1525 meters, from western Chiriquí through Veraguas and Coclé to Cerro Campana in the western sector of the Province of Panamá; ranges also to the upper Tropical Zone from 750 to 900 meters on Cerro Azul; in Darién to 900 meters on Cerro Sapó; on Cerro Pirre from 750 meters to the lower Subtropical Zone at 1580 meters; on Cerro Malí from 575 meters on the base to the upper Tropical Zone at 1430 meters.

They are encountered regularly from undergrowth near the ground to the lower tree crown, in undisturbed forest, and are adapted to change, as they come regularly to second growth where this has attained fair size. At rest they perch quietly with the body held erect. As they are so small, it may be difficult then to see them, since the smallest leaves may hide them. Males have a low song that may be represented by the syllables *weet chee si-loo*, often given with the syllables in reverse order. The more common call, that often attracts attention, is a rattling, steely note given usually by the males, and possibly may be restricted to them. In this sex, the trachea is thin-walled and considerably enlarged, the swelling beginning immediately below the larynx on the upper end, and tapering distally to terminate at the syrinx. In calling, the crest may be elevated, and the feathers of cheeks and upper neck erected. As stated, this call appears to be confined to the males. In females the trachea is small and of normal form. It should be noted that because of the thin wall the trachea shrinks appreciably after preservation in alcohol, so that while still enlarged it appears smaller than in life.

Skutch (Publ. Nutt. Orn. Club, no. 7, 1967, pp. 90–92), in observations on the Pacific slope of southern Costa Rica, recorded males calling persistently from the middle of January to May, scattered

singly through the forests. The only nest that he found was attended by one adult. From other observations it was his impression that males, keeping to a limited daily range, attracted the females by their calling, but that the birds did not form permanent pairs that remained in company during nesting. The nest, suspended from a twig about $3\frac{1}{2}$ meters above the ground, was a rounded ball with the opening guarded by a small projection above. It was made of "fine light-colored bast fibers, which in the bottom of the cozy rounded structure formed a very thick cushion." The nest was attached to the supporting twig by a broad band more than 50 mm in width, while a thin streamer dangled below. The two young were attended by one parent that he believed was the female.

Schönwetter (Handb. Ool., pt. 15, 1968, pp. 83, 111) describes eggs from Perú and Ecuador (listed under the nominate race *L.p. pileatus*) as somewhat pointed miniatures of those of the Royal Flycatcher. Some have a bright to dark reddish gray ground color, thickly marked with carmine in scrawling lines which form a wreath or band that obscures the ground color. Others have elongated carmine spots mixed with dark lines. The similarity is such as to indicate a possible relationship between the two genera. In size six eggs of the *Lophotriccus* measured $17.4-18 \times 12.8-13.5$ mm.

Close similarity in size in birds from western and eastern Panamá is shown by comparison of the following measurements of males from eastern Panamá with those listed above from the western end of the Republic.

Males (10 from eastern Province of Panamá and Darién), wing 47.1–51.8 (49.6), tail 34.7–38.7 (36.2), culmen from base 11.0–12.5 (11.6), tarsus 15.2–16.1 (15.8) mm.

The range of the species as a whole extends from Costa Rica south to South America through Colombia and western Venezuela to Ecuador and Perú, where additional races have been recognized.

ATALOTRICCUS PILARIS WILCOXI Griscom: Light-eyed
Pygmy-tyrant, Moscareta Pigmea Ojiblanca

Atalotriccus pilaris wilcoxi Griscom, Amer. Mus. Nov. no. 141, October 31, 1924, p. 1. (La Colorada, near Santiago, Veraguas.)

Very small; pale grayish green above; light grayish white underneath, faintly streaked with darker gray; tail long, narrow; eye light-colored.

Description.—Length 82–95 mm; four outer primaries shortened, narrowed, and pointed. Adult male, with the four outermost primaries

very short and narrow; above grayish olive-green, including the lesser wing coverts; crown feathers darker in center; wings dusky, edged with olive-green, the edging changing to pale yellow on the secondaries; middle and greater wing coverts edged and tipped with dull buffy white; lores dull buffy white; sides of head and of breast light brownish gray; under surface dull white becoming pale yellow on flanks and under tail coverts; chin and throat indistinctly streaked with dull brownish gray, these markings extending less definitely to upper breast; tibia brownish gray; axillars and under wing coverts pale yellowish white; inner margins of under side of wing feathers edged narrowly with dull white.

Adult female, similar, but with the four outer primaries somewhat larger and longer.

Juvenile, outer primaries broader; crown without central streaking; forepart of body suffused with buff; throat without streaks.

A male, collected at Nueva Gorgona, western sector of Province of Panamá, March 17, 1951, had the iris light yellow; base of mandible dull ivory-white; rest of bill dusky; tarsus and toes light brown; claws dusky.

A female taken at Gago, Coclé, January 20, 1963, had the iris yellowish buff; tip of bill black; base of maxilla to nostril mouse brown; base of mandible dull white; tarsus and toes pale mouse brown; claws dusky neutral gray.

Measurements.—Males (10 from Chiriquí, Veraguas, Los Santos, Herrera, Province of Panamá, and Canal Zone), wing 39.2–41.1 (40.4), tail 32.4–39.2 (36.8), culmen from base 9.6–11.3 (10.7), tarsus 14.8–16.2 (15.4) mm.

Females (10 from Chiriquí, Veraguas, Los Santos, Herrera, Coclé, and Province of Panamá), wing 38.2–39.7 (39.2), tail 30.1–33.6 (32.2), culmen from base 9.9–11.9 (10.9), tarsus 14.7–15.8 (15.4) mm.

Resident. Common in thickets and open woodlands; on the Pacific slope from the lowlands of Chiriquí (Alanje, David) east through southern Veraguas, the eastern side and southern end of the Azuero Peninsula, southern Coclé, the Province of Panamá (east to Panama City) and the southern Canal Zone; less commonly to 900 meters elevation along the foothills in Chiriquí and Veraguas, and to 300 meters in southern Coclé.

These tiny birds are common in the thickets and open woodlands in the drier areas of the Pacific slope, east to the southern Canal Zone and Panama City, but do not extend to the more humid areas

on the Caribbean side, or to the eastern section of the Pacific slope. They are found usually low down, but may come also, at least briefly, into taller trees. They may also appear in the inland border of mangrove swamps. Attention may be drawn to them by their chattering, trilling calls, after which they may be identified by their plain pattern of coloration, their slender form, and relatively long tail. Their food, gleaned in their active movement through the open branches, is composed of small insects. A typical stomach of one taken near Corozal, Canal Zone, contained fine bits of half a dozen species of tiny beetles, small hymenoptera, and heteroptera.

Though as a species these birds, in addition to the area described in Panamá, range widely through northern Colombia and Venezuela to Guyana, there is as yet no definite information on their nesting.

The subspecies *wilcoxi* was named by Griscom "in honor of Mr. A. L. Wilcox, president of the Tropical Forest Products Company," in recognition of his assistance during field work in the forests of southern Veraguas.

**PERISSOTRICCUS ATRICAPILLUS (Lawrence): Black-capped
Pygmy-tyrant, Moscareta Pigmea Gorraneira**

FIGURE 45

Orchilus atricapillus Lawrence, Ibis, ser. 3, vol. 5, July 1875, p. 385. (Angostura, Cartago, Costa Rica.)

Tiny, with very short tail; crown black; back greenish.

Description.—Length 60–70 mm; tail less than half as long as wing. Adult male, crown black, becoming slate posteriorly; hindneck and side of head slate-gray; back, scapulars, rump, upper tail coverts, and lesser wing coverts bright olive-green; wings slate-black, with olive-green to yellowish edgings, these becoming broader and yellower on inner secondaries; greater and middle coverts tipped with olive-green; lores with a black spot adjacent to eye, and a white line extending back to connect with a narrower white orbital circle; foreneck and center of upper breast white, with the latter area faintly lined with gray; sides gray; tibia dusky, tipped with white; posterior under parts, flanks, axillars, and under wing coverts pale yellow; inner margins of under side of wing dull white.

Adult female and juvenile similar, but with crown duller, ranging from dull black on the forehead to dusky slate posteriorly.

A male, taken at Puerto Obaldía, San Blas, March 16, 1963, had the iris dark brown; base of gonys and extreme tip of mandible white; rest of bill black; tarsus and toes pale brown; claws somewhat darker.

Measurements.—Males (10 from Darién, San Blas, and northwestern Colombia), wing 34.5–37.7 (35.7), tail 12.7–15.7 (14.3), culmen from base 10.5–12.3 (11.6), tarsus 12.1–13.5 (12.8) mm.

Females (5 from Costa Rica, Province of Panamá, Darién, and Colombia), wing 33.5–35.2 (34.4), tail 13.8–14.3 (14.0), culmen from base 10.9–11.6 (11.3), tarsus 12.5–13.7 (12.9) mm.

Resident. Uncommon, in forested areas in the Tropical Zone; on the Pacific slope in Darién, from the Río Tuira Valley to Jaqué; on the Caribbean side recorded from Bocas del Toro, northern Veraguas,



FIGURE 45.—Black-capped pygmy-tyrant, moscaveta pigmea gorraneira, *Perisotriccus atricapillus*.

lower Chagres Valley in the northern Canal Zone, adjacent Province of Panamá, and eastern San Blas.

The first record for Panamá is one in the American Museum of Natural History, collected by R. R. Benson at Guaval in eastern Bocas del Toro, near the upper Río Calovévora. Another, a male in the Havemeyer collection in the Peabody Museum at Yale, was taken by Austin Smith, May 16, 1927, near Zegla, a village at the junction of the Río Teribe and the Río Changuinola, in the lowlands of western Bocas del Toro (reported by Griscom, through misunderstanding, as from Almirante). While the bird was not identified in

earlier studies on Barro Colorado Island, in recent years there have been numerous reports of it by E. O. Willis and others, including a nest found by Willis in late April 1961. Ridgely recorded it July 5, 1969, back of Gamboa, and in company with N. G. Smith, at Cerro Santa Rita, Colón, near the Canal Zone boundary. A female was collected by J. A. Griswold, Jr., at the old Salamanca Hydrographic Station, on what is now the northern end of Madden Lake, on March 31, 1936. In Darién, I recorded it at several localities, as noted beyond. In eastern San Blas it has been found at Permé and Puerto Obaldía.

On March 21, 1946, in dense jungle at the base of Loma González, immediately to the south of Jaqué, on the coast of Darién, I saw some small creature, that I thought was a large insect, fly into a clump of moss, a rounded mass that seemed out of place in its location. At a pull on a vine one of these tiny birds flew out of what proved to be its nest, to perch a few meters away. The nest swung at the tip of a slender branch in a thorny tree between 3 and 4 meters from the ground. The location was such that the nest could not be reached, so finally I shot off the twig that supported it. Unfortunately, it overturned as it dropped, so that the two eggs fell out and were broken. The shells were rather dull white, spotted throughout with cinnamon. They were fresh. The nest was approximately 150 millimeters long by 90 wide, with the exterior made of green moss. Halfway down one side a small, rounded opening led into a covered cup of fine, dry, yellow fibers, lined softly with downy materials. The bulk of the nest was amazing in contrast to the size of the tiny bird that had built it. Only the female was in attendance. On April 6, on the Río Jaqué, we collected a male as it ranged high in heavy forest.

Dr. Alexander Skutch (in litteris November 20, 1970) has kindly furnished further details on the nest and eggs of this species as seen at La Selva, in the Caribbean lowlands of Costa Rica, April 13, 1967. The nest hung from a slender twig of a fallen branch swinging a little over a meter above the ground. The structure was similar to the one described above but with dangling ends of material hanging below. The two eggs were "white, with a wreath of light brown blotches around the thicker end and scattered elsewhere." It was not possible to remove them to be measured.

In February and March 1959, on the Río Tuira, near the mouth of the Río Paya, two of these small birds ranged through low trees covered with a tangle of vines. Here they moved actively, but were so tiny that it was difficult to distinguish them when they stopped to rest. In flight near at hand the yellow-green wing markings flashed

brilliantly. Others were seen there from late February to March 11 resting quietly in low shrubs. Hasso von Wedel collected several near Permé and Puerto Obaldía, eastern San Blas, in 1930. March 16, 1963, I found a male at the latter place ranging actively among vines and leaves 4 or 5 meters from the ground in the thickets beside a small quebrada. At the old village site on the base of Cerro Tacarcuna on March 14, 1964, a fully feathered juvenile with its female parent ranged in undergrowth in dense forest. As they rested on small, open limbs they resembled tiny knots of wood rather than birds.

Their call is a high-pitched, single syllable, *tseep*, sometimes given singly, sometimes repeated rapidly several times, so high-pitched in sound that it may not be recognized as the note of a bird. The tiny size of the bird adds to the difficulty.

North of Panamá, according to Slud, this species ranges along the Caribbean slope to the lowlands of northeastern Costa Rica. To the south in Colombia it is found near the Pacific coast of Chocó to northwestern Ecuador, and also in the lower Atrato Valley, the upper Río Sinú (Quebrada Salvajín) in Córdoba, and in the upper valleys of the Río Cauca (to Tarazá), and its tributary the Río Nechí (to Hacienda Belén) in Antioquia. The type specimen, a male, in the U.S. National Museum, is from Angostura in the Province of Cartago, Costa Rica.

Zimmer (Amer. Mus. Nov., no. 1066, May 3, 1940, p. 22) listed this bird as a race of *Perissotriccus ecaudatus* described from Bolivia, which in two subspecies ranges from Perú through northern Brazil, eastern Colombia, and Venezuela to the Guianas. In this action he stated that "intergradation is not established," nor is it shown by the additional material that I have seen. *P. ecaudatus* is plain gray on the crown, with restricted white on the lores and around the eye, and whiter under surface. The transfer of these two species to the genus *Myiornis* also does not appear justified from present data, in view of the more rounded wing, decidedly longer tail, more slender bill, and greater development of the rictal bristles shown in *Myiornis auricularis*, type species of the genus.

PSEUDOTRICCUS PELZELNI BERLEPSCHI Nelson: Olive-crowned Pigmy-tyrant, Moscareta Coronilla Aceitunada

Pseudotriccus pelzelni berlepschi Nelson, Smithsonian Misc. Coll., vol. 60, no. 21, February 26, 1913, p. 1. (Head of Río Limón, Cerro Pirre, 1585 meters elevation, Darién.)

Small; dark-colored, with black bill, bushy, dark-colored crest, and cinnamon edgings on wings and tail.

Description.—Length 105–115 mm. Male, crown and upper hind-neck olive; sides of head, back, and lesser wing coverts olive-brown; greater coverts, wings, and tail fuscous, edged with cinnamon; rump and upper tail coverts dull cinnamon; sides, including sides of neck, dull greenish olive; central under surface dull yellow, whiter on the throat, and washed with greenish olive across the breast; edge of wing, outer under wing coverts, flanks, tibia, and under tail coverts dull cinnamon.

Female, similar, but with back and sides dull buffy brown.

Measurements.—Males (7 from Cerros Pirre and Tacarcuna), wing 55.8–57.7 (56.5), tail 41.2–46.2 (43.8), culmen from base 12.7–13.6 (13.0, average of 5), tarsus 20.0–21.6 (20.6) mm.

Females (3 from Cerros Pirre and Tacarcuna), wing 52.3–54.0 (53.4), tail 38.1–41.2 (39.7), culmen from base 12.4–13.0 (12.7), tarsus 19.2–20.8 (20.1) mm.

Resident. Subtropical Zone forests on Cerro Pirre (1375 and 1585 meters), and Cerro Tacarcuna (1250 meters), Darién.

A specimen in the American Museum of Natural History from the eastern slope of Cerro Tacarcuna at 1400 meters on the headwaters of the Río Cutí, taken by Anthony and Ball, April 7, 1915, extends the range on the Colombian side of the international boundary to northern Chocó.

Goldman, who secured the type series, found these birds in low undergrowth in the dark forest of the summit of Cerro Pirre. The several seen attracted attention by "a slight snapping noise." Two of his specimens were taken in the lower levels of steep quebradas, and one on the summit of a high ridge. In 1964, on Cerro Tacarcuna, we collected four, all captured in mist nets set across a small channel on the upper Río Pucro at 1250 meters elevation. They were rather heavy-bodied in the hand, with long and prominent rictal bristles, fairly long tarsi, and long, curved claws. The suggestion by Chapman (Bull. Amer. Mus. Nat. Hist., vol. 36, 1917, p. 411) under the nominate race *pelzelni*, that because of the long tarsi this species "is more or less terrestrial," seems doubtful. It is more probable that they live in the lower levels of undergrowth, near the ground.

The race *berlepschi*, (distinguished from typical *P. p. pelzelni* of the eastern Andes in Colombia and Ecuador by larger bill, darker, more olive, less greenish color above, with the outer webs of remiges and rectrices brighter cinnamon, and the under tail coverts cinnamon-buff) ranges south in the western Andes of Colombia to northwestern Caldas.

There is no record of the nest and eggs.

**PHYLLOSCARTES FLAVOVIRENS (Lawrence): Yellow-green
Tyrannulet, Moscareta Verdecita**

Leptopogon flavovirens Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 7, 1862, p. 472. (Atlantic slope, Panama Railroad, Canal Zone, Panamá.)

Small; above olive-green; underneath pale yellow.

Description.—Length 100–110 mm. Adult (sexes alike), upper surface olive-green, with the crown very slightly grayer than the back; wings dusky, with middle and greater coverts tipped broadly with light yellow; primaries edged with yellowish olive-green; secondaries with borders yellower and wider; a white ring around eye; lores grayish white, with a central spot of dark gray; under surface, including axillars and under wing coverts, pale yellow, except the chin which is faintly whiter; upper breast washed faintly with olive; inner margins of wing feathers edged with yellowish white.

Measurements.—Males (8 from Canal Zone and eastern Province of Panamá), wing 52.5–57.5 (55.3), tail 47.0–51.8 (48.6), culmen from base 11.2–13.5 (12.7), tarsus 16.2–17.5 (16.8) mm.

Female (one from eastern Province of Panamá), wing 48.0, tail 43.7, culmen from base 12.4, tarsus 15.4 mm.

Resident. Rare; recorded from the Canal Zone; and on the Pacific slope, from near Chepo, Chimán, and Cerro Chucantí, eastern Province of Panamá, and Garachiné, Darién.

The species was named by Lawrence from a male collected by Galbraith and McLeannan, near the line of the railroad in the Canal Zone, on the Atlantic slope (probably, but not certainly, in the vicinity of Lion Hill station, now submerged in Gatun Lake between Gamboa and Gatun). A second record is a male, formerly in the Havemeyer collection, now in the Peabody Museum at Yale, collected by Austin Smith at "Port Antonio" (San Antonio) on the lower Río Bayano, near Chepo. Another male, in the Academy of Natural Sciences, was secured at Garachiné, Darién, by Dawson Feathers, on the Fifth George Vanderbilt Expedition. March 15, 1950, I collected a pair at the base of Cerro Chucantí, near the head of Río Majé. Several ranged with a traveling group of other small birds that moved actively through the forest tree crown 30 meters or more above the ground along a small quebrada. On March 31, near Chimán, I secured two more males, also from a mixed flock feeding through the higher part of the tree crown near the lower Río Chimán. In the American Museum of Natural History there are three males from the Canal Zone, one collected near the pipeline road back of Gamboa, January 5, 1966, and one from the Chiva Chiva road, June

19, 1970, both taken by E. S. Morton, and one from Curundu, August 2, 1966, taken by Storrs Olson and J. Wiese.

In the first mention of this species by Lawrence (loc. cit., p. 328) he listed it under the name *Tyrannula flaviventris*, with the remark "Irides brown; found on high trees, and very rare." In a third section of his report on the Galbraith-McLeannan collection, he described it as new. So little is known of this bird that its relation to other forms is not yet wholly certain. The name used here follows the suggestion of Zimmer (in Amer. Mus. Nov., no. 1095, 1940, pp. 2-3).

PHYLLOSCARTES SUPERCILIARIS (Sclater and Salvin):
Rufous-browed Tyrannulet, Moscareta Ceja Acanelada

Small; tail rather long; crown slate to blackish slate, back olive-green; lores and line above eye dark rufous; small, fluffy white nasal tufts.

Description.—Length 95-105 mm. Adult (sexes alike), crown slate to blackish slate, changing on hindneck to the greenish olive of the back, scapulars, lesser wing coverts, rump, and upper tail coverts; wings dusky; middle and greater coverts tipped narrowly with pale yellow; primaries edged with light olive-green, secondaries more prominently with yellowish-olive-green; tail dusky edged with dull olive-green; fluffy nasal tufts dull white; forehead (narrowly), lores, and narrow line around eye extending faintly back of eye, dark rufous; side of head slate, with space below eye white, and a dusky line below extending to side of neck; chin, malar area, and upper foreneck dull white; upper breast light gray, lined faintly with white; lower breast, abdomen, and under tail coverts yellowish white; tibia dusky; axillars and under wing coverts pale yellow; an indistinct dusky spot near edge of wing on under wing coverts.

This is a little-known species in the mountain forests of Costa Rica and Panamá that ranges to northern Colombia and western Venezuela. Two slightly different races are found in Panamá. While generic allocation has varied in earlier publications, it seems appropriate to accept the decision of Zimmer (Amer. Mus. Nov., no. 1095, 1940, p. 19) in placing it in *Phylloscartes*.

PHYLLOSCARTES SUPERCILIARIS SUPERCILIARIS
(Sclater and Salvin)

Leptotriccus superciliaris P. L. Sclater and O. Salvin, Proc. Zool. Soc. London, October 1868, p. 389. (Chitra, Veraguas, Panamá.)

Characters.—Brighter olive-green on back; crown grayer, superciliary and lores brighter cinnamon; with throat and breast gray.

Measurements.—Male (1 from Costa Rica), wing 53.0 tail 49.3, culmen from base 11.9, tarsus 17.5 mm.

Females (3 from Costa Rica and Veraguas), wing 49.6–52.7 (50.7), tail 42.8–48.3 (45.8), culmen from base 10.9–11.7 (11.2), tarsus 15.6–16.5 (15.9) mm.

Resident. Rare; recorded from the mountains of Veraguas.

The species in its nominate form was described from two specimens now in the British Museum (Natural History), the type from Chitra on the Pacific side, and another from Calovévora on the Caribbean slope, both collected by Enrique Arcé, in 1868. It is known also from the Caribbean slope of Costa Rica, where Ridgway secured a female at Guayabo, March 9, 1908. There is also a male in the British Museum taken at Carrillo, November 17, 1898, by C. F. Underwood. Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, pp. 266–267) found it at several localities in that country “apparently restricted to the wettest portions of the cool subtropical belt.” He recorded it as traveling actively with bands of small birds, where its mannerisms suggested those of a small warbler. Attention often was attracted to it by its lively calls.

PHYLLOSCARTES SUPERCILIARIS PALLORIS (Griscom)

Mecocerculus superciliaris palloris Griscom, Occ. Pap. Boston Soc. Nat. Hist., vol. 8, February 21, 1935, p. 200. (Tacarcuna village site, base of Cerro Tacarcuna, Darién, Panamá.)

Characters.—Duller in general coloration above; crown darker; back dull olive-green; paler on lower surface, both in the gray of breast and the yellow of the abdomen.

Measurements.—Males (2 from Darién), wing 52.9, 58.5, tail 49.8, 55.1, culmen from base 11.8, 11.8, tarsus 16.5, 17.2 mm.

Female (1 from Darién), wing 49.9, tail 48.5, culmen from base 11.5, tarsus 17.8 mm.

Resident. Rare; known only from the type locality, and from Cerro Malí on the Tacarcuna mountain range.

In the original description Griscom, through a lapsus, listed the type locality as “Tapalisa,” but in his check-list (Bull. Mus. Comp. Zool., vol. 78, April 1935, p. 353) cited it correctly as “Mt. Tacarcuna, February 24, 1915.” This marks the locality as the old Tacarcuna village site at 575 meters elevation on the upper Río Tacarcuna at the base of Cerro Malí, a spur of Tacarcuna.

It was known also at the time of the original description from an ancient Bogotá trade skin in the Paris Museum (according to Griscom in the original description). Two additional specimens, a female

and one with sex not marked but believed to be a male, in the National Museum, were taken by Dr. Pedro Galindo, at 1060 meters on the high ridge of Cerro Malí, June 4, 1963.

CAPSIEMPIS FLAVEOLA SEMIFLAVA (Lawrence):
Yellow Tyrannulet, Moscareta Amarilla

Elainca semiflava Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, November 1865, p. 177. (David, Chiriquí.)

Small, slender, with long, narrow tail; olive-green above; yellow below; line over eye, and two prominent wing bands, light yellow.

Description.—Length 105–112 mm. Adult (sexes alike), upper surface olive-green from crown to back, scapulars, lesser wing coverts, rump, and upper tail coverts; wings dusky; middle and greater coverts tipped broadly with pale yellow; primaries narrowly, secondaries broadly edged with yellowish olive-green; forehead, line above lores and eye pale yellow; lores dusky; auricular region pale olive-green, varied with indistinct shaft lines of dull yellow; tail grayish brown, with outer webs edged with yellowish green; under surface, including carpal edge of wing, axillars, and under wing coverts, yellow (varying individually from bright yellow to yellowish white); sides of upper breast washed lightly with dull olive; inner margins of wing feathers edged narrowly with yellowish white.

Juvenile, upper surface dull cinnamon-brown, brighter on the hind-neck; anterior lores dull white; line over eye and wing bars pale cinnamon-brown.

A male, taken at El Potrero, Coclé, March 8, 1962, had the iris very dark brown; maxilla and anterior half of sides of mandible black; rest of mandible dull buffy white; tarsus and toes dark neutral gray; claws black; inside of mouth, including the tongue, orange. A female, at Puerto Armuelles, Chiriquí, February 12, 1966, had the iris mouse brown; base of mandible dull brown; rest of bill fuscous-brown; tarsus and toes dusky neutral gray; claws dull black.

Measurements.—Males (10 from Isla Coiba, Chiriquí, Bocas del Toro, Herrera, Canal Zone, and eastern Province of Panamá), wing 49.5–52.3 (50.9), tail 48.1–51.5 (49.2), culmen from base 11.0–13.0 (11.6), tarsus 16.9–18.4 (17.6) mm.

Females (10 from Isla Coiba, Chiriquí, Herrera, Coclé, and Canal Zone) wing 45.7–50.0 (47.6), tail 45.0–48.9 (47.2), culmen from base 11.0–12.4 (11.6), tarsus 16.2–18.4 (16.7) mm.

Resident. Locally common in the Tropical Zone, on the Pacific slope from western Chiriquí east locally, including the eastern side

of the Azuero Peninsula, to the lower Río Bayano near Chepo, eastern Province of Panamá; on the Caribbean slope recorded in western Bocas del Toro, northern Coclé, the Canal Zone, and adjacent eastern Colón; to 1300 meters on Cerro Pando, Chiriquí; Isla Coiba.

These small, active flycatchers are inhabitants of thickets and undergrowth, ranging usually in pairs at the borders of open forest, pastures, and cultivated areas. In Chiriquí, I found them in weed-grown brush on the Río Corotú, west of Puerto Armuelles, and near Alanje, below Concepción. Higher, in the foothills and lower mountains, they were fairly common near Buena Vista (650 meters), and along the base of Cerro Pando, beyond the Río Chiriquí Viejo (1300 meters). They were fairly common also near Soná, Veraguas, and on the eastern side of the Azuero Peninsula in the Province of Herrera (La Cabuya, Pesé), and in Los Santos (Tonosí). In the lowlands of Coclé I encountered them at El Potrero. They range locally in the southern Canal Zone (Chiva Chiva, Curundu), and are recorded farther east in the eastern Province of Panamá at La Jagua, and on the lower Río Bayano beyond Chepo.

On the Caribbean side, one was taken at Almirante, by one of the collectors for the Gorgas Laboratory, the only record for that area. In 1952, they were fairly common at El Uracillo, on the Caribbean slope in northern Coclé Province near the headwaters of the Río Indio. They are found locally in the lower Chagres Valley in the Canal Zone and in adjacent eastern Colón.

On Isla Coiba they ranged in small number in the thickets back of mangroves, and also in second growth in abandoned fields. On several occasions I found them visiting berry-bearing trees in company with other small birds.

Alexander Skutch (Pac. Coast Avif., no. 34, 1960, pp. 319-321) in southwestern Costa Rica, in the record of six nests, found them breeding irregularly from February through May and June to September and December. The nests were "substantial open cups, composed of light-colored vegetable fibers, grass blades, shreds of plant epidermis and the like, with more or less green moss or selaginella attached to the outer wall." Two eggs in one nest were pure white, with measurements of 17.1×13.1 and 17.5×13.1 mm.

In the notes of Major-General G. Ralph Meyer there is record of a nest at the Summit Gardens, Canal Zone, on September 20, 1941. It was made of coarse and fine grass placed in the fork of a small tree about 2 meters above the ground. The two eggs measured 17.3×12.9 and 17.0×12.7 mm.

The nest with spotted eggs, described by Carriker (Ann. Carnegie Mus., vol. 6, 1910, p. 710) as of this flycatcher, may have been that of some other species.

As these slender little birds move actively through their cover the long tail is switched from side to side. They often utter chattering calls, and also sing in low, sweet-toned modulated phrases, *wheet-eet*, *wheet-eet*, *whew*.

Their food is a variety of small insects, often seized in active movement from the leaves of the shrubs through which the birds range. I found them also coming to berry trees to eat the drupes in company with other small birds.

The subspecies *semiflava*, found in Panamá, ranges also through Costa Rica to Nicaragua.

SERPOPHAGA CINEREA GRISEA Lawrence: Torrent
Tyrannulet, Moscareta de Torrentes

FIGURE 46

Serpophaga grisea Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 10, November 1871, p. 139. (Near San José, Costa Rica.)

Small; breast and back gray; crown, tail, and wings black.

Description.—Length 95–105 mm. Adult male, crown, sides of head, and hindneck black; a concealed area in the center of the crown white; back, scapulars, rump, and upper tail coverts gray; lesser wing coverts slate-black centrally, edged with gray; rest of wing black, with the greater and middle coverts edged with grayish white in the form of indefinite bars; tail dull black tipped indistinctly with grayish white (this marking often lacking); chin and throat grayish white; breast, sides, flanks, axillars, and under wing coverts pale gray; center of breast and abdomen white; under tail coverts and tibia slightly grayish.

Female, with crown and hindneck slightly duller black; white crown patch reduced, in some nearly lacking.

Juvenile, crown dusky mixed with dull gray; upper surface brownish gray, darker on the upper tail coverts.

In specimens taken near El Volcán, Chiriquí, in March 1954 and 1965, both male and female had the iris dark brown; bill black; tarsus, toes, and claws black; inside of mouth, including the tongue, orange.

Measurements.—Males (10 from Chiriquí and Costa Rica), wing 50.1–53.5 (51.9), tail 36.0–43.4 (40.1), culmen from base 10.2–11.0 (10.6), tarsus 15.3–16.5 (16.1) mm.

Females (10 from Chiriquí and Costa Rica), wing 48.0–51.7

(50.1), tail 36.0–41.4 (38.1), culmen from base 9.4–11.0 (10.2, average of 9), tarsus 15.8–16.5 (16.1) mm.

Resident. Found locally along swift mountain streams in the highlands of western Chiriquí and adjacent Bocas del Toro; in Chiriquí from 1200 to 2000 meters (above Cerro Punta); recorded in eastern Bocas del Toro at Guaval on the upper Río Calovévora, near the boundary with Veraguas.

The place of collection for a male in the British Museum (Natural History) taken by Arcé, marked "Santa Fe" (see Salvin, Proc. Zool.



FIGURE 46.—Torrent tyrannulet, moscareta de torrentes, *Serpophaga cinerea grisea*.

Soc. London, 1867, p. 145) is in error as it is the only record for the Pacific lowlands of Veraguas. Localities in these early collections were sometimes confused, so that it seems probable that the record refers to Calovévora, where Arcé recorded other species known from the Caribbean slope.

In personal observations I have found this species especially in Chiriquí, along the Río Chiriquí Viejo, from west of El Volcán to above Cerro Punta, and on a western tributary of the river, the Río Colorado, at a road crossing on the highway toward Costa Rica.

The birds usually are encountered in pairs along swift-running

streams, where their companions may be the Dipper and the Black Phoebe. Torrent Tyrannulets, however, range alone, hopping and running rapidly over gravel bars, sometimes even where a thin sheet of water a millimeter or two deep spreads over a flat surface of stone at the border of the stream. Insect food is picked from the gravel, the water in shallows, or seized in quick sallies on the wing from the sides of boulders or overhanging leaves. Such prey usually is abundant, so that the requirements for food soon may be satisfied. Then the birds rest quietly or preen their plumage on some open perch, usually low down along the stream border.

Feathers in this species are dense and soft over the entire body so that they form a close covering. In birds taken for specimens, where one had fallen to float in swift water, or even when it may have been drawn under the surface for several minutes before it was retrieved, the feathers were not saturated, so that only a quick shake was required to dry them.

As noted by Skutch (*Pac. Coast Avif.*, no. 34, 1960, pp. 356-364) their low, soft calls may be repeated as a twittering song, sharp enough in tone to be heard above the noise of the rushing waters beside them. Skutch also records a dawn song, a repetition of "a single note . . . heard above the babble of the current." He describes the nest as built by both parents, usually on a branch overhanging a stream, or less commonly, along the adjacent shore. The well-made cup externally is of green moss, with a lining of feathers. The two eggs in a set are pale buff, without markings. In 14 eggs the measurements averaged 16.5×12.6 mm, ranging from $16.3-17.1 \times 11.9-12.7$ mm. The female incubated alone, the period being 17 to 18 days. Although the male did not assist, he remained nearby while his mate was on the eggs, occasionally perching "beside or even upon the rim of the nest to rest or to preen, and at times . . . would bill the feathers of her head and breast in the most affectionate manner." The young at hatching have light gray down through which the pink skin shows, with the inner mouth color yellowish orange. Both parents feed the young. These remain with the parents for five or six weeks, and then locate elsewhere so that "only a single pair patrols each reach of the rushing mountain stream."

W. John Smith (*Condor*, 1971, p. 260) recorded a nest with eggs March 26 to 28, 1962, on the G. Lewis property below Cerro Punta. On March 13, 1965, at Bambito, below Cerro Punta, Dennis Sheets directed me to a nest that he had found the previous day. This was on an islet in the main Río Chiriquí Viejo, placed in a clump of bushes

growing on soil supported by a large rock, separated from the shore by a meter and a half of swift-flowing water. The small, compact, thick-walled cup rested on a sloping branch, with three leafy twigs built into its sides as support. It was composed mainly of green moss, held by long, slender fibers running through it so that it was firm and closely knit. The soft lining was of downy feathers of the domestic fowl, readily available at nearby houses. In external measurements the nest was approximately 90 by 70 mm, and 60 mm high, with the cup 40 mm deep. It held a single egg, well along in incubation, pale dull buff in color, so fragile that it could not be measured. Nearby I saw another nest, similar in construction but empty, placed in a low shrub standing in the water at the edge of the stream.

In the collections of the British Museum (Natural History) I have seen a set of two eggs of the very slightly larger *Serpophaga cinerea cinerea*, collected by T. K. Salmon, at Envigado, Antioquia, Colombia, that are similar to those of the race of western Panamá. The two are rather dull buffy white, subelliptical in form, and measure 16.4×12.6 and 16.4×12.1 mm.

Smith (cit. supra, pp. 259–286) in a detailed analysis of the Serpophagine group of flycatchers describes the northern race and nominate *cinerea* in Ecuador as closely similar in details of general behavior. In figure 3, line 2, of this reference he illustrates a vocalization record made in Panamá that he indicated as “the most complex units” found.

PHAEOMYIAS MURINA EREMONOMA Wetmore: Mouse-colored Tyrannulet, Moscareta Pardusca

Phaeomyias murina eremonoma Wetmore, Smithsonian Misc. Coll., vol. 122, no. 8, December 17, 1953, p. 7. (Río Santa María, north of Paris, Province of Herrera, Panamá.)

Small; grayish brown above; breast grayish, abdomen yellowish white; light line above eye.

Description.—Length 105–115 mm. Adult (sexes alike), above with crown, back, and sides of head dull drab-brown; rump and upper tail coverts faintly browner; superciliary and lower eyelids dull white; lores light grayish olive; wings dull hair brown; lesser wing coverts edged, and middle and greater wing coverts tipped, with dull buff; secondary borders usually paler, whiter; tail dull hair brown, with outer webs and tip dull olive-buff; throat and foreneck dull white; upper breast and sides pale, dull gray; lower breast and abdomen pale yellow; under tail coverts somewhat whiter; tibia drab-brown,

edged narrowly on lower end with yellowish white; axillars and under wing coverts yellowish white; bend of wing lined with hair brown.

Juvenile, darker, more olive above, with upper tail coverts browner; breast duller gray; throat grayish white; abdomen paler.

A female, collected January 17, 1963, near Aguadulce, Coclé, in the area known as Gallo, had the iris brown; maxilla and tip of mandible fuscous; base of mandible dull buffy white; tarsus, toes, and claws dull black.

Measurements.—Males (16 from Veraguas, Herrera, Los Santos, and western Province of Panamá), wing 54.8–60.5 (56.8), tail 48.7–56.2 (51.5), culmen from base 10.0–11.6 (10.8), tarsus 17.0–18.3 (17.7) mm.

Females (13 from Veraguas, Herrera, and Los Santos), wing 49.8–55.9 (52.8), tail 44.5–48.3 (46.7, average of 12), culmen from base 9.9–11.5 (10.4, average of 12), tarsus 15.8–18.3 (16.9) mm.

Resident. Locally common in thorn scrub and other thickets, in the savanna area, from Soná, southern Veraguas, east through the Azuero Peninsula in eastern Herrera, eastern and southern Los Santos, eastern Coclé, and western Province of Panamá, in the coastal lowlands to Nueva Gorgona, and the Río Sajalices, west of La Campana.

Because of its restricted distribution this species was not found in Panamá by early workers. It was first recorded (under the name *P. m. incomta*) by Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 353) as found on "arid plains near Agua Dulce" with no other comment. Another early record in print is of a female collected by R. R. Benson, at El Villano, about 25 kilometers southeast of Santiago, Veraguas, in September 1924, recorded also under the name *incomta* by Zimmer (Amer. Mus. Nov. no. 1109, 1941, p. 10). My first acquaintance with it came in February and March 1948, when I found it fairly common in the Azuero Peninsula, through Herrera, ranging south into the Province of Los Santos. Through this familiarity it was noted frequently elsewhere until the range was established as outlined above.

These are plain-colored little birds, rather nondescript in appearance, that attract attention by their active movements through the fairly open branches of the low shrubbery that they inhabit. In addition, they often utter chattering, trilling calls as a form of song. Birds in breeding condition were found from late February to May. They captured small insects for food and also fed with other small birds at berry-bearing bushes and trees.

Haverschmidt (Birds of Surinam, 1968, p. 337; and Condor, 1970, p. 374) gives an account of nesting in the subspecies *Phaeomyias murina wagae*, which differs in heavier bill, darker brown coloration of the back, and yellower breast, and occupies a broad area from eastern Perú through the valley of the Amazon, extending also to the Guianas. He describes the nest as a small, open cup of fine grasses and green moss, lined with a thick layer of feathers, and the two eggs as white. The female alone incubates, with the period 14 days, but both parents feed the young. The main food was the orange berries of a mistletoe (*Phthirusa pirifolia*), a species of wide distribution in Central America and South America. The parent birds also captured insects.

At La Palma, in eastern Los Santos, Panamá, on March 26, 1948, I found a pair of the race *eremonoma* starting a nest a meter above the ground in a thorny shrub. Two days later the foundation was completed but the nest itself not finished. Unfortunately, I was not able to follow it further. Birds in breeding condition were recorded elsewhere from the middle of March to the first week in June.

In field observations I found these birds quite similar in general habits to the Beardless Flycatcher, which however, differed noticeably in much smaller size. As information and specimens increased, it became evident that the population of Panamá differed in paler color and smaller size from *P. m. incomta* of Colombia. It was, therefore, separated under the subspecific name *eremonoma* (from the Greek words signifying isolated, alone).

The size difference is shown by comparison with the following measurements of a series of *incomta* from Colombia:

Males (23 specimens), wing 60.1–64.4 (62.2), tail 51.0–58.9 (54.9), culmen from base 10.3–11.7 (10.9), tarsus 16.4–19.4 (18.4).

Females (12 specimens), wing 55.2–60.5 (57.8), tail 46.4–50.8 (49.1), culmen from base 10.2–11.0 (10.5), tarsus 16.2–17.1 (16.6) mm.

ELAENIA FRANTZII FRANTZII Lawrence: Mountain Elaenia,
Papamoscas Montañés

Elaenia Frantzii Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, November 1865, p. 172. (San José, Costa Rica.)

Medium size; breast and sides grayish olive, abdomen pale yellow; crown without white, or with this marking much reduced; white spot on inner tertials broad and prominent.

Length 142–155 mm. Adult (sexes alike), above brownish olive;

center of crown unmarked, or rarely a few anterior crown feathers with short white streaks concealed on the base; wings dusky; middle and greater coverts with outer webs edged with whitish to yellowish olive, forming two bands; secondaries broadly edged with white to pale olive-yellow, this mark covering most of the outer web on the innermost feather, where it forms a distinct light-colored spot; primaries with outer margin pale olive; tail deep grayish brown edged indistinctly with dull greenish olive; sides of head and neck slightly paler than crown; a faint line on upper lores, and an indistinct orbital ring, pale olive to whitish olive; forepart of under surface and sides yellowish to pale grayish olive, changing to pale yellowish white on center of breast, abdomen, and under tail coverts; axillars, under wing coverts and carpal edge of wing pale yellowish.

Juvenile, upper surface from crown to upper tail coverts dull olive-brown; wing bands brownish buff, with distal spots on secondaries reduced.

An adult male, taken February 26, 1954, near El Volcán, Chiriquí, had the iris dark brown; maxilla and tip of mandible fuscous-brown; rest of mandible pale brownish white; tarsus and toes dark neutral gray, with under side of toes faintly yellowish white. A female from the same area, March 1, 1965, had the iris similar; maxilla and tip of mandible fuscous-black; rest of mandible very pale brownish white; tarsus, toes and claws black; inside of mouth, including all of tongue, rather dull orange.

Measurements.—Males (10 from Chiriquí), wing 78.5–82.6 (80.9), tail 68.4–75.4 (71.2), culmen from base 12.6–14.0 (13.3), tarsus 17.5–18.9 (18.1) mm.

Females (10 from Chiriquí), wing 73.3–78.3 (75.1), tail 63.3–69.6 (66.1), culmen from base 12.0–13.7 (12.7), tarsus 17.1–18.0 (17.6) mm.

A male taken at El Volcán, February 26, 1954, had the iris dark brown; maxilla and tip of mandible fuscous-brown; rest of mandible pale brownish white; tarsus and toes dark neutral gray; under side of toes faintly yellowish white. A female, from the same locality, March 1, 1965, had the iris very dark brown; maxilla and tip of mandible fuscous-black; rest of mandible very pale brownish white; tarsus and toes black; inside of mouth, including all of tongue rather dull orange.

Resident. Common in the upper Tropical and Subtropical zones in Chiriquí, especially on the slopes of the volcano, near El Volcán and Boquete; also on Cerro Flores. Found less commonly in Vera-

guas at Chitra, and in the Azuero Peninsula on Cerro Montuosa, on the boundary between Herrera and Veraguas. Reported to 3300 meters on the summit of the volcano, common to 2500 meters.

As the name implies, this is a true mountain species found from the upper margin of the Tropical Zone at 1250 meters through the Subtropical Zone to Temperate Zone elevations above 3000 meters on the slopes of Volcán Barú. In this range it is most abundant above 1500 meters. It is found regularly in the tops of trees in the forests where often it is quiet and remains hidden among the leaves. It ranges regularly also in the scattered shrubbery and lines of bushes and low trees of open meadows and is there more easily seen. Where food is abundant in the form of insects or berries these birds may be seen in group association, though they are not social; they range as single birds and usually they are belligerent toward others of their kind.

Low call notes are heard from them regularly, usually a slightly prolonged *pee-ee-er*, varied somewhat in depth of sound. Skutch records them singing a rather monotonous repetition of a single syllable. While regular in early morning, this was continued also on occasion into the middle of the day. They also have rattling, twittering calls.

Like Eisenmann and other observers I have found this species most common from the Llanos del Volcán to the slopes near and above Cerro Punta, where often dozens have congregated because of the abundant berry-bearing trees and bushes.

Blake (Condor, 1956, p. 387) described three nests collected by T. B. Mönniche on the Finca Lérida above Boquete, in April and May. All, placed low down in coffee trees, were open cups made of rootlets covered with moss and lined with horse hairs and a few feathers. The average size was about 90 by 50 mm, with the cup about 65 mm in diameter by 20 mm deep. The two eggs in each were "dull white marked, chiefly on the larger end, with a few reddish-brown spots and dots. Measurements of three eggs: 21.3×16.5 , 18.5×14.9 , 18.8×15 mm."

In observations in Costa Rica Skutch (Publ. Nuttall Orn. Club 7, 1967, pp. 97-99) recorded that nest building and incubation were the function of the female, with the male assisting later in feeding the young. The set in 11 nests was two eggs which ranged "from dull white to pale buff in ground color, marked with spots and blotches of pale cinnamon, rusty brown, or chocolate, which usually formed a wreath around the broad end and are thinly scattered elsewhere. In

shape the eggs may be short ovate and blunt or more elongate and pointed. The measurements of seven eggs average 20.3×15.7 mm. . . . extremes measured 22.0×15.0 , 19.9×16.1 , and 19.1×15.6 mm." In the Cordillera Central of Costa Rica eggs were found between April 9 and June 2.

He describes the nestling at hatching as with a yellow to pinkish skin that "bears sparse, dark gray down. . . . The nestling's bill, tarsi and toes are bright yellow."

Earlier writings have included *frantzii* as a subspecies of *Elaenia obscura*. Zimmer (Amer. Mus. Nov. no. 1108, 1941, pp. 15-16) doubts this relationship, pointing out the considerable gap in the range of *frantzii* as well as its differences in coloration. The extensive series that I have examined confirm his findings. Nominate *frantzii* ranges north through Costa Rica to Nicaragua. In Honduras it is replaced by *Elaenia frantzii ultima* Griscom (described in Ibis, 1935, p. 550) of Honduras, El Salvador, and Guatemala, which is somewhat darker, less greenish olive above, and darker, more olivaceous on the breast and sides.

Lawrence named the species for Dr. A. von Frantzius, a German naturalist, in recognition of his studies of the birds of Costa Rica.

ELAENIA CHIRIQUENSIS CHIRIQUENSIS Lawrence:
Lesser Elaenia, Moñoncita

Elaenia Chiriquensis Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, November 1865, p. 176. (David, Chiriquí, Panamá.)

Elaenia sordidata Bangs, Auk, vol. 18, no. 1, January 1901, p. 28. (San Miguel Island = Isla del Rey, Archipiélago de las Perlas, Panamá.)

Medium size, somewhat smaller and more slender than the Mountain Elaenia, with light area on tertials less prominent.

Description.—Length 125-145 mm. Adult (sexes alike) above grayish olive to olivaceous hair brown, with crown feathers somewhat darker centrally, these markings forming faintly outlined streaks; center of crown with concealed white bases, in some these reduced or, rarely, absent; wings dusky; middle and greater coverts broadly tipped with brownish gray to white; inner secondaries narrowly edged with white; primaries edged distally with brownish gray to somewhat greenish white; tail dark grayish brown, edged with pale grayish brown, and tipped lightly with white; sides of head somewhat paler than crown; supraloral region and eye-ring paler, the latter varying to white; chin and throat dull grayish white; foreneck, upper breast, and sides, somewhat yellowish gray; lower breast,

abdomen, under tail coverts, axillars, edge of wing, and under wing coverts pale yellow; tibia dusky tipped with yellowish white.

Juvenile, faintly browner above, especially on the upper tail coverts and tail.

A male, at El Volcán, Chiriquí, February 26, 1954, and another at El Copé, Coclé, February 22, 1962, had the iris dark brown; maxilla and tip of mandible fuscous; base of mandible flesh color; tarsus, toes, and claws black. A female from Gago, Coclé, January 20, 1963, had the iris brown; distal half of bill fuscous-black; base of mandible flesh color, of maxilla dark mouse brown; tarsus, toes, and claws black. In another female, from Isla Gobernadora, Veraguas, collected January 8, 1965, the iris was brown, tip of bill fuscous brown; base of maxilla dull brown, of mandible brownish flesh color; tarsus and toes dark neutral gray; claws black.

Measurements.—Males (10 from Chiriquí, Veraguas, Herrera, Coclé, and Province of Panamá), wing 71.4–78.7 (74.2), tail 57.8–64.2 (62.3), culmen from base 12.0–13.7 (12.9), tarsus 16.0–17.0 (16.4) mm.

Females (10 from Chiriquí, Veraguas, Coclé, Los Santos, Herrera, Province of Panamá, and Canal Zone), wing 65.5–70.1 (67.8), tail 54.5–59.6 (56.6), culmen from base 11.6–12.8 (12.2), tarsus 15.9–16.7 (16.3) mm.

Resident. Common, mainly in the Tropical Zone, occasionally to 1900 meters in the Subtropical Zone on open slopes; on the Pacific slope from western Chiriquí east through Veraguas, Coclé, the eastern side of the Azuero Peninsula (south to Tonosí), and Province of Panamá to the La Jagua marshes and the lower Río Bayano; in the Canal Zone extending north on the Caribbean slope in the lower Chagres Valley (Barro Colorado Island). Isla Coiba; Islas Gobernadora and Cébaco, Golfo de Montijo; Archipiélago de las Perlas (Islas San José, Rey, Viveros). On Volcán de Chiriquí to 1825 meters at Cerro Punta, 1900 meters above Llanos del Volcán, and 1600 meters above Boquete; 850 meters on Cerro Campana.

While ranging widely in forested areas, this species is noticed most often in open areas of scattered trees and shrubbery. It is common on slopes in the foothills of the mountains in open growth in pastures and the borders of cultivated lands. It may be recorded at times in gallery forest. On Isla Coiba, while they were common in the usual haunts of low second growth and the bushes in pastureland, they lived regularly also among the leaves in the tops of the tallest trees far above the ground.

While the range as a whole coincides with that of the Yellow-bellied Elaenia, the present species usually is less in evidence, as it remains more in cover and is much less vociferous in its calls. On the whole, in its actions it is more like the Mountain Elaenia. It differs from that species in plainer coloration, and its slightly smaller size. Lesser Elaenias come constantly to fruiting trees and shrubs to eat the berries, a conspicuous habit, but one that supplies only a part of their diet. Constantly they search through leaves and smaller branches for insects and spiders whose fragments often completely fill their stomachs. Some of this food may be taken in short snatches and little flycatching sallies. It is usual also to find their stomachs filled with small fragments of chitin from bees, other small hymenoptera, and a variety of beetles, most captured in the air, but so quietly that the considerable proportion of insects in the food may not be suspected.

Skutch in a detailed account of life history and habits in this species (Pac. Coast Avif. no. 34, 1960, pp. 307-318), mainly as seen in Costa Rica where they are common, described the usual note as "a low short whistle, sometimes soft and sometimes harsh in tone, which is often repeated over and over at intervals of a few seconds." They also have a dawn song of several syllables. In evening, from March through June, birds assumed to be males regularly rise in twisting flight in the air, and then suddenly drop back to cover as they give this song.

The nest, built by the female, is an open cup placed in a fork in a bush or tree from half a meter to 10 meters from the ground. It is built of bits of dry grass, moss, and other fibrous material, bound as needed by cobweb. In general the nest resembles that of the Yellow-bellied Elaenia, but may be more lightly formed and more flimsy in construction, also with fewer feathers for lining. The outer surface varies in ornamentation from a slight to a heavy covering of moss. Two eggs are usual in a set, though nests often hold only one. They are "short ovate and blunt, dull white, with a wreath about the thicker end of usually fine but sometimes heavy spots of brown," varying in depth of shade. In some, spots of this color are scattered over the entire surface and may vary in shade to lilac. Eggs range in size from 19.8×14.3 and 19.4×15.5 to 16.7×13.9 mm.

Incubation is by the female alone, with the male assisting later in feeding the young. These on hatching have pink skins with tufts of long, light gray down in tracts along the center of the crown, above the eye, and on the hindhead, back, and sides. Shorter bits that in part

are whitish, appear between these longer tufts. Two broods may be reared in the season, which extends from April to June.

The range in Panamá seems to be restricted to the original open areas of less heavy forests. The present extension to the Caribbean side of the Canal Zone may have come during changes through deforestation in the expansion of human activities. Except for this limited area, the nominate race is confined to the Pacific slope and its off-lying islands. In South America where the species ranges widely there are other subspecies in eastern Bolivia and Brazil.

The record for Isla Víveros, in the Pearl Islands, is based on two females collected by C. Bovallius April 5 and 11, 1882, reported by Rendahl (Ark. Zool., vol. 13, 1920, pp. 36-37).

In Panamá the insular populations on Isla Coiba and in the Pearl Islands do not differ appreciably from those of the mainland.

**ELAENIA FLAVOGASTER (Thunberg): Yellow-bellied
Elaenia, Moñona**

Pipra flavogaster Thunberg, Mem. Acad. Sci. St. Pétersb. vol. 8, 1822, p. 286.
(Rio de Janeiro, Brazil.)

Somewhat larger than other species of the genus found in Panamá; with a more prominent pointed crest; color olive to greenish olive above.

Description.—Length 145-155 mm. Crown feathers elongated slightly, narrowed and pointed distally. Adult (sexes alike), upper surface, including scapulars, olive to greenish olive, paler and more brownish on rump and upper tail coverts; crown darker with indistinct shaft lines of dusky, and bases of central feathers with a distinct area of white, or faintly yellowish white varying somewhat in extent, most prominent in adult males; wings dusky; greater and middle coverts tipped broadly with grayish brown to white; secondaries edged distally with olive-yellow, forming an indistinct patch; inner secondaries bordered prominently with white; tail dark grayish brown, faintly paler on edges of outer feathers, in fresh plumage, tipped lightly with brownish white; lores pale grayish to grayish white, often darker centrally, with whiter lines above and below continuous with a narrow white line around the eye; side of head grayish olive, lined faintly with grayish white, merging below with the grayish white of the throat; foreneck, sides, and upper breast somewhat yellowish gray on throat and upper foreneck, with the individual feathers often paler laterally, so that they appear faintly streaked; lower sides and flanks paler; rest of under surface, including the carpal edge of the

wing, axillars, and under wing coverts light yellow; under surface of primaries with inner margin dull grayish white.

Juvenile, upper surface somewhat browner; under surface whiter, less yellowish; without white in the crown.

This, as stated above, is the largest of the elaienias found in Central America. As a species, it ranges in the Tropical and lower Subtropical zones from southern México to Perú, Brazil, and Paraguay. Through this vast area these birds are surprisingly uniform in color, and in pattern of markings, with only slight regional variation. Seasonal changes in shade of coloration throughout are considerable, specimens in freshly molted dress being more brightly colored than those taken only two or three months later at the beginning of the nesting season. Exposure to light and wear dull the depth of shade rather quickly, a process that continues at a retarded pace until the next molt. In making comparisons it is necessary to ascertain that the birds examined are in an equivalent stage of plumage. Bearing this in mind, with suitable series, it is possible to separate the birds in the broad area outlined in three slightly different groups. These are as follows:

Elaenia flavogaster subpagana Sclater and Salvin, marked by darker, more brownish olive coloration above, regardless of the stage of plumage. Found from the northern limit southward through Costa Rica and on Isla Coiba, Panamá. A supposed variant named *saturata* is merely a seasonal stage of this generally darker population.

Elaenia flavogaster pallidorsalis Aldrich, grayer and faintly more greenish dorsally in all stages of plumage. In Panamá, it is found on the Pacific slope from western Chiriquí to the eastern sector of the Province of Panamá, rarely to western Darién; on the Caribbean slope in western Colón, the lower Chagres Valley and western San Blas. In December 1955, I collected specimens in fresh plumage on the Islands of Taboga, Taboguilla, and Uravá. With these, and additional series from the mainland available, the race *crístula* that I had described earlier from these islands appears too slightly differentiated from *pallidorsalis* to warrant recognition. This proves true also for *silvicultrix*, named from Isla San José, with distribution through other islands of the Archipiélago de Las Perlas. The birds of Isla Coiba, assigned originally under this latter name prove to be definitely darker, in this agreeing with *subpagana* of northern Central America.

Elaenia flavogaster flavogaster (Thunberg). Similar to *pallidorsalis*, but gray of chest averaging faintly darker; dorsal surface also slightly darker gray, and without the faint greenish olive cast of the

race of Panamá. Though slightly darker above, in this suggesting the northern race *subpagana*, the nominate form is grayer, less brownish olive. As it is recorded only to northwestern Colombia in the departments of Antioquia and Córdoba, there appears to be a considerable gap in the total range of the species in eastern Darién and eastern San Blas. Measurements of *E. f. flavogaster* are as follows:

Males (10 from Colombia), wing 79.2–81.6 (80.3), tail 67.8–74.1 (70.7), culmen from base 12.2–13.4 (12.7), tarsus 18.5–19.9 (18.9) mm.

Females (10 from Colombia), wing 75.0–78.1 (77.2), tail 64.2–69.3 (67.4), culmen from base 12.0–13.2 (12.7), tarsus 18.3–19.5 (18.8) mm.

A series from northern Brazil is very slightly smaller, thus agreeing closely in size with *E. f. pallididorsalis*.

ELAENIA FLAVOGASTER SUBPAGANA Sclater and Salvin

Elaenia subpagana P. L. Sclater and O. Salvin, Ibis, ser. 1, vol. 2, no. 5, January 1860, p. 36. (Dueñas, Guatemala.)

Elaenia flavogaster saturata Brodkorb, Occ. Papers Mus. Zool., Univ. Mich., no. 478, November 5, 1943, p. 1. (Palenque, Chiapas.)

Darker, somewhat brownish olive, above; grayer on the breast, and faintly darker on the side of the head.

Measurements.—Males (6 from Isla Coiba), wing 76.0–79.7 (78.0), tail 69.3–71.8 (70.7), culmen from base 12.4–14.0 (13.4), tarsus 19.0–19.6 (19.1) mm.

Females (7 from Coiba), wing 74.0–76.5 (75.4), tail 69.1–74.0 (71.8), culmen from base 12.5–14.0 (13.1), tarsus 18.5–19.8 (18.9) mm.

Resident. Common on Isla Coiba.

The Yellow-bellied Elaenia was the more common of the two species of this genus found on Isla Coiba, and as usual, came constantly to attention through its calls. With other birds they visited berry-bearing trees, and also were seen regularly along the borders of cultivated fields where thickets afforded cover, and in the low tree growth along the lower courses of the small rivers near the sea. On Coiba they ranged regularly also in the tree crown of the tall forests over the inland hills, where they lived high above the ground, a custom that I have not noted except casually elsewhere.

In the account of the avifauna of the island published in 1957 I identified the Coiba population of this species under the name *silvicultrix* that I had proposed for the population of the Archipiélago de

las Perlas. As explained above, with the larger series now available this supposed race has proved invalid. In darker dorsal coloration the Coiba series differs from that of mainland Panamá and resembles the average of the northern race *Elaenia flavogaster subpagana* found from southern Costa Rica north to México. The Coiba birds therefore are listed under this name. It should be noted, however, that the 16 specimens available from the island are uniformly darker gray on upper breast, foreneck, and side of the head, while only part of the mainland series equal them in depth of these markings.

For comparison, measurements of the mainland population are given.

Males (10 from México, Guatemala, Honduras, Nicaragua, and Costa Rica), wing 76.3–82.3 (79.6), tail 69.1–74.0 (71.8), culmen from base 12.2–14.5 (13.6), tarsus 18.9–19.8 (19.4) mm.

Females (10 from the same area), wing 73.3–78.7 (76.2), tail 64.7–71.6 (67.5), culmen from base 12.5–13.6 (13.0), tarsus 18.9–19.9 (19.3) mm.

ELAENIA FLAVOGASTER PALLIDIDORSALIS Aldrich

Elaenia flavogastra pallididorsalis Aldrich, Scient. Publ. Cleveland Mus. Nat. Hist., vol. 7, August 31, 1937, p. 106. (Paracoté, Mouth of Río Angulo, Golfo de Montijo, Veraguas, Panamá.)

Elaenia flavogaster silvicultrix Wetmore, Proc. Biol. Soc. Washington, vol. 59, March 11, 1946, p. 51. (Isla San José, Archipiélago de las Perlas, Panamá.)

Elaenia flavogaster cristula Wetmore, Smithsonian Misc. Coll., vol. 121, no. 2, December 2, 1952, p. 22. (Isla Taboga, Panamá.)

Characters.—Paler, more greenish olive above, somewhat brighter yellow on abdomen.

A male, taken March 5, 1961, at the Candelaria Hydrographic Station on the Río Pequeñi, above Madden Lake, had the iris light wood brown; maxilla and tip of mandible fuscous-black; base of mandible brownish white; tarsus and toes dusky neutral gray; claws black. A female at El Llano, Panamá, February 3, 1962, had the iris dark wood brown; base of maxilla fuscous, changing to fuscous-black at tip; tip of mandible also fuscous-black, with the base dull brownish white; tarsus, toes, and claws black. In another female at Aguadulce, Coclé, January 17, 1963, the iris was dark reddish brown; tip of bill, including maxilla and mandible, fuscous-black; base of maxilla dark mouse brown, that of mandible dull pinkish flesh color; back of tarsus at upper end neutral gray; the front and lower part, toes and claws black.

Measurements.—Males (10 from Chiriquí, Veraguas, Los Santos,

Coclé, and Canal Zone), wing 76.0–80.4 (78.1), tail 66.2–74.1 (70.9), culmen from base 12.8–13.7 (13.1), tarsus 19.0–20.6 (19.5) mm.

Females (10 from Chiriquí, Veraguas, Coclé, and Canal Zone), wing 73.6–78.0 (75.1), tail 64.0–71.2 (68.3), culmen from base 12.3–13.9 (12.9), tarsus 19.1–20.3 (19.3) mm.

Resident. Locally common, in the Tropical Zone; on the Pacific slope from western Chiriquí, east through Veraguas and the Azuero Peninsula to the lower Bayano Valley (Chepo, El Llano), Chimán in the eastern sector of the Province of Panamá, and Punta Sabana, at the mouth of the Río Tuira, western Darién; on the Caribbean slope from the Río Indio (at Chilar and Río Indio, western Colón, and El Uracillo, northern Coclé), east to the lower Chagres Valley, and Mandinga, western Comarca de San Blas; in Chiriquí to 1900 meters above Cerro Punta, and 1615 meters above Boquete. Isla Parida, Golfo de Chiriquí. In Veraguas, on Isla Afuerita, off Bahía Honda, and Islas Gobernadora and Cébaco, Golfo de Montijo. Islas Taboga, Taboguilla, and Uravá. Archipiélago de las Perlas (Islas San José, Pedro González, Rey, and Saboga).

On the mainland they are common along the Pacific side to near the Río Bayano, and then become less abundant. In 1950 several lived near Chimán in the upper edge of the village. The most eastern record, for Punta Sabana, Darién, is a male collected by Festa, June 24, 1895 (recorded by Salvadori and Festa, Bol. Mus. Zool. Anat. Comp. Roy. Univ. Torino, vol. 14, 1899, p. 5). On the Caribbean side, in 1952 I found them common along the Río Indio in western Colón, and also inland at El Uracillo in the foothills in northern Coclé.

This is the most conspicuous of the species of its genus in Panamá, both from its size and from its wheezy calls. It is found mainly around open areas in the border of tree growth, especially where there are clearings. Often it comes into villages, near farms, and to the suburban areas of larger towns. They are especially conspicuous in the nesting season from the end of January through June, when males call regularly, and appear constantly with pointed crests fully raised so that the white feathers in the center show clearly.

In addition to the loud wheezy notes heard through the day, Skutch (Pac. Coast Avif. 34, 1960, p. 289) describes a dawn song, given only in early morning, a steady repetition of two notes, *we do, we do*, occasionally more loudly accented, but with no other variation. These calls begin at the first hint of daylight and continue steadily until the sun appears, when they change to the harsher, more varied sounds in

which the female joins. (While his notes, made in Costa Rica, refer to the race *subpagana*, this song is heard also in Panamá.)

The nesting season, as stated, begins at the end of January, and is most active from early March into June. Nests are compactly made, open cups, well supported in forks of open branches. Skutch (loc. cit., pp. 290–292) found the males aiding regularly in building, though he believed that the bulk of the work was performed by the females. The base and walls of the nest are formed of bits of filamentous or soft vegetable material, bound by cobweb, with the exterior covered by gray and greenish lichens and fragments of moss. The fairly abundant lining is of feathers.

The two eggs in the usual set are dull white marked with spots of dull to cinnamon-brown varied to lilac, mainly in a circlet around the larger end. A set of two, the usual number, collected by Major-General G. R. Meyer at Summit, Canal Zone, April 19, 1944, measured 21.8×15.7 and 22.3×16.2 mm. Another set of two recorded by Hallinan (Auk, 1924, p. 316) is described as “dull white, with reddish brown and faint purple spots which were almost entirely confined to the larger end.” These measured 21.8×16.5 , and 21.6×16.0 mm. (Other nests described by this author may be of uncertain identity, as one is said to have held four eggs, and another three.)

Skutch (loc. cit., p. 303) says that the nestling (of the race *E. f. subpagana*) at hatching “has short, whitish down in restricted linear tracts along the middle of the crown, above the eyes, across the hind-head, down the middle of the back, along the flanks, and on the wings and the outer side of the thighs.”

These elaenias are seen regularly capturing small insects on the wing and also coming constantly to various berry-bearing trees. Some of the fruits eaten are of fair size with large pits.

MYIOPAGIS VIRIDICATA ACCOLA Bangs. Greenish
Elaenia, Moñona Verdosa

Myiopagis placens accola Bangs, Proc. New England Zoöl. Club, vol. 3, January 30, 1902, p. 35. (Boquete, 1220 meters elevation, Chiriquí, Panamá.)

Rather small; slightly crested; olive-green above; with crown darker at sides, and a large, partly concealed, central patch of bright yellow.

Description.—Length 125–138 mm. Adult male, center of crown bright yellow, with anterior area basally more or less white; sides of crown grayish brown to olive, with the bright central color tipping the lateral and frontal feathers; back, scapulars, and upper tail coverts

dark to light olive-green; rump usually faintly paler; wings dusky; primaries edged with olive-green; secondaries bordered with olive-yellow; greater and middle coverts tipped narrowly and indistinctly with dull olive-yellow; tail grayish brown, edged on the lateral feathers, especially at the base, with olive-green, in unworn state tipped lightly with dull white; lores grayish white, with a dusky central spot anterior to the eye; upper and lower eyelids lined narrowly with white, that on the upper lid is continuous with a post-ocular streak of grayish white; auricular region dusky with indefinite shaft lines of white; chin and throat dull white basally, washed with pale gray; foreneck and upper breast dull gray, lined indefinitely with whitish; lower breast, abdomen, sides, flanks, and under tail coverts light yellow; axillars and under wing coverts somewhat paler yellow; inner webs of wing feathers dull white.

Female, similar, but with yellow crown patch of lesser extent.

Juvenile, upper surface dull wood brown, slightly darker on the crown; crown patch absent or faintly indicated by whitish bases on a few feathers; breast darker gray.

A male, taken at Las Palmitas, Los Santos, January 25, 1962, had the iris dark brown; base of mandible dull brownish white; rest of bill brownish black; tarsus and toes fuscous-black. In a female, at Juan Mina, Canal Zone, January 12, 1961, the iris was wood brown; base of mandible light mouse brown; rest of bill neutral gray; tarsus and toes dark neutral gray; claws black.

Measurements.—Males (10 from Chiriquí, Los Santos, eastern Province of Panamá, and Pearl Islands), wing 64.5–71.6 (67.8), tail 58.2–66.0 (62.0), culmen from base 11.8–13.4 (12.5), tarsus 18.2–19.8 (18.9) mm.

Females (10 from Chiriquí, Canal Zone, and Pearl Islands), wing 61.0–64.4 (63.1), tail 52.9–59.3 (56.7), culmen from base 11.9–12.9 (12.2), tarsus 17.0–18.7 (17.8) mm.

Resident. Fairly common locally in forest areas in the Tropical Zone and the lower edge of the Subtropical Zone, on the Pacific slope, from western Chiriquí, eastward through Veraguas, the Azuero Peninsula, the southern Canal Zone, and the eastern sector of the Province of Panamá to the lower Río Bayano (Chepo, San Antonio); rarely to western Darién (Garachiné); Archipiélago de las Perlas (Islas San José, del Rey, Saboga, Viveros, Bayoneta); Isla Uravá, Bahía de Panamá; Isla Verde, in the northern end of Golfo de Montijo, Veraguas; Isla Coiba; to 1525 meters above Boquete and El Volcán, Chiriquí.

I have found them mainly in the tops of undergrowth in the forests, where they moved quietly, usually alone, occasionally in company with small groups of other birds. In Chiriquí and in the Province of Los Santos in the Azuero Peninsula they were mainly in heavier stands of forest, but in the lowlands were encountered also in more open areas. At La Jagua they lived in somewhat scattered undergrowth through the narrow lines of trees along the borders of the marshes. They came occasionally to eat drupes of shrubs and trees, and also plucked insects from leaves. It was common for one to rest quietly for several minutes, usually on some sheltered perch, when it suggested an *Empidonax* or other small species of the family. In my experience they were silent.

On Isla Verde one ranged near the shore in the border of mangroves. In the forests on Isla San José they inhabited the stands of tall trees along the streams.

Little is known of their nesting. A male, collected May 19, 1953, at Soná, Veraguas, was in breeding stage. Another male, near breeding, was collected in the undergrowth in deeply shaded woodland on Isla Uravá, near Isla Taboga, December 26, 1955. J. Stuart Rowley (Condor, 1962, pp. 256–257, fig. 1), in Morelos, southern México, found the nests of the closely related *Myiopagis v. placens* through watching and following females carrying nesting material. The nest, from his description and a photograph was a shallow cup woven of vegetable fibers, with the bottom and lower sides so thin that the contents were visible from the sides. Nests were placed in terminal crotches in the tops of low trees a few meters above the ground. His illustration shows eggs with a white or whitish background “handsomely marked with heavy lilac and chocolate brown colored streaks and blotches over most of the surface.” Three nests found in June and July held two eggs each. In one set these measured 18×13 and 17×12.5 mm. and in another, 17.8×13 and 17.6×13.1 mm. Dr. Eisenmann has brought to my attention description of another set of eggs of the race *placens* from British Honduras (Oates and Reid, Cat. Birds Brit. Mus., vol. 3, 1903, p. 196, pl. 4, fig. 16). These, collected by F. Blancaneaux, are described as “cream-coloured, streaked and spotted, more densely at the broad end where the markings form a wide zone, with purplish brown and deep lavender.” The two eggs in this set, said to have been taken in May, measure 18.0×13.7 and 18.2×12.9 mm.

The record for Garachiné, Darién, listed above is a specimen in the Academy of Natural Sciences in Philadelphia, collected in April 1941, on the Fifth George Vanderbilt Expedition.

The population on Isla Coiba follows the general rule for resident birds on this large isolated island in having a tendency toward dark coloration. This seems too slight, however, in the series of 12 specimens examined, to warrant a name as it is duplicated in part of the mainland series.

Griscom, in his Ornithology of Panamá (Bull. Mus. Comp. Zool., vol 78, 1935, p. 353), through an oversight, in addition to his note under *M. v. accola*, lists also "*Elaenia viridicata pallens* (Bangs)," a name used formerly for the bird of Panamá, restricted now to the slightly different subspecies of northern Colombia.

The race *M. v. accola* ranges north from western Panamá through Costa Rica to Nicaragua.

MYIOPAGIS GAIMARDII MACILVAINII (Lawrence):
Forest Elaenia, Moñona Montaraz

Elaenia macilvainii Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 10. (Cartagena, Bolívar, Colombia.)

Small; slightly crested; similar to the Greenish Elaenia, but slightly smaller, and with yellow (not orange) crest, and two definite wing bars.

Description.—Length 112–125 mm. Adult (sexes alike), crown grayish brown to olive, with a large, partly concealed central patch of light yellow, whiter anteriorly, tipped distally with grayish brown; back and scapulars rather light greenish olive; rump and upper tail coverts faintly paler; wings dusky; middle coverts and greater coverts tipped with pale yellowish olive to dull white, forming two usually well-marked wing bars; primaries edged with olive, secondaries more prominently with olive-yellow; tail hair brown or olive, edged broadly with greenish olive, tipped faintly with pale brown (a mark that disappears with wear); a dusky loreal spot; an indefinite grayish white line from upper lores across upper eyelid to back of eye; a similar narrow line on lower eyelid; auricular area grayish olive with paler shaft lines; malar region and upper throat whitish, marked very faintly with spots and shaft lines of grayish olive; lower foreneck, breast, and upper sides rather dull pale gray, lined faintly with edgings of pale yellow; abdomen, under tail coverts, and flanks pale yellow; axillars and under wing coverts light yellow; edgings on inner webs of wing feathers somewhat paler.

Juvenile, crown light brownish olive without central yellow patch; back and scapulars duller, more brownish olive-green.

A male, taken at La Jagua, Panamá, January 14, 1962, had the iris dark brown; base of mandible dull brownish white; rest of bill

brownish black; tarsus, toes, and claws black; another male collected at El Llano, February 4 of the same year had the iris light brown; bill, tarsus, and toes black. A female, at Chiva Chiva, Canal Zone, January 12, 1963, had the iris light reddish brown; base of gonys and lower side of mandibular rami light buffy brown; rest of bill fuscous; tarsus and toes dusky neutral gray; claws black.

Measurements.—Males (10 from Coclé, Canal Zone, Province of Panamá, and Darién), wing 56.6–59.9 (58.4), tail 52.4–57.0 (54.7), culmen from base 11.0–12.5 (11.5, average of 9), tarsus 17.3–18.4 (17.7) mm.

Females (10 from Canal Zone, Province of Panamá, Darién, and northern Colombia), wing 52.0–58.7 (56.0), tail 45.6–53.3 (49.7), culmen from base 10.4–11.9 (11.8), tarsus 16.3–17.9 (17.1) mm.

Resident. Uncommon; found in forested areas on the Pacific slope from the southern Canal Zone (Chiva Chiva) east through eastern Province of Panamá and Darién; on the Caribbean side, from the upper Río Indio (El Uracillo) in northern Coclé, east through the lower Chagres Valley (Achiote, Gamboa, Barro Colorado Island); and at Permé, eastern Comarca de San Blas.

Like the Greenish Elaenia this is a forest bird, but one found in smaller number. While the ranges of the two species overlap from the northern Canal Zone eastward, there would appear to be no competition between them as I have not encountered them together. The Forest Elaenia, in part, ranges in the high tree crown, and in that habitat is seldom seen. Those that I have observed near at hand have been lower down in the tops of undergrowth. They are slender birds that perch with the body erect and tail pointing down, usually moving slowly in a leisurely manner. Only rarely have I found them in company with other small forest birds. While they move about quietly in search of insects, also they may remain at rest for several minutes. As the yellow crest usually is hidden under the adjacent feathers, there is little in their appearance to distinguish them from other small flycatchers of similar rather dull colors. Their rather sharp, two-syllable call, that Eisenmann describes as *pitwheet*, may attract attention but the bird itself may be difficult to locate.

Near La Jagua I found them in the low trees near the Río Chico. At Chimán, and on the Río Majé, they were in thickets, and in open growth bordering old clearings. Elsewhere they have been seen occasionally in growths of weeds adjacent to the border of low forest. In the lower levels of Cerro Pirre I encountered one in open stands of brush beside a river. In Darién I have found them in Tuirá Valley at

Boca de Paya on the Río Tuira, and on the Tuquesa where it joins the Río Chucunaque. The species is also known at Punta Sabana in the lower valley, and at Garachiné on the coast. Eisenmann has recorded it at Santa Fé, and it is known at Cana on Cerro Pirre.

Stomachs of those that I have examined have contained insect fragments, and a few small seeds.

On February 26, 1950, near the Río Corotú above Chimán I collected one as it placed bits of vegetable fiber in the foundation of a nest. I was interested to find that this bird was a male. Belcher and Smooker (Ibis, 1937, pp. 244–245) describe a nest of the slightly larger race of Trinidad (*Myiopagis g. trinitatis*), placed in twigs at the end of a branch of a mangrove in the Caroni marshes, Trinidad, as like that of the Yellow-bellied Elaenia, but smaller, and without the feather lining found in that species. The two eggs, with a pale creamy-white ground color, had markings "of spots and blotches of deep red-brown with underlying ones of lavender, forming a ring toward the larger end." They measured 17.9×14.1 and 17.2×13.9 mm.

This race was described as from "Venezuela" collected by Christopher Wood, without a more definite locality. The type specimen, in the American Museum of Natural History, is marked Cartagena, Colombia, which is accepted as the type locality. Lawrence named it "in compliment to my friend, J. H. McIlvain, Esq., of Philadelphia, an ethnologist as well as ornithologist, to whose liberality Mr. Wood is indebted for the opportunity to make the collection."

MYIOPAGIS CANICEPS ABSITA (Wetmore): Gray
Elaenia, Moñona Gris

Elaenia caniceps absita Wetmore, Smithsonian Misc. Coll., vol. 145, no. 6, December 16, 1963, p. 7. (Old Tacarcuna village site, head of the Río Pucro, 950 meters elevation, base of Cerro Malí, Darién.)

Small; concealed white patch in crown; male, gray above and on breast; female greenish, with yellow abdomen.

Description.—Length 110–120 mm. Adult male, crown and hind-neck deep neutral gray; with a partly concealed white central area in which the basal two-thirds of the individual feathers are white; a narrow line of grayish white on forehead and lores, extending back through the margins of upper and lower eyelids; back, rump, and upper tail coverts neutral gray; wings black, with the middle and greater coverts tipped, and the inner primaries, secondaries, and tertiaries, edged with white; tail mouse gray, edged narrowly with

neutral gray, mainly toward base, tipped lightly with dull white; throat and central upper foreneck pale grayish white; lower foreneck, upper breast, and adjacent sides pallid neutral gray; flanks, abdomen, and under tail coverts pure white; tibia brownish gray; inner under wing coverts and edge of inner webs of primaries white; outer under wing coverts mixed white and neutral gray.

Female, crown slightly blacker than in male; the central area basally white; back, scapulars, inner lesser wing coverts, rump and upper tail coverts grayish green; wings black, with pale yellow edgings on coverts, inner secondaries and tertials; tail blacker than in male, edged indistinctly with dull grayish green; markings of side of head and loreal area as in male; throat and upper foreneck grayish white, duller than in male; lower foreneck, breast, and adjacent sides faintly grayish green; lower breast, abdomen, flanks, and under tail coverts pale yellow (with a very faint greenish cast); inner under wing coverts and inner edgings of primaries very pale yellow.

Measurements.—Males (2 from Darién), wing 57.3, 58.0, tail 46.4, 49.4, culmen from base 10.5, 10.7, tarsus 14.5, 15.5 mm.

Female (1 from Darién), wing 52.5, tail 42.8, culmen from base 10.2, tarsus 15.6 mm.

Resident. Rare, in heavy forest. Known from a pair taken at the old Tacarcuna village site at 950 meters elevation on the base of Cerro Malí, and a male from 550 meters at Cana, on Cerro Pirre, Darién.

The male and accompanying female from which this bird was described were collected for Dr. Pedro Galindo, of the Gorgas Memorial Laboratory on July 4, 1963. The locality was the forest surrounding the field camp, at the old Cuna Indian village on the upper Río Pucro. An earlier specimen, also an adult male, collected March 20, 1912, by E. A. Goldman near Cana, on the lower slopes of Cerro Pirre, was wrongly identified originally as *Serpophaga cinerea grisea*, and through this was overlooked in earlier studies.

The bird is listed here in the genus *Myiopagis*, following treatment by Zimmer (Amer. Mus. Nov., No. 1108, May 14, 1941, p. 20). The much brighter colors of the female, with yellow abdomen and greenish back, are in definite contrast to the grayer color pattern of the male. Both are marked by the prominent white in the crest.

While the species ranges widely from Colombia and southern Venezuela to Bolivia, northern Argentina, and southern Brazil, little is known of it other than the few records of specimens collected. In these, four geographic races have been described. The bird of Darién, generally similar to *M. c. parambae* (Hellmayr) found from the Baudó Mountains in Chocó, western Colombia, south to western

Ecuador, differs in the male in being lighter gray, with the white markings on the wing more extensive. The female has the breast, sides, and abdomen paler yellow. Size in the two races is similar, as indicated by measurements of two males and a female *parambae* in the Academy of Natural Sciences in Philadelphia from the Río Jurubidá, Chocó, Colombia, and the type male, in the American Museum of Natural History from Paramba, Esmeraldas, Ecuador.

Males, wing 54.8–55.4 (55.1), tail 45.0–46.4 (45.8), culmen from base 9.5–10.0 (9.7), tarsus 14.5–15.6 (15.0) mm.

Female, wing 54.2, tail 44.9, culmen from base 10.0, tarsus 15.8 mm.

**CAMPTOSTOMA OBSOLETUM (Temminck): Southern
Beardless Flycatcher, Moñona Lampiña**

Muscicapa obsoleta Temminck, Nouv. Rec. Planch. Col. Ois., livr. 46, May 1824, pl. 275, fig. 1. (Curitiba, Paraná, Brazil.)

Very small; grayish green above; pale yellow below, with two white wing bars; bill small; often active like a small wood warbler.

Description.—Length 85 to 95 mm. Adult (sexes alike), above rather dull grayish green, with a faintly darker crown; a narrow white eye-ring, and an indistinct white line from lores back above eyes; cheeks lined indistinctly with white; wings dusky, with the middle and greater coverts tipped with white to pale yellowish white, to form two distinct wing bars; in some, light tips on the lesser coverts form a third bar; tertials tipped with yellowish white; secondaries and primaries edged narrowly with yellowish white; tail fuscous to dusky, tipped with dull buffy white; throat and upper foreneck rather dull white; rest of under surface light yellow to very pale yellow, duller and grayer on upper breast and sides; axillars, under wing coverts, and edge of wing light yellow.

Juvenile, slightly duller, browner, above, with rump and upper tail coverts buffy brown; wing bands dull cinnamon-buff; under surface very pale buffy white, with a narrow indistinct band of buff across the breast. In their mainland range in Panamá they are fairly uniform in coloration. In addition, two slightly marked island races have been described.

The species as a whole is found from Costa Rica and Panamá through tropical South America to northern Argentina and southern Brazil.

While these flycatchers are common locally, they may be overlooked because of their tiny size, as any leaf is sufficient cover to conceal them.

CAMPTOSTOMA OBSOLETUM FLAVIVENTRE
Sclater and Salvin

Camptostoma flaviventre Sclater and Salvin, Proc. Zool. Soc. London, 1864 (February 1865), p. 358. (Lion Hill, Canal Zone, Panamá.)

Characters.—Paler above, with crown cap browner; more distinctly yellow on the lower surface.

A male in breeding condition, taken at Aguadulce, Coclé, January 17, 1963, had the iris brown; maxilla dull black; lower side of base of mandible dull brown; rest of mandible fuscous; tarsus dusky neutral gray; toes, including the claws, black. Others that I have examined have had the maxilla and tip of the mandible dull fuscous; base of the mandible brownish white. The gape and inside of the mouth are reddish orange.

Measurements.—Males (10 from Herrera, Los Santos, Canal Zone, and Province of Panamá), wing 50.3–54.6 (51.9), tail 34.6–41.4 (39.0), culmen from base 9.1–10.8 (9.8), tarsus 13.3–15.2 (14.0) mm.

Females (10 from Chiriquí, Los Santos, Herrera, Canal Zone, and Province of Panamá), wing 45.3–50.1 (48.1), tail 33.3–35.2 (34.7), culmen from base 9.1–9.9 (9.4), tarsus 13.0–15.7 (14.1) mm.

Resident. Locally common in the Tropical Zone; Pacific slope from Costa Rica eastward, including Herrera and Los Santos on the eastern side of the Azuero Peninsula, eastern Province of Panamá (Chepo), and Darién; Carribean slope in the lower Chagres Valley (Piña, Lion Hill, Gatun, Barro Colorado Island, Juan Mina) and adjacent eastern Colón; eastern San Blas (Permé, Puerto Obaldía); Isla Cébaco in Golfo de Montijo.

These tiny flycatchers are common in the tropical lowlands of the Pacific slope east to the lower Río Bayano, and range north also across the lowland divide where the Panama Canal crosses to the north coast near Colón. The most western record on the Caribbean side is a male taken by S. Olson at Piña. There are records for Darién from Garachiné, Santa Fé (on the Río Sabana), and El Real, with one at Cana on Cerro Pirre. It is probable that they are found in small numbers through the Tuira basin. And it is also probable that they range through the lowlands of San Blas, though the only records are from near the Colombian boundary at Permé and Puerto Obaldía.

Along the Pacific slope they are found through the thickets and low tree growth of the savanna area, sometimes low, near the ground, sometimes higher in the trees. While at times they move rather quickly so that they seem as active as wood warblers, it is more usual for them to show the quieter movements common to many

small tropical flycatchers that search for food through branches and leaves, in contrast to those that wait quietly for passing insects. Although they take some insects, they also feed extensively on small berries. In the more humid areas of the Caribbean part of the range they may be found in heavy forest, often in the high tree crown.

Birds taken in March frequently were in breeding condition. Once on March 24, 1958, at La Jagua, east of Pacora, a male fed a berry to a smaller companion that I assumed to be his mate. On March 8, 1960, I collected a mated pair near Alanje in western Chiriquí. Haverschmidt (Condor, 1956, pp. 139-141) described the nest of the closely related *Camptostoma o. napaecum* in Surinam as a rounded ball with an entrance in one side, placed among vines or otherwise concealed. The set of eggs usually numbers two, in color "creamy white with a number of lilac and reddish brown spots especially at the larger end." Measurements of four eggs ranged as follows: 16.2-16.7 x 12.3-12.8 mm. One fresh egg weighed 1.35 grams. A female that I shot March 13, 1960, at the Canta Gallo bridge below Alanje held a fully developed egg, unfortunately broken, so that I was able to determine only that it was white with a few dots of cinnamon-brown. On March 9, 1949, an adult fed a fully grown young bird in a bush back of the laboratory on Barro Colorado Island. We have immature birds, marked by cinnamon-buff wing bars, taken as follows: Alanje, March 3; Parita, Herrera, March 22; Chico, Panamá, March 24; Lion Hill, Canal Zone, April 4; and Gatun, Canal Zone, April 6.

While Sclater and Salvin do not give a definite locality, their type specimen was part of a collection taken by James McLeannan near the Lion Hill Station on the Panama Railroad, which has been designated as the type locality.

CAMPTOSTOMA OBSOLETUM ORPHNUM Wetmore

Camptostoma obsoletum orphnum Wetmore, Smithsonian Misc. Coll., vol. 134, no. 9, July 8, 1957, p. 70. (Isla Coiba, Panamá.)

Characters.—Similar to *C. o. flaviventre*, but with upper surface darker, more olive, especially on the crown.

Measurements.—Males (2 from Isla Coiba), wing 52.0 52.1, tail 39.2, 39.3, culmen from base 9.9, 10.1, tarsus 13.2, 13.9 mm.

Females (2 from Isla Coiba), wing 47.1, 47.2, tail 35.0, 35.2, culmen from base 9.7, 10.4, tarsus 13.6, 14.0 mm.

Range.—Isla Coiba; Isla Afuerita (adjacent to Isla Canal de Afuera, between Coiba and the mainland).

These little flycatchers are so small, and so quiet in mannerisms

that they undoubtedly are more common on Isla Coiba than is indicated by the four specimens taken during my five weeks on the island. They move quietly, usually among leaves, and when they fly disappear at once behind cover. While I found them in low growth near the beaches and along the borders of clearings, they ranged also through the high tree crown of the forest.

On Isla Afuerita, separated by a narrow channel from Isla Canal de Afuera, which lies between Isla Coiba and the Veraguas mainland, I collected a male on March 22, 1962, that is assigned to this subspecies. It is slightly grayer on the dorsal surface, and somewhat less yellow below than the type series from Coiba, but agrees with them in being distinctly darker above than *C. o. flaviventre* of the mainland. The difference equals that seen in the range of variation in our extensive series of *flaviventre*. The bird was found in low bushes at the border of an old cornfield. Its measurements are as follows: wing 52.5, tail 44.0, culmen from base 9.0, tarsus 14.0 mm.

CAMPTOSTOMA OBSOLETUM MAJOR Griscom

Camptostoma pusillum major Griscom, Bull. Mus. Comp. Zool., vol. 72, no. 9, January 1932, p. 353. (San Miguel, Isla del Rey, Archipiélago de las Perlas, Panamá.)

Characters.—Similar to *C. o. flaviventre*, but slightly grayer, less olive above, with the crown somewhat lighter, so that it is more like the back.

Measurements.—Males (8 specimens), wing 52.6–55.2 (54.2), tail 37.3–45.8 (40.7), culmen from base 9.0–10.5 (9.5), tarsus 13.0–14.6 (13.7) mm.

Females (5 specimens), wing 48.3–50.6 (49.1), tail 33.0–37.2 (35.2), culmen from base 8.6–9.5 (9.3), tarsus 13.3–14.3 (13.8) mm.

Resident in the Archipiélago de las Perlas; recorded on Islas Rey, Saboga, Pacheca, Pedro González, and San José.

This slightly differentiated race is little known except for the specimens that have been taken, which come mainly from Isla del Rey. I saw single individuals on three occasions on Isla San José in 1944 and 1946, but did not succeed in collecting one. A specimen in the American Museum of Natural History from Isla Pedro González was taken by Griscom and Crosby on February 18, 1927.

SUBLEGATUS ARENARUM ARENARUM (Salvin): Scrub Flycatcher, Moñona Grisácea

Elainea arenarum Salvin, Proc. Zool. Soc. London, August 1863, p. 190. (Puntarenas, Provincia de Puntarenas, Costa Rica.)

Medium size; gray, darker above, paler on breast; abdomen light yellow; three light wing bars; bill black.

Description.—Length 135–150 mm. Bill relatively broader compared to other species in the *elaenia* group of flycatchers. Adult (sexes alike), upper surface, including scapulars, grayish brown, varying from faintly olive-brown when newly grown to definitely gray through fading as the feathers age; crown with darker shaft lines; rump often with a faintly paler wash, verging toward cinnamon; wings dusky; lesser, middle, and greater coverts tipped with white to light grayish brown, forming three wing bars; inner primaries and secondaries edged with white to light grayish brown; tail dusky, with edging of outer rectrices and tips pale grayish white to brownish white; forehead, a faint supraloral line, and eyelids grayish white; a dusky loreal spot in front of eye; side of head back of eye like hindneck, with faint shaft lines of grayish white; chin and upper throat pale gray to grayish white, changing to pale gray on foreneck, breast, and adjacent sides; lower breast, abdomen, flanks, and under tail coverts light yellow; axillars and under wing coverts very pale yellow; inner margins of wing feathers dull white.

Juvenile, above dark, somewhat grayish brown, with the feathers tipped narrowly with dull white; foreneck and upper breast light gray, with indistinct narrow grayish brown tips; wings and tail as in adult.

A female, taken on Isla Afuerita, off Bahía Honda, Veraguas, March 22, 1962, had the iris wood brown; mandibular rami brownish black; rest of bill fuscous-black; tarsus, toes, and claws black; edges of gape dull honey yellow; inside of mouth honey yellow. Another female, at Puerto Armuelles, Chiriquí, February 19, 1966, had the iris mouse brown; bill fuscous, darker at tip, paler at base of mandible; tarsus and toes fuscous-black; claws black.

Measurements.—Males (10 from Chiriquí, Veraguas, Herrera, Los Santos, Coclé, and Canal Zone), wing 69.3–75.2 (71.8), tail 64.7–70.2 (66.4), culmen from base 11.4–13.0 (12.2), tarsus 18.0–19.4 (18.8) mm.

Females (10 from Chiriquí, Veraguas, Herrera, Los Santos, eastern Province of Panamá, and Isla Taboguilla), wing 67.0–71.1 (68.9), tail 63.3–66.7 (65.6), culmen from base 11.4–13.3 (12.2), tarsus 18.0–18.6 (18.2) mm.

Resident. Found locally in the lowlands of the Tropical Zone on the Pacific slope from western Chiriquí east through Veraguas (inland to Soná), the eastern side of the Azuero Peninsula, Coclé, Province of Panamá, and the southern Canal Zone, east to the lower Río Bayano (Chepo); recorded eastward along the coast at Majé,

eastern Province of Panamá, and at Garachiné, Darién. Common through the Archipiélago de las Perlas (recorded on Islas Contadora, Saboga, Bayoneta, Málaga, Vivienda, Rey, Cañas, Santelmo, Moreno, Pedro González, and San José). On other islands as follows: Taboga, Taboguilla, in Bahía de Panamá; Iguana, north of Punta Mala, Los Santos; Gobernadora, Cébaco, Golfo de Montijo; Coiba; Afuerita, off Bahía Honda, Veraguas; Parida, Bolaños, Golfo de Chiriquí.

These small flycatchers usually are found in low growths of bushes and small trees, ranging through open areas, and commonly also, in denser stands. They range regularly in mangrove swamps in the drier areas along the inner border, seldom in the heavier stands over deeper water. They are seen at times also in forested sections. Pairs are encountered regularly though more often individuals are alone, moving so quietly through the twigs and leaves that they may not be seen. Much of their food is insects, captured in such search. Less often they rest on open perches, when with their twitching tails they may be confused with other small flycatchers of similar color pattern. They also come quietly to feeding trees to eat the drupes.

While in general appearance, and if not seen clearly, they may be confused with the Lesser Elaenia, they differ from that species in relatively heavier, blacker bill, in addition to smaller size. Their call is a somewhat sibilant *svees*, heard only occasionally with the birds near at hand. They also have a low trilling song of little carrying power.

The breeding season appears to come from March to June. March 26, 1948, near La Palma, Los Santos, I saw one working at construction of a simple open cup nest located about 6 meters from the ground in the fork of a branch in a small, open-limbed tree. A nest found by Major-General G. Ralph Meyer March 31, 1944, near Chepo, was made of plant fibers placed in a tree beside the highway. The two eggs, with incubation not begun, are faintly creamy white, spotted finely with chestnut-brown, a few varying to lilac, all mainly in a slightly indicated wreath near the larger end. They measure 18.7×13.7 and 18.9×14.0 mm. Another set that he collected April 11, 1941, near Summit, Canal Zone, from a nest made of grasses in a solitary tree standing beside an unimproved road had only a trace of incubation. The nest was about 75 mm in diameter, by 40 mm deep. The two eggs, with the spotting somewhat more scattered, measure 19.4×14.4 and 19.4×14.6 mm. In both of these sets the eggs are near subelliptical in shape. A third nest, collected April 19, 1944, near Chepo, like the first was in a fork of a horizontal branch in a

tree standing at the edge of forest. The two eggs in this set, in which incubation had begun, had chestnut spots of slightly larger size scattered over the larger end, as in the others. The eggs measure 17.4×13.5 and 17.2×13.8 mm, and are somewhat pointed subelliptical in form.

The series of specimens of this form at hand from the mainland area, Coiba, and the inshore islands, are fairly uniform, with the usual variation in darkness of the dorsal surface due to the slight, slow fading from intensity of light as the season progresses. Salvin's type (sex not indicated), examined in the British Museum, is a well-formed specimen in good condition. Its measurements of wing 69.7, tail 65.4, and culmen from base 11.6 mm, agree closely with the average for the female.

Those from the Archipiélago de las Perlas have been interesting since they are somewhat intermediate toward *Sublegatus a. atrirostris* (Lawrence) of northern Colombia. The 11 males and 9 females from the islands, as listed in the range given above, average faintly darker dorsally, with a slight brownish cast, thus indicating relationship to that form. The gray of the anterior lower surface however is like that of typical *arenarum*. Zimmer (Amer. Mus. Nov., no. 1109, 1941, p. 7) listed three specimens from Islas San José and Pedro González as *atrirrostris*, and with them included two from Isla Coiba. In an account of the birds of Coiba (Smithsonian Misc. Coll., vol. 134, no. 9, 1957, p. 69), I indicated agreement with him, with regard to the Perlas Islands series (but not from Coiba). Since then our larger series indicates an intermediate condition, but with the birds nearer *arenarum*.

PHYLLOMYIAS GRISEICEPS CRISTATUS Berlepsch: Crested
Tyrannulet, *Moscareta Crestada*

Phyllomyias cristatus Berlepsch, Journ. f. Orn., vol. 32, April 1884, p. 250.
(Bucaramanga, Magdalena, Colombia.)

Phyllomyias griseiceps quantulus Wetmore, Smithsonian Misc. Coll., vol. 122,
no. 8, December 17, 1953, p. 8. (Cana, Darién, Panamá.)

Very small; a short, somewhat bushy crest; greenish olive above, with darker crown; yellowish on abdomen.

Description.—Adult (sexes alike), crown fuscous-black, shading on hindneck to dull greenish olive on back and scapulars; rump and upper tail coverts somewhat paler; wing coverts basally dusky; the lesser coverts edged with greenish olive; middle and greater coverts tipped irregularly and indistinctly with dull grayish brown; secon-

daries and inner primaries edged narrowly with white; tail grayish brown, tipped narrowly and indistinctly with dull white; an indistinct blackish spot in front of eye; lores dull white, this marking extending back over eye as a superciliary streak; lower eyelid with a white line; side of head back of eye dusky, mixed basally with grayish white; chin and upper throat rather dull white, shading on foreneck and upper breast to dull greenish gray; upper breast lined indefinitely with dull yellow; lower breast, abdomen, and under tail coverts pale yellow; edge of wing dusky; axillars and under wing coverts pale yellow.

Juvenile, base colors of dorsal surface as in adult but with crown and back feathers tipped narrowly with white. Middle and greater coverts tipped prominently with white, forming two definite wing bars; tail tipped with white.

Measurements.—Males (1 from Darién, 8 from northern Colombia), wing 49.3–53.6 (51.7), tail 43.1–47.4 (45.2, average of 8), culmen from base 8.7–9.7 (9.2), tarsus 13.3–14.5 (13.9) mm.

Females (3 from Colombia), wing 47.0–50.5 (48.7), tail 41.9–45.8 (43.2), culmen from base 8.2–9.0 (8.6), tarsus 13.4–13.7 (13.5) mm.

Recorded in Darién from one male, taken at Cana on Cerro Pirre.

The specimen was collected by E. A. Goldman June 1, 1912, at 550 meters elevation. His notes make no reference to it except for its entry in his specimen catalog. When the collection was first studied by E. W. Nelson, he identified it correctly as to species, but then the bird, through some oversight was laid aside, apart from the rest of the collection. When finally it came to attention it was noticed that it differed slightly in paler, duller pattern of color from other specimens available. Because of this I named it as a distinct race, as indicated above. As other specimens became available from Chocó and other areas in northern Colombia, it was found that these were individual differences, and the bird of Cerro Pirre proved to be an example of the subspecies *cristatus* of northern Colombia. As a whole, the species *griseiceps* has a wide distribution in Colombia, Ecuador, Perú, northern Brazil, eastern Venezuela, and Guyana. As yet little seems to be known of it, aside from the few specimens in museum collections.

The presence of prominent wing bars in the juvenile stage (absent or slightly marked in the adult) is interesting, as this and the white tipping on the upper surface are suggestive of what is seen in the juvenile stage in *Sublegatus*.

The name *cristatus* was presented at a meeting of the German

Ornithological Society held in Berlin, March 7, 1884, by Cabanis on behalf of Count Berlepsch (who was unable to be present).

The description was repeated by Berlepsch in an account of the rest of the specimens with which it had been received, published in the next number of the *Journal für Ornithologie* for July-October 1884, p. 300. The collection of about 800 specimens, presented to the city museum of Lübeck by Emilio Minlos, had been purchased over a period of time locally from the Indians in Bucaramanga, Colombia. The specimens differed from the "Bogotá" trade skins in that the bones were concealed in an artificial body of wadding or moss, not found in the others.

TYRANNISCUS VILISSIMUS PARVUS Lawrence: Paltry
Tyrannulet, Moscareta Menuda

Tyranniscus parvus Lawrence, *Ibis*, vol. 4, January 1862, p. 12. (Lion Hill, Isthmus of Panamá.)

Small; above greenish olive; breast and foreneck grayish white; wings edged prominently with light greenish yellow.

Description.—Adult (sexes alike), crown dull dusky green; hind-neck, back, scapulars, rump, and upper tail coverts greenish olive; wings dusky; middle and greater coverts, primaries (except outermost), and secondaries edged distinctly with bright greenish yellow; bend of wing yellow; tail dusky, edged with dull olive-green; forehead and narrow indistinct superciliary, gray; lores dusky; side of head light olive, with indistinct whitish shaft lines; chin and upper foreneck whitish; lower foreneck and breast pale gray, lined indefinitely with dull white; center of abdomen white; flanks, lower abdomen, and under tail coverts pale olive-yellow, with a greenish wash; axillars and under wing coverts very pale yellow; inner margins of under wing feathers dull white.

A male taken at Chepo, Province of Panamá, April 24, 1949, had the iris grayish white. Another, collected near El Volcán, Chiriquí, February 28, 1954, had the iris light brownish white; bill dusky neutral gray, fuscous at the base of the gonys; tarsus and toes dusky neutral gray. A third, at Almirante, Bocas del Toro, February 5, 1958, had the inside of the mouth, including the upper surface of the tongue, slightly more orange than honey yellow. A female, at Charco del Toro, Río Majé, Province of Panamá, March 24, 1950, had the iris Marguerite yellow; maxilla dusky neutral gray; mandible neutral gray; tarsus, toes, and claws dusky neutral gray.

Measurements.—Males (10 from Chiriquí, Bocas del Toro, Canal

Zone, Colón, and Darién), wing 47.7–55.2 (51.4), tail 39.0–46.7 (42.2), culmen from base 9.0–9.9 (9.4), tarsus 15.6–16.7 (16.1) mm.

Females (10 from Chiriquí, Bocas del Toro, Coclé, and Province of Panamá), wing 42.5–50.8 (45.2), tail 31.7–37.0 (34.2), culmen from base 8.6–9.7 (9.0), tarsus 13.9–15.0 (14.5) mm.

Resident. Common in forested and brushy areas throughout the Tropical Zone. On the Pacific slope in Chiriquí, from near the Costa Rican boundary (Serenó and Divalá to Chame and San Félix), to the Subtropical Zone on the volcano (1525 meters below Cerro Punta, and 2000 meters above Boquete); along the hill slopes in Veraguas to Santa Fé, Chitra, Paracoté at the head of Golfo de Montijo, and Cerro Montuoso in the northern Azuero Peninsula, on the boundary with Herrera; El Valle, Coclé, and Cerro Campana, east through the Canal Zone and the Province of Panamá to Chepo, the Río Majé, and Darién (Cerro Sapo, Cana, and the base of Cerro Tacarcuna). (Not recorded on the open plains of Coclé, or on the eastern side of the Azuero Peninsula.) On the Caribbean side from western Bocas del Toro (Changuinola, Almirante), east through northern Coclé (El Uracillo) and the northern Canal Zone to eastern Colón (Portobelo).

There is no report at present from the Comarca de San Blas, though it is found near Acandí, Chocó, at the western side of the entrance of the Golfo de Urabá, in northwestern Colombia, 25 kilometers beyond the Panamanian boundary.

These are quiet, unobtrusive little birds that live in the cover of tree growth and shrubbery, often ranging singly, or equally often found associated with other species of smaller birds that range in company. One may be noted making short flights through the higher branches, then resting quietly under shelter of the leaves to look about. They may perch quietly, or may move quickly, often with vibrating tails. While often under cover, in flight they may also pause on some tall dead stub standing in the open. Any cover from heavy forest to open, scattered second growth or isolated trees is suited to their needs. When found in pairs, the females appear so small, with their bulk seemingly only half that of the males, that the pair often suggests an association of two distinct species.

Breeding in Panamá is indicated from March onward. A female, taken March 1, 1952, at El Uracillo, on the Caribbean slope of Coclé, held a nearly formed egg. J. R. Karr near Gamboa found one feeding a nestling on July 14, 1969.

Call notes are soft and low so that they seldom attract attention. The food is partly small insects taken during quick movements among

leaves, and more evidently the berries of epiphytes and the smaller fruits that attract birds to feeding trees. These berries often form the major bulk in the contents of the stomach.

Skutch (Pac. Coast Avif., no. 34, 1960, pp. 465-474) in his detailed account of their life history, as seen in Costa Rica, described the call notes as "varied but low" with a "slight, weak dawn song . . . which is delivered persistently in the morning twilight." The nest is made of mosses and other soft materials placed among epiphytes, in the shelter of a curled leaf, amid vines and small branches, or even in an old abandoned hanging nest of another flycatcher. It is built by the female, who also incubates alone. The eggs, two in a set, are "dull white, speckled or blotched with shades of cinnamon ranging from pale to rufous-cinnamon." His measurements of a small series of eggs had a range of $16.7-18.7 \times 12.7-13.5$ mm. The nestling at hatching had "on its crown, back, and sides long gray down which is rather dense for a passerine bird. . . . Its bill, the interior of its mouth, its legs, and its toes are intensely yellow."

Under present understanding, the subspecies *parvus* ranges north in Central America through Costa Rica and Nicaragua to Honduras. To the south it is recognized in northern Chocó in northwestern Colombia. From present data it is rare in eastern Darién and not known from San Blas. The few seen from eastern Panamá appear to be slightly smaller and faintly darker green above than those from the Canal Zone westward.

The type material in the American Museum of Natural History includes the two specimens, male and female, covered in the original description in the *Ibis*, where the title of the paper reads, "Descriptions of Six New Species of Birds from the Isthmus of Panama." The label of the male (A.M.N.H. 42574) reads in part, "Coll. G.N.L. Type." On the reverse is the name "*Tyranniscus parvus* Lawr. ♂, Panama, McL. & G."

The label of the other (A.M.N.H. 42575) is marked "Coll. of G.N.L. Type *Tyranniscus* sp. nov. *parvus*." On the reverse, in addition to the name, is the notation "♀, Panama McL. & G." As Lawrence (Ann. Lyc. Nat. Hist. New York, 1862, p. 316) states relative to the collections made by McLeannan with the aid of John R. Galbraith that all "are from the Atlantic slope" with the exception of six listed by number which came from the other side, this establishes the general area. From this the citation of the type locality as "Lion Hill" by Ridgway (U.S. Nat. Mus., Bull. 50, pt. 4, 1907, p. 409) may be accepted as valid.

TYRANNULUS ELATUS PANAMENSIS Thayer and Bangs:
Yellow-crowned Tyrannulet, Moscareta Coronilla Dorada

Tyrannulus reguloides panamensis Thayer and Bangs, Bull. Mus. Comp. Zool., vol. 46, January 1906, p. 218. (Savanna of Panamá, near Caledonia, Panama City, Panamá.)

Small; under surface yellowish; above olive-green; crown dull black, with partly concealed yellow central stripe.

Description.—Adult male, crown dull black, becoming slate on forehead; a broad yellow stripe in center (in some, slightly orange); back, scapulars, and rump olive-green (grayish olive-green in some); upper tail coverts faintly brighter; wings dusky; middle and greater coverts edged with white, forming two narrow bars; secondaries edged narrowly with white; inner primaries edged with dull olive-green; tail dull grayish brown, in some tipped narrowly with olive to olive-yellow; anterior lores grayish white, changing to dusky in front of eye, and then continued over the eye as a superciliary line to above the auricular region, changing posteriorly to grayish white; side of head grayish, with indistinct shaft lines of white; chin and upper throat grayish white, changing on foreneck to gray, tinged with yellow; breast and sides olive-yellow becoming light yellow on lower breast, abdomen, flanks, and under tail coverts; axillars and under wing coverts pale yellow, the latter area dusky toward the carpal edge.

Adult female, similar, but with crown stripe narrower.

Juvenile, crown dull black, without the crown stripe, this appearing early as a narrow line of white and orange-yellow; rest of upper surface dull dusky-brown edged with grayish white; wing coverts dull buff, blackish to dusky centrally, tipped with dull buffy brown; breast and foreneck in early stages similar to back, but changing early to adult colors; abdomen, flanks and under tail coverts pale, dull yellow.

A male taken at Mandinga, San Blas, January 22, 1957, had the iris dull Marguerite yellow; bill black; tarsus and toes dark neutral gray. In another, at Puerto Armuelles, Chiriquí, February 8, 1966, the iris was dull yellow; bill black; tarsus and toes dusky neutral gray; claws black. A female, at El Real, Darién, February 18, 1964, had the iris light brown; bill black; tarsus and toes dark bluish neutral gray; claws black.

Measurements.—Males (10 from Chiriquí, Veraguas, Los Santos, Province of Panamá, and Canal Zone), wing 50.5–53.7 (52.4), tail 38.7–45.1 (42.2), culmen from base 7.6–8.7 (8.2), tarsus 12.3–13.8 (12.7) mm.

Females (10 from Chiriquí, Canal Zone, Darién, and northwestern Colombia), wing 46.0–49.5 (47.4), tail 34.5–38.8 (37.5), culmen from base 7.0–8.9 (7.9), tarsus 11.3–13.3 (12.3) mm.

Resident. Locally common in the tropical lowlands, where suitable tree cover is found. On the Pacific slope from western Chiriquí (Puerto Armuelles, Divalá) east through the lowlands (David, San Félix, Las Lajas) to Veraguas (Puerto Vidal, Soná), Los Santos (Tonosí), Coclé (El Valle), the Province of Panamá, and the Canal Zone to Darién (El Real). On the Caribbean slope from northern Coclé (El Uracillo) and western Colón (Río Indio) through the Canal Zone to eastern Colón and western San Blas (Mandinga).

These tiny birds are found singly or in pairs, often in the border trees along the side of cultivated lands, even where this shelter may be comparatively low and open. Scrub growth scattered through pastures may be attractive to them; they may come into trees beside open roadways, into the shade of a suburban garden, or along the edge of larger stands of forest. Their haunt may vary from rather open growth to heavier, denser, more humid stands. They often rest motionless and then, because of their tiny size, may not be seen through the cover of leaves around them even though this may be fairly open. I have heard their calls on a few occasions in scattered shade trees in urban areas, as around army quarters, or once even from spreading branches over a parking lot adjacent to a Panama City restaurant.

Their main coloration is plain and inconspicuous, and only occasionally may one display the brightly colored crest. Rarely I have seen the male of a pair dart in twisting flight through the trees, swinging in a circle without pause, with much show of color, apparently a mating display. It was not until I had identified the quiet, whistled call, *pray teer*, that I realized that in many localities they were fairly common.

While they capture small insects regularly, small berries, including those of mistletoes, are a standard food supply. I have collected birds in breeding condition in early January. On Barro Colorado Island, Dr. Eisenmann found adults feeding young out of the nest on July 3 and 30, 1950. And on August 22, 1954, found an occupied nest in the edge of the laboratory clearing in a Cecropia tree, about 10 meters above the ground. He described it as a shallow cup, placed where six leaf stems sprouted from a twig, and made of fine twigs and hairlike filaments, some hanging below the narrow branch on which the nest was saddled.

In Panamá, there is no certain record at present for this bird in

the Province of Bocas del Toro. Nor has this species been reported in Costa Rica, though it seems probable that it will be found there in the lowlands of the Pacific slope, as I saw it west of Puerto Armuelles only a short distance from the international boundary.

Two eggs are reported to constitute a set. Hellebrekers (Zool. Med. Ryksm. Nat. Hist. Leiden, vol. 24, 1942, p. 259) records those of the nominate race, taken in Surinam, as broadly oval, glossless, cream colored, and unmarked "with measurements of 16.4×12.1 and 15.1×11.9 mm."

The species ranges widely from Panamá through northern South America to the Guianas and northern Brazil. While Zimmer (Amer. Mus. Nov., no. 1126, 1941, pp. 2-3) in examination of a large series was unable to distinguish subspecies, from other studies it appears that two races may be recognized.

Tyrannulus elatus elatus (Latham).

Sylvia clata Latham, Ind. Orn., vol. 2, 1790, p. 549. (Cayenne.)

Back darker, more olive; breast and sides averaging darker; abdomen somewhat duller yellow.

From southeastern Colombia and southern and eastern Venezuela to the Guianas and Brazil.

Tyrannulus elatus panamensis Thayer and Bangs.

See reference above.

Back lighter, more greenish olive; breast and sides averaging paler; abdomen somewhat brighter yellow.

Panamá, through Colombia, except the southeast, to western Ecuador.

ACROCHORDOPUS ZELEDONI ZELEDONI (Lawrence): White-fronted Tyrannulet, Moscareta Frentiblanca

Pogonotriccus ? zeledoni Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 9, March 1869, p. 144. (Dota, Costa Rica.)

Small; crown gray; back dull olive-green; front line of forehead prominently white; lower half of bill light colored.

Description.—Length 107-115 mm; lower end of tarsus distinctly roughened. Adult (sexes alike), crown and hindneck slate color; back, scapulars, rump, and upper tail coverts light olive-green; wings dull black; middle and greater coverts tipped and edged with dull olive-yellow; secondaries and inner primaries edged with pale yellowish white; tail hair brown, tipped lightly, and the outer feathers edged

more prominently, with pale dull olive-green; a dusky spot in front of eye; forehead behind nostrils white, this continued on upper margin of lores and over eye as a narrow superciliary line; side of head dull white, mixed more or less with dusky; chin and throat dull white, lined faintly with dull gray; lower foreneck, upper breast, and sides dull olive, with indistinct edgings of yellow to yellowish white; abdomen, flanks, and under tail coverts yellow; under wing coverts dusky on carpal area; edge of wing and under wing coverts pale yellow; inner webs of wing feathers margined with pale yellowish white.

A male, taken at Santa Clara, Chiriquí, February 19, 1955, had the iris light reddish brown; maxilla fuscous; mandible flesh color; tarsus and toes fuscous; inside of mouth dull orange.

Measurements.—Males (6 from Costa Rica and Chiriquí), wing 60.1–63.0 (61.4), tail 43.6–47.1 (45.2), culmen from base 9.4–10.5 (9.8, average of 4), tarsus 14.1–15.4 (14.8) mm.

Females (3 from Chiriquí), wing 59.5–61.0 (60.4), tail 44.5–45.5 (45.1), culmen from base 9.0–9.2 (9.1), tarsus 14.2–14.7 (14.5) mm.

Resident. Rare; known from a few records in forested areas in the upper Tropical and lower Subtropical zones in Chiriquí.

The White-fronted Tyrannulet was recorded first in Panamá by Bangs (Proc. New England Zoöl. Club, vol. 3, 1902, p. 35) from three females collected by W. W. Brown, Jr., near Boquete, on January 20 and 23, and March 10, 1901. Mönniche secured a male, August 1, 1932, at about 1600 meters elevation at Lérída, above Boquete. In Costa Rica, Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 272) recorded six localities in which it has been found, mainly on the Caribbean slope, and in the Dota mountains.

On the three occasions when I saw this bird in life, I found single individuals moving quietly through the upper branches of undergrowth at the borders of forest. In movement, appearance, slightly tilting flight, and method of feeding, they suggest the Paltry Tyrannulet, but are slightly larger, yellower underneath, and with the lower half of the bill light colored (instead of black). All three were males. March 26, 1954, one was in open shrubbery at about 1200 meters along the Río Colorado, a tributary of the Río Chiriquí Viejo, 10 kilometers west of El Volcán. Another, 20 kilometers farther west, near Santa Clara, on February 19, 1955, was in the tops of the undergrowth along a trail through a coffee plantation, at 1300 meters. The third, taken by an assistant, was collected February 25, 1960, at 1800 meters on Cerro Pando. Their slightly larger

size and somewhat brighter color drew attention, but only in the hand were they recognized, when I noted the roughened lower end of the tarsus. In this, the slightly smaller scutes in this area are smaller than those higher on this part of the leg, with slightly elevated, rounded papillae, and the lower margin somewhat elevated and thickened. During preparation of one, I noted that the feather tract on the center of the back was elongated elliptical in outline, with a narrow apertion down the center.

The nominate race is found in small numbers in Costa Rica and Chiriquí, with subspecies described from Colombia and Venezuela. While currently the group is assigned to the Tyrannidae, earlier it was placed in the Cotingidae. Lawrence, in his original description, named the species "in compliment to Mr. J. Zeledon, an intelligent and promising young naturalist and collector."

The nest and eggs are not known. Meise (in Schönwetter, Handb. Ool., pt. 15, 1968, p. 87) cites a record of von Ihering that describes an egg of the somewhat larger *A. burmeisteri*, found from south-eastern Brazil to Paraguay, Bolivia, and northern Argentina, as yellowish with a wreath of dark brown and measurements of 16.0 × 12.5 mm.

MICROTRICCUS BRUNNEICAPILLUS BRUNNEICAPILLUS
(Lawrence): Yellow-bellied Tyrannulet, Moscareta Cejiblanca

FIGURE 47

Tyrannulus brunneicapillus Lawrence, Ibis, vol. 4, January 1862, p. 12. (Lion Hill, Atlantic slope, Canal Zone, Panamá.)

Very small; with short tail, plump body, and yellow under surface; a conspicuous white line over eye.

Description.—Length 72–85 mm. Adult (sexes alike), crown somewhat sooty brown; hindneck, auricular region, back, scapulars, lesser wing coverts, rump, and upper tail coverts rather dull olive-green; primaries and secondaries dusky; greater wing coverts, primaries and secondaries edged with olive-green, this varying to somewhat paler yellowish olive-green on the flight-feathers; tail dull brown, edged faintly with greenish olive; forehead white, extending back above eye as a superciliary stripe; lores dusky; under surface, including under tail coverts, canary yellow, with foreneck, breast, and sides faintly tinged and lined with olive-green; axillars and under wing coverts pale yellow; inner webs of wing feathers edged with yellowish white.

A female, taken March 4, 1964, at the old Tacarcuna village site

on the base of Cerro Malí, Darién, had the iris warm brown; maxilla black; mandible fuscous-black, changing to light grayish brown on the central line of the gonys; tarsus, toes, and claws dark neutral gray.

Measurements.—Males (9 from Canal Zone, eastern Province of Panamá, Darién, and Costa Rica), wing 42.2–47.5 (44.8), tail 23.9–27.4 (25.4), culmen from base 9.0–9.5 (9.2), tarsus 13.6–15.7 (14.8) mm.

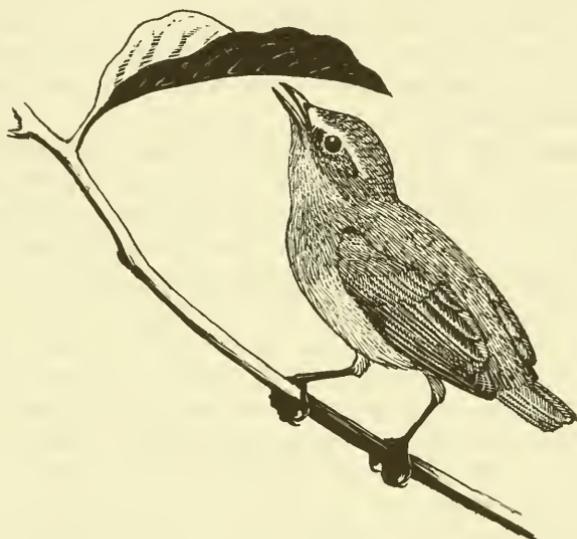


FIGURE 47.—Yellow-bellied tyrannulet, moscareta cejiblanca, *Microtriccus brunneicapillus brunneicapillus*.

Females (4 from Darién and Costa Rica), wing 41.6–42.9 (42.1), tail 22.2–22.9 (22.4), culmen from base 8.3–9.2 (8.8), tarsus 12.4–13.6 (12.9) mm.

Resident. Found locally in small numbers in forested areas; on the Pacific slope from Cerro Campana, western sector of Panamá, southern Canal Zone, and through the eastern sector of the Province of Panamá, eastward to Darién; on the Caribbean side, recorded at Cocoplum, Bocas del Toro; in the lower Chagres Valley in the Canal Zone, and in eastern San Blas (Permé, Puerto Obaldía).

R. S. Ridgely recorded it in Cerro Campana July 3, 1968. It was named from Lion Hill, now submerged in Gatun Lake, from specimens collected by McLeannan, and was found there also and at Gatun

by E. A. Goldman in 1911. On Barro Colorado Island it is seen regularly, and also on the Achote and Pipeline roads. Eisenmann has seen it near Tocumen and on Cerro Azul. I have recorded it at La Jagua, and near Chimán in the eastern Province of Panamá. There are various reports of it in Darién in the Tuirá Valley from the Río Tuquesa and the Río Chucunaque, Santa Fé, El Real, and the base of Cerro Malí.

They range, alone or in company with other small birds, from rather low to high in the treecrown, in their active movement through the leaves and small twigs suggesting a warbler or a vireo. Among its companions, the short tail, plump body, and the black, rather heavy, bill attract the eye. Their food, so far as I have recorded it, has been small insects.

The characteristic call is described by Eisenmann as a "high-pitched repetition of whistled notes, usually five, going rapidly down the scale, the whole phrase uttered in little more than a second." This may be heard when the tiny bird is hidden among the leaves.

Dr. Eisenmann and Major Chapelle, on August 15, 1954, on the slopes of Cerro Azul, found a pair "building a nest in semi-open woodland, about 12 meters above the ground in a tree of moderate size. The incomplete nest, saddled in a small fork, partly shaded by leaves, was a somewhat untidy flattened saucer of fine brownish twigs (possibly leaf skeletons) mixed with bark shreds. One of the pair, presumed to be the female, brought bits of bark which she shaped with her body as she sat in the nest. The other bird, presumed to be the male, came to perch a meter away." I have seen no description of the eggs.

Zimmer (Amer. Mus. Nov., no. 1126, 1941, p. 3) in a short paragraph, was "doubtful of the validity of the genus *Microtriccus* which differs from *Ornithion* only in its shorter tail and certain details of coloration." He then listed *Ornithion subflavum* as its single species. These changes were suggested without further discussion. The suggestion, which has been accepted and followed in some recent publications, needs consideration. On careful comparison, it appears that other differences separate the two groups generically, as in *Ornithion* the distal outline of the primaries, especially at the outer end, is more rounded, with the outermost relatively shorter, the primaries only slightly longer than the longest secondaries, and these wing feathers narrower in outline. The tail in *Ornithion* not only is proportionately longer, being about four-fifths as long as the wing, but also is composed of feathers that are actually decidedly narrower. The bird as

a whole appears longer in body. The tarsus is about equal in length in the two groups, but the toes in *Ornithion* are smaller. These structural differences between the two do not appear to support the suggested union.

Differences in coloration between the two populations found in *Microtriccus* are not great but in detail show no overlap. Those from México south through Nicaragua, continuing beyond on the Pacific slope of Costa Rica, have the crown slate color and the white superciliary longer. Those from the Caribbean slope of Costa Rica south through Panamá to Colombia and Venezuela have the crown rather sooty brown and the superciliary less in length. The difference is slight but appears specific as it is definite without evidence of any intergradation. It is interesting to note a typical specimen of the northern *semiflavus* from San Juan del Norte, on the Caribbean coast of southeastern Nicaragua, especially since in Costa Rica immediately to the south the nominate form of *brunneicapillus* is found. The northern *semiflavus* in Costa Rica is confined to the Pacific drainage. Dr. Paul Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, pp. 272–273) in his studies in Costa Rica noted slight differences in calls between the two. His conclusion that the two merit treatment as separate species on present information seems justified.

Microtriccus b. brunneicapillus beyond Panamá continues in northwestern Colombia, where it is recorded at present from central Chocó (Nuquí) on the Pacific Coast east to the middle Magdalena Valley. To the eastward in the Santa Marta region and extending into western Venezuela the bird becomes paler yellow on the under surface and lighter green above, this marking the race *dilutus* described by Todd (Proc. Biol. Soc. Washington, 1913, p. 171).

**LEPTOPOGON AMAUROCEPHALUS Tschudi: Sepia-capped
Flycatcher, Moscareta Cabeciparda**

Leptopogon amaurocephalus Tschudi, Cabanis Mss., Faun. Peruana, Aves, 1846, p. 162. (São Paulo, Brazil.)

Medium size; crown dull grayish brown; back olive-green, with light buffy brown bars on the wings; side of head dull grayish brown.

Description.—Length 120–130 mm. Adult (sexes alike), crown sepia brown, paler on the hindneck; back, scapulars, and rump olive-green; upper tail coverts russet-brown; tail dull brown edged with pale brown; wings dusky; lesser wing coverts olive; middle and greater coverts tipped with clay color to ochraceous-buff; primaries narrowly, and secondaries broadly, edged with pale yellowish olive;

lores dull yellowish olive, mixed with dusky; side of head anteriorly light olive, shading to dusky posteriorly, with paler shaft lines; chin and throat grayish olive, indistinctly lined with dull white; breast and sides more olive; rest of under surface yellowish white to yellow; under wing coverts yellowish to pale yellow; inner margins of wing feathers pale buff.

The species ranges from southern México through Central America, and South America from Perú to Guyana south to northern Argentina. Two races are found in Panamá, one of them restricted to Isla Coiba.

LEPTOPOGON AMAUROCEPHALUS FAUSTUS Bangs

Leptopogon pileatus faustus Bangs, Auk, vol. 24, no. 3, July 1907, p. 300. (Boruca, Puntarenas, Costa Rica.)

Characters.—Brighter colored; crown browner; back brighter olive-green; foreneck more olive-green; abdomen light yellow.

Male and female, from Pedasí, Los Santos, March 11, 1957, had the iris light brownish yellow; maxilla and anterior half of mandible dusky neutral gray; base of mandible light brownish white; tarsus fuscous; toes neutral gray; claws dark neutral gray.

Measurements.—Males (10 from Los Santos, Canal Zone, and northwestern Colombia), wing 60.4–65.9 (64.0), tail 50.1–55.5 (53.1), culmen from base 12.5–14.5 (13.9), tarsus 15.4–18.2 (16.4) mm.

Females (8 from Los Santos and northwestern Colombia), wing 59.3–61.8 (60.6), tail 46.7–50.5 (49.1), culmen from base 13.4–14.4 (13.9), tarsus 14.5–16.4 (15.2) mm.

Resident. Found irregularly in small numbers in the Tropical Zone, on the Pacific slope in Chiriquí (recorded at Bugaba and San Félix), Veraguas (Santa Fé, El Villano, Cerro Montuosa), Los Santos (Pedasí), southern Canal Zone (Chiva Chiva, J. R. Karr), and eastern sector of the Province of Panamá (savanna east of Panama City); on the Caribbean side, recorded from Calovévora, northern Veraguas, and the northern Canal Zone, along the railroad at the old San Pablo Station (near Frijoles).

Records of two females in the Rothschild collection in the American Museum, taken at Bugaba, western Chiriquí, October 4 and November 24, 1903, by H. J. Watson, seen not to have been reported previously, so that when Mrs. M. E. McLellan Davidson collected two males and two females near San Félix, eastern Chiriquí, from November 28 to December 10, 1931, she recorded them as the first known from that Province. Other specimens in the American

Museum, secured in Veraguas by Benson, are male and female taken at Santa Fé, March 25 and 28, 1925, El Villano, near Santiago, August 19, 1924, and Cerro Montuosa (at 650 meters) August 6, 1925. J. R. Karr netted and banded one at Chiva Chiva, Canal Zone (December 14, 1968). The most eastern specimen on record at present is a female in the Rothschild collection in New York, taken February 23, 1899, by E. André, on the savanna east of Panama City.

In the British Museum (Natural History) there is one (sex marked ♀, but with wing 63.5, probably a male) collected by Arcé from Calovévora, Veraguas. Griscom (Bull. Mus. Comp. Zool., vol. 78, 1935, p. 354) cites two records from "Veraguas" but I have found only this one. Another (sex not marked) was collected March 25, 1863, by Salvin near the old San Pablo Station between Gamboa and Frijoles (now submerged in Gatun Lake). Lawrence listed a male collected by McLeannan and Galbraith on the Atlantic slope near the railroad, without citing the actual locality. The U.S. National Museum collections include a male taken by R. R. Benson at Farfan, Canal Zone, January 27, 1931.

On March 11, 13, and 16, 1957, I found this species in stands of open forest along the lower Río Caldera, below Pedasí, Los Santos. The area was one with low undergrowth beneath trees of moderate height. Clumps of the spiny corozo palm stood among rather open shrubs that often were bound with vines. The flycatchers perched quietly and rather stolidly a few meters above the ground, coming near when attracted by squeaking. In their quiet mannerism they suggested Wood Pewees, often resting motionless, only turning the head slightly to look about. On one occasion when swarms of small, dull-colored butterflies hovered over the dead leaves on the ground I found the stomachs of two of these flycatchers crammed with fragments of butterfly remains.

Moore (Condor, vol. 46, 1944, pp. 6-8) described the nest of *Leptopogon a. pileatus* (the northern race) in Veracruz, as a round ball of "green and dried moss, woven around a fragile framework of very fine roots, plant stems and grasses" with a small entrance hole in one side. The three nests seen were suspended from hanging roots, two of them in dark shadows beneath large rocks. On May 1, 1942, one sheltered two small young. A third nest, beneath a huge log over a stream, held three heavily incubated eggs which "were immaculately white with a slight gloss." One was broken. The other two measured 18.5 × 14.8 and 19.8 × 14.5 mm.

While there is no report for this bird to date from eastern Panamá

in Darién or San Blas, it is probable that it may occur there, since a series in the U.S. National Museum from northwestern Colombia in the Departments of Antioquia and western Bolívar are like the bird of Central Panamá. Farther east in central and eastern Bolívar, east through Magdalena to northwestern Venezuela where they become faintly paler and slightly more brightly colored, they are referred to as the race *diversus* described by Todd.

LEPTOPOGON AMAUROCEPHALUS IDIUS Wetmore

Leptopogon amaurocephalus idius Wetmore, Smithsonian Misc. Coll., vol. 134, no. 9, July 8, 1957. p. 71. (Isla Coiba, Panamá.)

Characters.—Generally similar to *L.a. faustus*, but decidedly grayer throughout; much paler yellow on lower breast and abdomen; more grayish green above; wing bars paler, less rufescent; under wing coverts paler, less yellow.

An adult male, collected January 31, 1956, 4 miles northwest of La Central, Isla Coiba, had the iris light brownish yellow; maxilla and tip of mandible dusky neutral gray; base of mandible dull Marguerite yellow; tarsus and toes neutral gray; claws fuscous.

Measurements.—Males (2 specimens), wing 64.3, 65.3, tail 57.4, 57.5, culmen from base 13.7, 13.8, tarsus 14.4, 14.5 mm. (The first measurement in each case is that of the type.)

Females, none available for measurement.

Resident. Rather rare; restricted to Isla Coiba, off the Pacific coast of western Panamá.

During daily field work on the island January 6 to February 6, 1956, I saw this bird on two occasions. As the island was heavily forested, a bird of this type that is not common may be encountered more or less by chance. On the first occasion, on January 31, two moved rather slowly through the middle branches in gallery forest at an elevation of about 150 meters. Apparently this was a pair. The one that I collected, which proved to be a male in breeding condition, at intervals trembled its partly opened wings while it uttered a low call, *prce-ee-ee-ee*. On February 3, another adult male in breeding condition was taken in heavy forest in this same area. In the subdued light under the heavy stand of trees it moved quietly through the lower branches at a level slightly above the undergrowth. Dr. Eisenmann notes that he and E. S. Morton captured one in a mist net on October 9, 1965, "in heavily cutover, rather open woodland."

The small size of the tarsus in the two specimens taken was noted during my original studies. While an occasional specimen of *L. a.*

faustus agrees in this, the average in the latter race is about 2 millimeters longer.

**LEPTOPOGON SUPERCILIARIS Tschudi: Slaty-capped
Flycatcher, Moscareta Cabecipizarrosa**

Leptopogon superciliaris Tschudi, Arch. Naturg., vol. 10, band 1, 1844, p. 275. (Perú.)

Medium size; crown slate color, back olive-green; a large black spot behind the eye.

Description.—Length 125–135 mm. Adult (sexes alike), crown dark gray to slate color, the feathers darker centrally; changing on hindneck, back, scapulars, lesser wing coverts, and rump to olive-green; upper tail coverts brownish; wings (except lesser coverts) dusky; middle and greater coverts edged with pale buff to pale cinnamon-buff; primaries edged narrowly with olive-yellow; secondaries bordered more broadly with yellow to yellowish white; lores and space above nostril mixed grayish white and dusky; a narrow border of white on edge of eyelids around the eye; posterior area of side of head black; a few whitish spots in an indistinct line at posterior angle of eye; chin and throat pale olive-gray, lined indistinctly with white, changing to olive-gray on upper breast and sides; abdomen and under tail coverts pale yellow; tibiae dull olive-green; axillars and under wing coverts yellowish white, yellower on carpal edge of wing; inner margins of wing feathers dull white to pale buff.

As a species these flycatchers range from Costa Rica south through northern South America to Perú, Bolivia, and Brazil. In Panamá they are inhabitants of highland forests, with those of the west, in Chiriquí and Veraguas, differing slightly from those of Darién, so that two geographic races are recognized.

LEPTOPOGON SUPERCILIARIS HELLMAYRI Griscom

Leptopogon superciliaris hellmayri Griscom, Bull. Mus. Comp. Zool., vol. 69, no. 8, April 1929, p. 175. (Carrillo, Cartago, Costa Rica.)

Characters.—Slightly darker on upper surface, and on foreneck and breast; abdomen somewhat deeper yellow.

Measurements.—Males (7 from Costa Rica, Chiriquí, and Veraguas), wing 64.3–69.3 (67.0), tail 57.5–65.5 (60.5), culmen from base 13.4–14.6 (14.0, average of 6), tarsus 14.7–15.6 (15.2) mm.

Females (10 from Costa Rica, Chiriquí, and Veraguas), wing 59.0–63.0 (60.9), tail 48.5–55.5 (51.5), culmen from base 12.9–14.8 (13.7), tarsus 13.9–15.0 (14.5) mm.

Resident. Uncommon, in the upper Tropical and Subtropical Zone forests of Chiriquí and Veraguas.

The first records were specimens sent by Arcé to Salvin (Proc. Zool. Soc. London, 1870, p. 197), taken at Calovévora, Veraguas, in 1869, and near Bugaba, western Chiriquí in 1870. The next report is that of Mrs. Davidson (Proc. California Acad. Sci., 1938, p. 259), who collected a male at Barriles (1350 meters elevation), western Chiriquí, on January 15, 1931.

Four in the National Museum were secured by collectors for Dr. Frank Hartman near El Volcán, three females, March 8 and 16, 1951, and February 15, 1958, and a male at Santa Clara, farther west, on March 2, 1953. On Cerro Pando I collected a female March 1, 1954, a male in breeding stage February 12, 1960, and another female on February 22, 1960. These few records from field work here from 1951 to 1965 indicate the scarcity of the species. The birds were found singly moving quietly through the higher undergrowth in the forest, at elevations of 1280 to 1675 meters.

In observations in Costa Rica, Skutch (Publ. Nuttall Orn. Club, no. 7, 1967, pp. 99–102) found these birds in the mountain forests, sometimes alone, sometimes accompanying moving bands of other forest birds. With these it moved quickly, usually 6 to 10 meters above the ground. The usual calls of two syllables he represented as *peet-yer*, or a sharper *hit-chú*. The only nest that he found was a rounded ball made of "fibrous rootlets with a small admixture of light-colored fibers." The egg chamber was lined with finer, softer materials, and the rounded entrance was protected by a projection above. The nest, suspended from a projection beneath a large tree trunk that had fallen across a small mountain stream, hung free a meter or so above the boulders in the water. It held a small nestling with long tufts of gray down adhering to the tips of growing pin-feathers.

On the island of Trinidad, Belcher and Smooker (Ibis, 1937, pp. 248–249) found nests of a related subspecies now known as *Leptopogon s. pariae* (Phelps and Phelps, Jr.), suspended in dark places beneath boulders or in cavities beneath high banks. Two of the sets of eggs that they collected, now in the British Museum (Natural History), were presented by C. K. Belcher. In both, the eggs, sub-elliptical in form, are plain white without gloss. In one, from near Morne Bleu, collected February 28, 1932, the nest was described as a "ball of moss and fibrous materials, lined with silky vegetable down and a few feathers, 5½ inches [140 mm] in diameter with a side

entrance below the top, suspended by a rootlet in a slight indentation in a clay bank along a road." The two eggs measure 19.0×13.7 , and 19.3×14.0 mm. In the second, collected at the Turure River, the nest was "in a dark indentation in dark shade along a stream in forest." The two eggs measure 20.1×14.6 , and 19.3×14.3 mm.

LEPTOPOGON SUPERCILIARIS TRANSANDINUS

Berlepsch and Taczanowski

Leptopogon superciliaris transandinus Berlepsch and Taczanowski, Proc. Zool. Soc. London, 1883 (April 1884), p. 553. (Chimbo, western Ecuador.)

Leptopogon superciliaris troglodytes Griscom, Bull. Mus. Comp. Zool., vol. 69, April 1929, p. 174. (Cana, Darién.)

Characters.—Foreneck, breast, and sides faintly paler, more greenish gray; back and crown in series averaging very slightly paler.

A male, taken March 10, 1964, at the old Tacarcuna village site on the base of Cerro Malí, Darién, had the iris Verona brown; bill black, gape honey yellow; tarsus and toes neutral gray; claws black. A female, collected at the same time, had the iris dark mouse brown, but was like the male otherwise. A second male, on March 14, differed from the one of March 10 in having the gape dull yellowish white; tarsus, toes, and claws black.

Measurements.—Males (10 from Darién), wing 61.7–68.0 (64.8), tail 52.4–58.0 (56.2), culmen from base 13.6–15.3 (14.3), tarsus 14.4–15.7 (14.9) mm.

Females (8 from Darién), wing 57.4–61.4 (59.5), tail 47.5–59.2 (50.5), culmen from base 12.5–15.3 (13.9, average of 7), tarsus 13.9–14.7 (14.3) mm.

Resident. Recorded locally in the upper Tropical and Subtropical Zone forests on Cerro Pirre, and on the base of Cerro Malí, Darién.

The first records of this species on Cerro Pirre were made by E. A. Goldman, who collected a male and three females from 600 to 1375 meters above Cana, from March 9 to June 10, 1912. Benson took six males and two females there in 1928. Others have been reported here more recently by Dr. Galindo of the Gorgas Memorial Laboratory. In the Tacarcuna area this flycatcher was found by Anthony and Richardson during their explorations in 1915, mainly at around 600 meters elevation. In my own work there in March 1964, I found them in small number, always in the forests, where they ranged rather high, mainly in and immediately below the tree crown. They descended to lower levels, however, as one was taken in a mist net set on the ground.

Griscom recognized that the population of the Darién forests differed from that of the western mountains in Panamá and described them both as new. With longer series from Colombia now available it is appropriate to agree with the summary by Zimmer (Amer. Mus. Nov., no. 1126, June 26, 1941, pp. 4-5), where the birds of eastern Panamá and the western Andes south in Colombia to western Ecuador are recognized as the race *transandinus*, described originally from Ecuador.

MIONECTES OLIVACEUS Lawrence: Olive-striped Flycatcher,
Moscareta Rayada

Small; olive-green above; two lightly marked yellowish olive wing bars; under surface light olive, streaked with olive-yellow; abdomen pale yellow.

Description.—Length 123-146 mm. Ninth primary narrowed for distal half, markedly so in adult male, to lesser degree in females and immature males in first season. Adult (male and female similar in color), above greenish olive with crown slightly darker; wing grayish brown, edged with olive-green; middle and greater coverts edged lightly with olive-buff, forming two slightly marked wing bars; an indistinct, short post-ocular streak of dull white; side of head otherwise greenish olive, with faintly indicated paler shaft lines; foreneck, breast, and sides light olive with shaft lines of pale olive that varies from whitish to yellowish on breast and side; abdomen and under tail coverts pale yellow, the latter with faint shaft lines of olive; tibia olive; carpal edge, axillars, and under wing coverts pale yellow, with the under wing coverts marked lightly with pale olive.

Juvenile, faintly duller on the crown; with olive streakings of under surface less extensive on posterior half of sides, and reduced to indefinite spots on throat and upper foreneck.

The species ranges widely from Costa Rica through Panamá, and in northern South America from Colombia and Venezuela to Perú.

MIONECTES OLIVACEUS OLIVACEUS Lawrence

Mionectes olivaceus Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 9, April 1868, p. 111. (Barranca, Costa Rica.)

Characters.—Slightly smaller, with smaller bill; somewhat more greenish, less olive above; darker markings of under surface somewhat paler; slightly deeper yellow on lower breast and abdomen.

Measurements.—Males (5 from Chiriquí and Costa Rica), wing

64.3–67.9 (66.1), tail 46.8–50.3 (48.8), culmen from base 13.5–15.2 (14.3, average of 4), tarsus 16.2–17.9 (17.0) mm.

Females (9 from Chiriquí, Bocas del Toro, and Costa Rica), wing 60.0–64.9 (62.0), tail 41.7–46.5 (43.7), culmen from base 13.8–15.0 (14.2, average of 8), tarsus 16.0–16.9 (16.4) mm.

Resident. Found locally in forested areas in the Tropical and Subtropical zones, to 1800 meters elevation in western Chiriquí, and western Bocas del Toro.

From available records the nominate form of this species has its principal distribution in Costa Rica, where Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 274) recorded it as common on both Caribbean and Pacific slopes though most abundant on the Caribbean side. In western Chiriquí it is recorded mainly on the slopes of the volcano, though not in abundance. The first report for Panamá is that of Salvin (Proc. Zool. Soc. London, 1870, p. 196) who listed one taken by Arcé. This specimen, now in the British Museum, is labeled "southern slope Volcan de Chiriqui, 1870." Bangs (Proc. New England Zool. Club, 1902, p. 351) listed seven collected by W. W. Brown, Jr., near Boquete in March and April 1901. The Mönniche collection from this same region included male and female (Blake, Fieldiana: Zool., vol. 36, 1958, p. 544). On Cerro Pando, beyond El Volcán, I collected one March 3, 1954, and assistants of Dr. Frank A. Hartman, three others in February and March 1956, and February 10, 1960. From March 2 to 30, 1967, near Nueva Suiza (below Cerro Punta) eight were banded and released by men working under the direction of Horace Loftin. G. V. N. Powell listed another there on December 21, 1968.

Near the Río Chiriquí Viejo I saw one eating small berries in a feeding tree. The few that I have observed in life moved quietly through the undergrowth in the forest.

The two specimens, a male and a "female," that Lawrence designated as his types, were both collected by J. Carmiol. The male, a bird with the ninth primary only slightly narrowed, was taken at Barranca February 26, 1866. According to Carriker (Ann. Carnegie Mus., vol. 6, 1910, p. 335) Carmiol's locality under this name was on the western slopes of Volcán de Poás. The female labeled "Dota" (Santa María de Dota) in the mountain area, about 60 kilometers southeast of San José, was collected January 20, 1864. While marked "♀" it is definitely larger than that sex, as with wing of 67.9 mm it agrees fully in this dimension with males. The bird from Barranca, an undoubted male, is here designated as the holotype.

MIONECTES OLIVACEUS HEDERACEUS Bangs

Mionectes olivaceus hederaceus Bangs, Proc. Biol. Soc. Washington, vol. 23, May 4, 1910, p. 73. (Pavas, Valle, Colombia.)

Characters.—Slightly larger, with somewhat longer bill; darker, more olive-green above; streaks on lower surface somewhat darker; lower breast and abdomen slightly paler yellow.

Measurements.—Males (10 from Coclé, Province of Panamá, Canal Zone, and Darién), wing 67.2–71.7 (69.6), tail 46.9–53.0 (50.7), culmen from base 15.5–17.5 (16.3), tarsus 16.5–17.5 (16.9) mm.

Females (10 from Coclé, Province of Panamá, and Darién), wing 60.4–65.3 (62.9), tail 45.2–49.0 (46.4), culmen from base 14.2–16.1 (15.1), tarsus 15.5–16.5 (16.2) mm.

An adult male, taken on the Río Guabal, northern Coclé, February 28, 1962, had the iris brown; bill black, except mandibular rami which were warm brown, and the base of the gonys which was grayish white; tarsus and toes warm brown; claws grayish brown; inner surface of bill light blue; inside of mouth, tongue, and fauces black. Another male, taken on the Río Pequení back of Madden Lake, March 6, 1961, had the entire bill black.

An adult female, collected with first male, on the Río Guabal, had the mandibular rami grayish blue, the base of the gonys dull brown, and the inside of the mouth as in the male. In another, at the base of Cerro Chucantí, eastern Province of Panamá, March 6, 1950, the iris was brown; bill dusky neutral gray, becoming fuscous at gape; tarsus and toes fuscous, inner surface of maxilla, mandible, and tongue light grayish blue.

Resident. Common, widely distributed in forested areas; on the Pacific slope recorded from the mountains of Veraguas (Chitra), western Province of Panamá (Cerro Campana), southern Canal Zone (Road K-6), Cerro Azul and the base of Cerro Chucantí, eastern Province of Panamá, east through Darién; to 1580 meters on Cerro Pirre, and 1450 meters on Cerro Tacarcuna; on the Caribbean slope from eastern Bocas del Toro and northern Veraguas (Río Calovévora), northern Coclé (head of Río Guabal), western sector of Colón (Río Indio), and the lower valley of the Río Chagres in the Canal Zone; probably throughout the Comarca de San Blas, but recorded only in the east from Permé and Armila to Puerto Obaldía, near the Colombian boundary.

They range in undergrowth, occasionally higher in the trees, frequently alone, less often in company with traveling parties of other

small birds. While not rare, they may be seen infrequently as they move quietly, usually behind cover of leaves. At several localities where one or two were captured daily in mist nets set in the forest, they were seen only casually in the undergrowth. In their rather rapid movement with the traveling flocks of other species, they were suggestive more of a titmouse or a vireo than of a flycatcher. Their usual actions were of quick searches among twigs and leaves. On several occasions I found them eating berries in feeding trees. Though I saw them at intervals over a period of years I did not record calls that I could attribute certainly to them. Rarely, in display, one was seen to thrust one wing, only slightly, if at all opened, straight up above the back, and as quickly pull it back to normal resting position. The display was like that of the related Ochre-bellied Flycatcher *Pipromorpha oleaginea*. In examination of birds in the hand, the dark inner lining of the mouth and tongue often attracted attention, with the suggestion that the color might be for use in some display.

There has been little reported on their breeding. Dr. Neal Smith recorded a nest which resembled that of *Pipromorpha*, February 7, 1967, near Gamboa. In the related race *Mionectes olivaceus venezuelensis*, in Trinidad, Belcher and Smooker (Ibis, 1937, pp. 246-247) recorded nests similar to those of *Pipromorpha*, but due apparently to the shy habit of the owners, had difficulty in certain identification. Smooker saw only two that he was satisfied belonged to *Mionectes*. Each held three eggs, plain white, without gloss or markings. The average size of the six was 18.8×14.3 mm. The nests were described as rounded balls, externally of moss, with an entrance in one side. They hung suspended "by aerial roots either from rocks over the water of streams or from horizontal earth-banks held together by matted roots." He described the nests that he certainly identified as without the long dangling tail usual in *Pipromorpha*.

Beyond Panamá the race *hederaceus* is recorded through western Colombia to western Ecuador.

**PIPROMORPHA OLEAGINEA (Lichtenstein): Ochre-bellied
Flycatcher, Moscareta Viente Ocroso**

Muscicapa oleaginea Lichtenstein, Verz. Doubl. Zool. Mus. Kön. Univ. Berlin, 1823, p. 55. (Bahia, Brazil.)

Small; foreneck gray to grayish; breast and abdomen buff; greenish olive above; in some races with middle and greater coverts and secondaries edged with cinnamon-buff.

This is a species of Tropical Zone woodlands that is widely dis-

tributed from México south through Central America and South America to Bolivia and southern Brazil.

In the Isthmus of Panamá, where it is common in the Tropical Zone, they show a definite cline in coloration and measurements from darker hue and somewhat larger size near the Costa Rican boundary to brighter color and lesser dimensions in the central lowlands, continuing in the latter form beyond the Colombian boundary.

Generic status of *Pipromorpha* as separate from *Mionectes* is subject to question. The species included differ definitely in plain color pattern from the heavily streaked forms characteristic of *Mionectes*, a distinction clearly evident even in the juvenile stages of the two groups. Other than this, the adult males of the streaked group differ in the much narrowed ninth primary, a sexual character, and one that becomes evident apparently only at the renewal of the primaries at the second molt. Nest construction in the two groups is similar, and in both the eggs are white with no markings. Both also appear to have a peculiar signal display in which one wing is thrust up for an instant at right angles to the back. Ames (Peabody Mus. Nat. Hist., Bull. 37, 1971, p. 163) reports that the form of the syrinx is the same in both. Close relationship is evident, with the *Mionectes* group probably the more ancient in view of their greater uniformity, and the definitely plastic *Pipromorpha* more recent. While Todd (Proc. Biol. Soc. Washington, vol. 34, 1921, p. 175), and Hellmayr (Cat. Birds Amer., pt. 5, 1927, p. 497) mention the resemblances, both continue to use the two generic names in their accounts of the species. Firm decision may come when the two are more fully known, especially as to life history and other details of anatomy.

PIPROMORPHA OLEAGINEA DYSCOLA (Bangs)

Mionectes assimilis dyscolus Bangs, Auk, vol. 18, no. 4, October 1901, p. 362. (Divalá, Chiriquí, Panamá.)

Generally similar to the race *assimilis*, but somewhat smaller; brighter olive-green above, with the crown concolor with the back; darker coloration of under surface more extensive on sides and flanks than in *assimilis*; buff of abdomen and under tail coverts somewhat darker.

A female, taken at Puerto Armuelles, Chiriquí, March 8, 1966, had the iris dark brown; cutting edge of basal half of mandible dull brown; rest of bill fuscous-black; tarsus, toes, and claws dull blackish slate. Gape dull honey yellow, inner surface of maxilla and mandible

(within the mouth) light bluish gray; tip of tongue dull yellowish brown, with the base and the rest of the inside mouth lining dull blackish slate.

Measurements.—Males (10 from the Pacific slope of Costa Rica and western Chiriquí), wing 60.0–64.7 (62.4), tail 46.3–52.3 (49.1), culmen from base 13.0–15.0 (13.9), tarsus 15.2–16.2 (15.8) mm.

Females (2 from Chiriquí), wing 55.4–56.7 (56.0), tail 42.0–43.8 (42.9), culmen from base 13.5–14.0 (13.7), tarsus 14.7–14.8 (14.7) mm.

Resident. Found locally in western Chiriquí from Puerto Armuellas, Santa Clara, and El Volcán to Divalá, Boquete, and Boquerón; to 1250 meters elevation around the base of Volcán Barú.

This darkest of the races ranges north in Costa Rica on the Pacific slope. Slud (Bull. Amer. Mus. Nat. Hist., vol. 128, 1964, p. 275) recorded it in that country in "small parties in the Pacific northwest."

The observations of Skutch (Pac. Coast Avif., no. 34, 1960, pp. 561–570) on this species in western Costa Rica refer to the present race. He speaks especially of one bird near El General that "plucked a small, dark object from the foliage and, holding it in the tip of his bill, placed it beneath his wing." This was an instance of anting, as on examination he found ants from a small nest crawling over the branches and leaves.

In the early dry season in March males took stations in the undergrowth and lower tree crown, where for a period of several months they called persistently *whip wit chip chip chip chip*, repeating this steadily through the day. At the same time they display by flitting the wings, one at a time, raising them above the back and then folding them. Females are attracted, and after mating, build a nest, deposit the eggs, incubate, and care for the young without assistance from the male. The eggs, usually three, less often two, are white without markings. The average size in 10 was 20.2×14.3 mm. The young at hatching had a body covering of "sparse but fairly long gray natal down."

PIPROMORPHA OLEAGINEA ASSIMILIS (Sclater)

Mionectes assimilis P. L. Sclater, Proc. Zool. Soc. London, pt. 27, May 1859, p. 46. (Córdoba, Veracruz, México.)

Generally similar to *P. o. dyscola*, but larger; above darker olive-green; crown averaging darker, more dusky, than the back.

Measurements.—Males (10 from México, Guatemala, Nicaragua, and eastern Costa Rica), wing 66.1–72.5 (68.6), tail 46.9–55.9 (52.7), culmen from base 13.3–15.7 (14.4), tarsus 16.0–17.9 (16.8) mm.

Females (10 from Guatemala, Nicaragua, eastern Costa Rica, and Bocas del Toro), wing 58.0–61.5 (59.5), tail 42.0–46.7 (44.1), culmen from base 12.6–14.5 (13.7), tarsus 14.3–16.8 (15.2) mm.

Resident. Found locally in small number in western Bocas del Toro (Changuinola to Guabo).

This race was first reported from Panamá by Griscom (Amer. Mus. Nov., no. 293, January 12, 1928, p.1) from specimens taken by Benson in 1927 at Almirante. From April 7, 1927, to October 18, 1928, Hasso von Wedel collected four males and a female at Changuinola, Almirante, and Guabo. In 1958 I secured three females near Almirante. The first on January 20, was taken in rather dense second growth on a steep hill slope above Water Valley. On January 29 I found another in the swampy woodlands at Pondsock Point, and on February 10 the third in the woodland along Quebrada Nigua. From the records indicated it is probable that the birds range from the eastern shores of the Laguna de Chiriquí west to the Costa Rican boundary, possibly farther east in eastern Bocas del Toro.

Beyond Panamá this race ranges through the Caribbean slope of Costa Rica, and beyond through Central America to eastern México. In Costa Rica, Slud recorded the display when "it may continually flick a single wing."

PIPROMORPHA OLEAGINEA LUTESCENS Griscom

Pipromorpha oleaginea lutescens Griscom, Amer. Mus. Nov., no. 280, September 10, 1927, p. 9. (Santa Fé, Veraguas, Panamá.)

Similar in size to *P. o. dyscola*, but definitely brighter olive-green above; under surface dark, with the foreneck and upper breast rather similar to the average in *assimilis*, but the buff brighter; flanks and sides paler.

A male taken at Las Palmitas, Los Santos, January 24, 1962, had the iris wood brown; maxilla and tip of mandible dull black; rest of mandible brownish white; tarsus, toes, and claws dark neutral gray; gape dull honey yellow; inside of mouth on the inner surface of the bill (maxilla and mandible) light neutral gray; palate, and the area beneath and beside the tongue, dark neutral gray.

Measurements.—Males (10 from eastern Chiriquí and Veraguas),

wing 60.4–63.3 (61.7), tail 44.6–48.5 (46.7), culmen from base 13.2–14.8 (13.9), tarsus 14.4–15.6 (15.3) mm.

Females (8 from eastern Chiriquí, Veraguas, and Isla Coiba), wing 56.2–59.6 (58.1), tail 41.8–45.6 (43.6), culmen from base 13.0–14.5 (13.7), tarsus 14.1–15.1 (14.6) mm.

Resident. Locally fairly common on the Pacific slope from eastern Chiriquí through Veraguas, including the western side and the southern end of the Azuero Peninsula (Río Oria near Los Asientos; Río Guánico, near Las Palmitas) Isla Coiba; Islas Gobernadora and Cébaco, in the southern Golfo de Montijo.

Near Soná and Puerto Vidal in May and early June I noted them regularly in gallery forest, usually on open perches in the tops of undergrowth. Males displayed regularly by quickly raising one wing without spreading it vertically above the back, holding it there for a second or two and then retracting it to its normal position. They were fairly common also on Isla Cébaco where we caught them regularly in mist nets. On Isla Coiba they were seen most frequently in undergrowth and the lower treecrown in the heavily shaded forest, where their subdued colors and their usually quiet attitude made them inconspicuous. The three males taken on Coiba have slightly longer wings and tails than the series from the mainland, but do not differ in color.

The range of the race *lutescens* covers the transition between the darker population of western Panamá and the paler *parca*, distributed from the western sector of the Province of Panamá and of Colón east to Colombia.

PIPROMORPHA OLEAGINEA PARCA (Bangs)

Mionectes oleagineus parvus Bangs, Proc. New England Zoöl. Club, vol. 2, September 20, 1900, p. 20. (Lion Hill, Canal Zone, Panamá.)

Smaller; lighter, brighter olive-green above; breast, abdomen, sides, flanks, and under tail coverts paler, more cinnamon-buff; foreneck and upper breast decidedly paler grayish; middle and greater coverts distinctly edged with cinnamon-buff; pale edgings on distal margins of secondaries lighter, more evident.

A male, taken at Chimán, February 16, 1950, had the iris dark brown; base of bill dull orange-brown; rest blackish brown; tarsus mouse brown. In another of this sex, at Mandinga, San Blas, February 12, 1957, the iris was also dark brown; maxilla and tip of mandible dusky neutral gray; base of mandible dull orange; tarsus fuscous; toes dull neutral gray; gape very dull orange; inside

of mouth, including the inner face of the mandible and the tip of the tongue, ivory-white; inner surface of maxilla pale neutral gray; base of tongue and back of mouth cavity dusky neutral gray.

Measurements.—Males (10 from northern Coclé, Colón, Province of Panamá, Darién, and San Blas), wing 55.7–59.5 (57.8), tail 39.7–45.8 (44.0), culmen from base 11.4–12.6 (12.0), tarsus 13.2–15.4 (14.0) mm.

Females (10 from northern Coclé, Province of Panamá, Canal Zone, Darién, and San Blas), wing 52.3–58.1 (56.1), tail 39.4–44.1 (41.5), culmen from base 11.3–13.1 (12.1), tarsus 13.4–14.8 (14.2) mm.

Weight ♂, 10.3 grams (R. S. Crossin).

Resident. Common, in forested areas, on the Pacific slope, from the western sector of the Province of Panamá (Cerro Campana) east through Darién to the Colombian boundary; on the Caribbean side from the Río Indio in western Colón (Chilar) and the northern slope of Coclé (El Uracillo) through the northern Canal Zone, the lower valley of the Río Chagres, and the Comarca de San Blas to Colombia; to 600 meters on Cerro Pirre, and Cerro Tacarcuna (La Laguna). Archipiélago de las Perlas: Islas San José, Viveros, and Rey.

This is the most common and widely distributed of the races found in the Republic, ranging in forests and also in thickets adjacent to them. Though its subdued colors make it inconspicuous it may attract attention by its chipping calls, as well as by flipping movements of its wings. In the usual display one closed wing may be raised vertically full length above the back, held motionless for a brief second, and then lowered quickly to the resting position. The action is so rapid that it may not be distinguished from ordinary flitting movements unless the observer is looking directly at the bird. While the bird may utter rapid, chipping calls when excited, it is silent in this display. The action is like that of the Olive-striped Flycatcher *Mionectes olivaceus*. They are found often alone, as single individuals, but also may join the parties of other small birds that forage in company in the forests. They pluck insects from twigs and leaves in rapid, fluttering movements, and also feed extensively on berries when available.

Nest-building, incubation, and the care of the young are reported as the work of the female alone, without assistance of the male, with the breeding season extending from February to July. The nest is a large, elongate, rounded structure, suspended at the end of

a branch or from a hanging vine, often over water, without any attempt at concealment, or may hang pendant against or beneath a bank undercut by water action. The central structure is a mass of fine rootlets and vines, often mingled with leaves and slender twigs, expanded in globular form, and attached firmly to the supporting root or stem. Externally usually it is covered with mossy vegetable materials. A rounded hole at the lower side opens into the hidden nest cavity, a fairly deep cup, more or less arched above. A nest collected by S. Olson and J. Wiese in the Canal Zone near Summit, May 10, 1966, is approximately 250 mm long by 120 mm wide at the broadest part. Another, from these same collectors, from near Gamboa, May 26, 1966, is about 350 mm long by 130 mm wide. The eggs usually number three in a set. Those from the nest of May 10, 1966, described above, are slightly pointed subelliptical in form, and measure as follows: 18.7×13.7 , 19.0×13.6 , 19.0×13.8 mm. Another set of three, collected by Major-General G. Ralph Meyer, on the Madden Road, Canal Zone, March 18, 1941, similar in color, lack of gloss, and form, measures 17.8×12.9 , 18.1×13.2 , and 18.3×13.4 mm. General Meyer's notes list two other nests found in the Forest Reserve, Canal Zone, May 24, 1941, in which the eggs were too far advanced in incubation to be preserved.

Family OXYRUNCIDAE: Sharpbills, Picos Agudos

The single species of this peculiar group has a broken range in which it is found in Costa Rica; Veraguas, western Panamá; Darién; eastern Venezuela; Guyana; and Brazil. Two subspecies are recognized in Panamá, one in Veraguas and one in eastern Darién.

In brief review, the sharpbill was diagnosed technically first by Temminck (Anal. Syst. Gen. Orn., Man. d'Orn., ed. 2, vol. 1, p. lxxx) as the genus *Oxyruncus*, placed in his Order VI, Anisodactyli. Bonaparte (Consp. Gen. Av., vol. 1, 1850, p. 211) included it in the family "Anabatidae," as did Cabanis (Mus. Hein., vol. 1, pt. 2, 1859, p. 31). Sclater and Salvin (Exot. Orn., 1868, pp. 131-132) remarked that while they agreed in part with Cabanis they did not follow in regarding it "as a genus of Anabatidae, or, as we prefer to call them, Dendrocolaptidae. It would seem more natural to consider it as constituting a sub-family, if not a family." In their later account (Biol. Centr.-Amer., vol. 2, 1888, p. 1) they located it in a monotypic family, which has been the usual treatment since. Its actual relationship to other groups has remained uncertain since information on its anatomy is not yet known in detail.

Hubert Lyman Clark (Auk, 1913, pp. 404-405), with only the partial body of one that had been prepared for a study skin available, compared it with species of Tyrannidae and found no differences in the few characters that he could see. Ridgway (U.S. Nat. Mus. Bull. 50, pt. 4, 1907, pp. 332-333) had available only three study skins, with uncertain data in part in which he was not able to verify the serration of the outer primary in the male.

Ames (Peabody Mus. Nat. Hist., Bull. 37, 1971, p. 163) remarks that while *Oxyruncus cristatus* "has a basically tyrannid syrinx" he found no special resemblance to any particular genus in that family. He noted a similarity in the syringeal musculature to that of the "becards (*Pachyramphus*) but . . . substantial differences in the supporting cartilages." In his final summary where he grouped the Passeriformes in five suborders he placed the Oxyruncidae at the end of the Tyranni, following the family Tyrannidae.

Those who have seen the bird in life have remarked on its superficial resemblance in rather heavy form of body and short legs to some of the medium-sized species of Cotingidae, which was my own impression from my only observation. Its major external difference is in the form of the bill, which tapers rather evenly from the heavy base to the narrow, sharply pointed tip.

The nest and eggs as yet are unknown.

OXYRUNCUS CRISTATUS (Swainson): Sharpbill, Pico Agudo

FIGURE 48

Oxyrhyncus cristatus Swainson, Zool. Illustr., ser. 1, vol. 1, no. 9, June 1821, pl. 49 and text. (Brazil.)

Size medium; body heavy, head small, bill tapering from rather broad base to slender, sharply pointed tip; back greenish; breast heavily spotted with black.

Description.—Length 150-170 mm. Adult male, outer margin of proximal half of tenth (outermost) primary with tips of barbs narrowed, acuminate, and bent, directed at an angle downward; head with a flattened central crest of narrow, elongate scarlet feathers; forehead, sides, and back of crown, hindneck, and auricular region dull white, banded narrowly with black; back, scapulars, and rump olive-green; upper tail coverts somewhat duller; wings black, wing coverts dull black tipped with dull olive-green, shading at the tips to yellowish white, the lesser series duller than the others; secondaries edged extensively with pale yellowish white; inner primaries bordered narrowly with olive-green; tail dull black, the feathers bordered

narrowly with dull olive-green and tipped narrowly with white; under surface of body white to pale yellow, spotted with black, except in center of abdomen; axillars, under wing coverts, and inner margins of wing feathers pale yellow.

Female, like male, but without serrations on the tenth primary; crest shorter with central scarlet area reduced to a narrow line.



FIGURE 48.—Sharpbill, pico agudo, *Oxyruncus cristatus*.

Immature, like female, but with scarlet markings on the crown absent or much reduced.

Two forms are recognized in the Republic, one in Veraguas and one in eastern Darién.

OXYRUNCUS CRISTATUS FRATER (Sclater and Salvin)

Oxyrhamphus frater Sclater and Salvin, Proc. Zool. Soc. London, October 1868, p. 326. (Calovévora, Veraguas, Panamá.)

Characters.—Under surface distinctly yellow; lower back and rump slightly darker green.

Measurements.—Males (7 from Costa Rica and Veraguas), wing 91.1–96.9 (93.8), tail 53.6–59.3 (56.3), culmen from base 16.8–19.5 (18.2), tarsus 18.7–20.4 (19.7) mm.

Females (5 from Costa Rica and Veraguas), wing 88.5–92.2

(90.5), tail 51.7–56.7 (54.8), culmen from base 17.6–19.1 (18.6), tarsus 19.6–20.6 (20.1) mm.

Resident. Rare. Recorded in Veraguas from specimens collected more than 100 years ago by Enrique Arcé near Chitra, Castillo, and Calovévora.

In the original description (cit. supra) the authors wrote that "Arcé's last collection contains two skins," and further, that they "were secured at Calovevora." In a second account (Exotic Orn., 1869=December 1868, p. 131) they added that another sending from this same locality had further specimens. They described the serration in the outer web of the tenth primary in the male, noting that this peculiarity had been figured by Mikan in his account of the form of Brazil (Delectus Florae et Faunae Brasiliensis, pt. 3, 1823).

Salvin (Cat. Birds Brit. Mus., vol. XIV, 1888, pp. 281–282) listed specimens from Calovévora and Castillo, Veraguas. In the collections of the British Museum there are in addition male and female labeled Chitra, taken by Arcé. Hellmayr (Cat. Birds Amer., Pt. VI, 1929, p. 3) in his list of material examined includes "Boquete, Chiriqui 1," without further explanation. As no specimen has been found to support it this is not accepted as a valid record. There have been no modern records from Panamá.

The race is found also in Costa Rica where the known range, according to Dr. Slud, is mainly on the Caribbean side from La Vijagua, on the slopes of the Cordillera de Guanacaste, northern Alajuela, along the north face of the Cordillera Central to its eastern side, with additional records from Orosi, San José and Santa María de Dota.

OXYRUNCUS CRISTATUS BROOKSI Bangs and Barbour

Oxyruncus brooksi Bangs and Barbour, Bull. Mus. Comp. Zool., vol. 65, September 1922, p. 220. (Cerro Sapo, Darién, Panamá.)

Characters.—Yellow of under surface paler, and less in extent, absent on foreneck, and reduced on breast.

A female, taken on the base of Cerro Malí, Darién, March 6, 1964, had the iris pale orange; maxilla fuscous; mandible with tip fuscous-brown, and base pale brownish neutral gray; tarsus, toes, and claws bluish neutral gray.

Measurements.—Males (3 from Darién), wing 90.2–93.5 (91.4), tail 54.8–59.5 (56.0), culmen from base 16.1–17.6 (17.1), tarsus 18.8–20.6 (19.6) mm.

Females (2 from Darién), wing 86.7, 88.7, tail 54.5, 57.5, culmen from base 18.2 (measurement of one), tarsus 19.0, 19.8 mm.

Resident. Rare. Known in Darién from the slopes of Cerro Sapo, back of Garachiné; near Cana, on Cerro Pirre; and La Laguna and the old Tacarcuna village site, on the north base of Cerro Tacarcuna.

The first specimens of this race were two collected by E. A. Goldman May 25 and June 11, 1912, on the slopes above Cana on Cerro Pirre. Barbour and Brooks in April 1922 collected the type, a male, and two females near the Río San Antonio on the slopes of Cerro Sapo, back of Garachiné, where the birds came to a feeding tree in the forest. Benson secured a male near Cana in 1928.

A male, fully grown but in immature plumage (with only a single red feather of the head markings of the adult) was taken by Dr. Pedro Galindo at La Laguna on Cerro Tacarcuna, June 6, 1963.

In early morning of March 6, 1964, back of our camp at the old Tacarcuna village site on the base of Cerro Tacarcuna, four or five stocky-bodied birds flew down from the forested hill above the river. One alighted in a tall tree where I secured it, a male of this race. In the hand, the bird with its dense feathering, strongly muscled, stocky body, and short legs, in general suggested a cotinga of the larger, heavy-bodied species. In preparing the specimen it was noted that the dorsal feather tract had a broad central apertion. The tract had a winglike expansion on either side near the center of the back, and then narrowed abruptly. In its lower half the line expanded slightly to continue without a break to end at the base of the tail.

The stomach of the male collected by Goldman near Cana on June 11, 1912, was preserved and in due course examined by me. It was filled with partly digested remains of several spiders, including many tiny eggs, possibly taken with them. In addition there were a few fragments of a large ant, and seeds of small size that I did not identify. The stomach of the one that I collected in the early morning in 1964 was empty. Barbour and Brooks secured their specimens at a feeding tree where they were "in company with several species of Cotingidae."

As stated under the general heading, the nest and eggs are unknown.

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