



LIBRARY
OF THE
UNIVERSITY
OF ILLINOIS

590.5

FI

v.31

cop.3

NATURAL
HISTORY SURVEY

NATURAL
HISTORY SURVEY
LIBRARY

I
141
3

FIELDIANA • ZOOLOGY

Published by
CHICAGO NATURAL HISTORY MUSEUM

Volume 31

FEBRUARY 16, 1951

No. 41

A REVIEW OF THE WOODPECKERS

Chrysophilus melanochloros and *C. melanolaimus*

MELVIN A. TRAYLOR, JR.

RESEARCH ASSOCIATE, DIVISION OF BIRDS

During the study of a collection of Bolivian birds in Chicago Natural History Museum, it became apparent that the races of the woodpeckers *Chrysophilus melanochloros* and *C. melanolaimus* were not adequately understood. Therefore I decided to borrow the available specimens of the two species and to attempt to straighten out the relationships of the various races. For the loan of valuable comparative material I am indebted to the authorities of the following institutions: Museum of Comparative Zoology, Cambridge, Massachusetts; American Museum of Natural History, New York; Academy of Natural Sciences of Philadelphia; United States National Museum, Washington; Carnegie Museum, Pittsburgh; and Museum of Zoology, University of Michigan, Ann Arbor. I particularly wish to thank Dr. A. L. Rand, Curator, and Mr. E. R. Blake, Associate Curator of the Division of Birds, Chicago Natural History Museum, for their aid and encouragement during the preparation of this study.

Since Cory (1919, p. 442) reviewed the *melanochloros-melanolaimus* group of woodpeckers, several authors have attempted to settle in greater or less detail the difficulties involved in its classification. Wetmore (1926, p. 219) had four races from Argentina and Uruguay, and his discussion helped to clarify the problem of their distribution in this region. However, he lacked sufficient comparative material to place them in their proper relation to birds from adjacent areas. Hellmayr (1929, p. 410) discussed the races in northeastern Brazil, and, although he was able to define the range of one of the races involved, he admitted that a great many more specimens would be necessary before the ranges of the others could be defined satisfactorily.

Laubmann (1934, p. 297) published a complete review of this group, the first since that of Cory. He considered all the races

conspecific, and grouped them under the specific name *melanochloros*,¹ which had priority. Laubmann's treatment of the various races, which will be discussed in more detail below, suffered from a lack of adequate material, particularly from the periphery of the range. Recently Pergolani (1944, p. 347) published a review of the Argentine races as part of her studies of Argentine Picidae. Although exception may be taken to her nomenclature² her study was the first to be based on adequate material and is particularly useful, since she published detailed measurements of all specimens.

The present study is based on an examination of 245 specimens from almost all parts of the range of the group. Ten subspecies are recognized, but one of them only tentatively, since no specimens are available for examination. This is one more subspecies than was recognized by Laubmann, and the ranges that he gave to several others have been considerably revised. Laubmann also considered that all the races belonged to one species, whereas I attempt to show that two species are involved.³

Before discussing in detail the subspecies of the *melanochloros-melanolaimus* group, it is necessary to consider the question of how many species are involved. There is no doubt that the subspecies fall into two groups that replace each other geographically. I consider them two species. One, *C. melanolaimus*, ranges from the highlands of central Bolivia through Paraguay (west of the Rio Paraguay) and northern Argentina (except Misiones) to Uruguay and the provinces of Buenos Aires and Pampa and the Gobernacion of Neuquen, Argentina. The other, *C. melanochloros*, ranges from Rio Grande do Sul, Brazil, and Misiones, Argentina, through eastern Paraguay, eastern Bolivia, and southern Matto Grosso to Pernambuco, Ceará, Piauhy, and Maranhão, in northeastern Brazil. Although the two species have been collected within one hundred miles of each other in several regions, there are no records of their having been found together in the same locality.

There are several characters that are useful in separating the two species. The first is the orange breast of *melanolaimus*, which

¹ Although the meaning of Laubmann's discussion is clear, the names *melanochloros* and *melanolaimus* seem to be used interchangeably throughout.

² Pergolani bases her use of species names on relationship rather than priority and calls the *melanolaimus* group of races *leucofrenatus*, since she considers the latter the parent race from which the others within this group have differentiated.

³ The sixth volume of Peters' *Birds of the World*, which includes the woodpeckers, has appeared (1948) since the completion of this paper. Peters (p. 105) follows Laubmann's treatment of species.

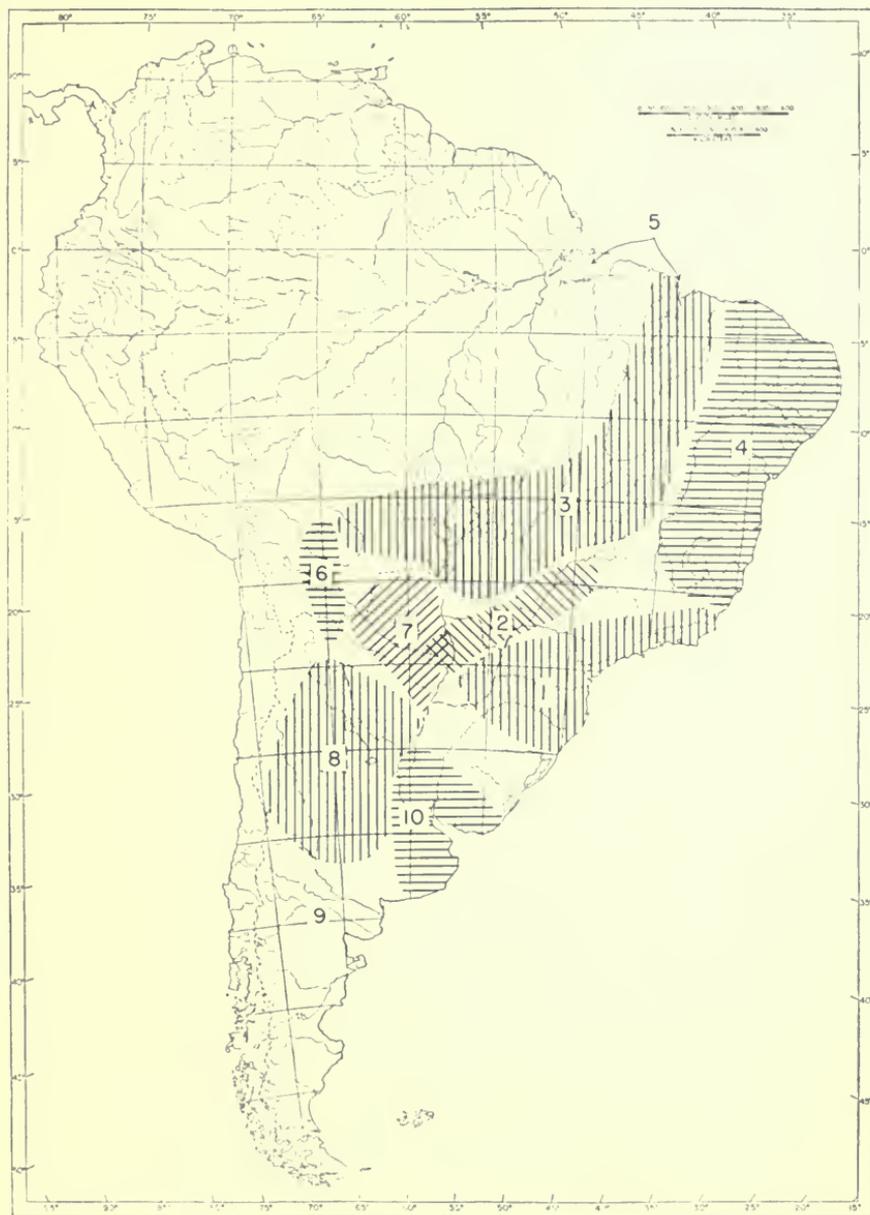


FIG. 84. Races of *Chrysoptilus melanochloros* and *C. melanolaimus*.

- | | |
|--|---|
| 1. <i>Chrysoptilus melanochloros melanochloros</i> . | 6. <i>Chrysoptilus melanolaimus melanolaimus</i> . |
| 2. <i>Chrysoptilus melanochloros cristatus</i> . | 7. <i>Chrysoptilus melanolaimus nigroviridis</i> . |
| 3. <i>Chrysoptilus melanochloros nattereri</i> . | 8. <i>Chrysoptilus melanolaimus leucofrenatus</i> . |
| 4. <i>Chrysoptilus melanochloros flavilumbis</i> . | 9. <i>Chrysoptilus melanolaimus patagonicus</i> . |
| 5. <i>Chrysoptilus melanochloros mariae</i> . | 10. <i>Chrysoptilus melanolaimus perplexus</i> . |

is at a maximum in the nominate race and in *perplexus* from Buenos Aires, and at a minimum in *nigroviridis* from the Chaco. In *melanochloros* this orange is replaced by the green or greenish-yellow of the belly, so that the under parts have a uniform ground color. A second distinction is the black spot behind the malar stripe, which is present in all but one race, *nigroviridis*, of *melanolaimus*, and absent in all races of *melanochloros*. A third character, and one of the most consistent, is the presence of pale yellowish barring on the second outermost rectrix of all specimens of *melanochloros*. It is found in about half the specimens of the race *C. melanolaimus perplexus* of Uruguay and Buenos Aires, but is absent in all individuals of the other races of this species. In fact, in a large majority of these specimens the barring on the outermost rectrix is restricted to the outer web. Most subspecies of *melanolaimus* are larger than those of *melanochloros*, although there is an overlap between the smallest race of the former and the largest race of the latter. The largest race of *melanochloros*, however, has a disproportionately long tail and short beak, and may be distinguished by these characters when the wing measurements overlap.

For convenience, these distinguishing characters are presented in tabular form, but it must be remembered that they are not all constant within the species.

Character	<i>melanolaimus</i>	<i>melanochloros</i>
Color below	breast orange, belly yellowish to pale greenish-yellow	uniform green to greenish-yellow
Black mark behind malar stripe	present	absent
Barring on second outermost rectrix	absent	present
Size	wing 145-153.4(150.5) tail 95.5-101.9(99.6) culmen 29.7-33.5(32.2)	wing 129.7-149(137.4) tail 84.6-109.2(95.8) culmen 25.1-28.0(26.5)

These characters alone might be considered as having only sub-specific value—the view adopted by Laubmann. However, they should best be considered together with the relationships between the adjoining races of the two forms. At the south end of the common range of the two species are two races that are quite unlike. *C. melanolaimus perplexus* of Uruguay and Buenos Aires, Argentina, has a bright orange breast and a well-developed black spot behind the malar stripe. *C. m. melanochloros* from Rio Grande do Sul, however, is dark olive green below and lacks completely the spot

behind the malar stripe. The difference in the second outermost rectrix is not so striking between this pair of races, since *perplexus* is the only race of *melanolaimus* in which this feather is barred. The two races are also similar in size of wing and culmen, but the tail of *melanochloros* is much larger (109 compared to 96). At no place is there any sign of intergradation between the two races. At the northern end of the common boundary, in Bolivia, two even more strikingly different representatives occur. In the highlands of Bolivia, above 7,500 feet, is found the nominate race of *melanolaimus*, which possesses all the characters of this species to an extreme degree. It is the only race of either species that has no sign of a greenish wash, the belly being a pale orange. At the foot of the mountains, in the Department of Santa Cruz, is found the small, light greenish-yellow race, *C. melanochloros nattereri*. These two forms differ strikingly in every character listed in the table, and if standing by themselves would never be suspected of being conspecific.

The only region where the representative races appear closely related and where intergradation might be expected to occur is Paraguay. With fifty-one specimens from this country now available for comparison, it is possible to determine the races involved and to work out their ranges. Hitherto the Parana and Paraguay rivers, from Corrientes, Argentina, to Corumba, Matto Grosso, have seemed to form a definite faunal boundary for these species. To the east of the rivers, from south to north, are the races *melanochloros* and *cristatus*, while to the west is *C. melanolaimus nigroviridis*. The last species has more green below and on the barring of the back than any other race of *melanolaimus*, but the orange wash on the breast is still apparent. Also, there is barring only on the outer web of the outermost rectrix, while the two neighboring races of *melanochloros* have both outer rectrices barred, and frequently with a golden wash. The size differences between the races are the long tail of *melanochloros* and the long bill of *nigroviridis*.

Although the above-mentioned river system has previously proved to be a good boundary between the species, there was recently collected from "Riacho Negro, 235 km. west," in the center of the range of *nigroviridis*, a series of four males of *C. melanochloros cristatus* that are identical with birds from northeastern Paraguay. These birds show no traces of intergradation with *nigroviridis*, although they were taken within 100 miles of the type locality of that race. Since this is the only reported instance of a race of *melanochloros* in this area, it seems fairly safe to assume that this is a recent

westward invasion. Although it would take a field investigation to prove whether the species are ecologically distinct, their existence as good species is attested by the lack of any intergradation.

From present evidence the common parental stock of the two species must have centered in what is now Paraguay and must have developed along two divergent lines, the division between the two originally having been the Paraguay River. One branch, *melanolaimus*, spread out to the westward, eventually reaching central Bolivia on the north, and Uruguay, Buenos Aires, and Pampa on the south. The other, *melanochloros*, spread north and east and eventually reached Rio Grande do Sul on the south, eastern Bolivia on the west, and Maranhão and Ceará to the northeast. A long evolutionary history such as this is necessary to explain the highly divergent races *melanolaimus* and *nattereri* in Bolivia or *melanochloros* and *perplexus* in Rio Grande do Sul and Uruguay. The final step in the speciation of the two forms is apparently taking place now, the re-invasion of the range of one form by the other, after a long period of isolation. Their close relationship is indicated by their still being geographical representatives. The treatment here, their consideration as separate species, seems to express best their present stage of evolutionary development. Although biological isolation can not yet be proved, because the species are geographically isolated, it may be inferred from the physical differences and the apparent invasion of the range of *melanolaimus* by populations of *melanochloros*.

Chrysoptilus melanochloros

Within the species *melanochloros* there is a distinct cline both in size and color from south to north. The largest and darkest green of all the subspecies is the nominate race in southern Brazil. There is a general decrease in size and a replacement of green by light greenish-yellow until the smallest and palest race is found in Goyaz and Maranhão. Within this range four races are apparent and well characterized. However, intermediates occur, which, on the basis of present material, are so variable that it is impossible to assign some of them to one form or another.

Besides the races characterized below there have been several others described that belong in the synonymy of the species.

Picus chlorozostus Wagler, "Brazil," must be a synonym of the race *melanochloros* because of its large size and dark coloring.

Chrysopicus chrysomelas Malherbe from "Brazil, Guyane ou Colombie" is unidentifiable from either the description or the localities.

Picus icteromelas Vieillot from "Brazil" could be either the race from Matto Grosso and Goyaz, or that from Bahia, and there is no way at present of determining which it is.

The wing measurements below were made by laying the wing flat against the scale. The beak measurements were of the exposed culmen.

Chrysoptilus melanochloros melanochloros Gmelin

Picus melanochloros Gmelin, Syst. Nat., 1, 1788, p. 427—Cayenne, errore=Rio de Janeiro (see Hellmayr, Verh. Orn. Ges. Bay., 12, pt. 2, p. 154, 1915).

Diagnosis.—Characterized by large size and dusky, olive green coloration; tail absolutely and proportionately longer than in other races; belly moderately spotted; rump moderately barred or spotted; green of under parts frequently extending onto throat.

Range.—Brazil, from Espiritu Santo and Rio Janeiro through southern São Paulo, Parana, and Santa Catharina to Rio Grande do Sul, and to Misiones, Argentina, and southeastern Paraguay.

Measurements (average in parentheses).—Twenty males: wing, 140–156 (149); tail, 97–120 (109.2); culmen, 26–30 (28). Nineteen females: wing, 140–155 (147.3); tail, 98–119 (108.6); culmen, 25–30 (26.9).

Remarks.—This is a well-marked race whose characters are best shown by populations from Parana and Misiones. It is somewhat unfortunate that Rio de Janeiro was designated as type locality for this form, since one of the two topotypes before me is well below average in size and somewhat yellowish in color. The series of twelve birds from Parana, on the other hand, are uniform both in size and color. In central eastern Paraguay are found specimens intermediate between this race and *cristatus* of northeastern Paraguay.

Chrysoptilus melanochloros cristatus Vieillot

Picus cristatus Vieillot, Nouv. Dict. Hist. Nat., 26, p. 98, 1818—Paraguay, ex Azara 252=Colonia Nueva Germania (see Laubmann, Verh. Orn. Ges. Bay., 20, p. 304, 1934).

Diagnosis.—Smaller than preceding race; below, more yellowish green, less dusky; barring or spotting on abdomen more variable;

above, barring lighter, more yellow green, rump not quite as heavily spotted or barred, more yellowish; intermediate between *melanochloros* and the following race *nattereri*.

Range.—Northeastern Paraguay and Brazil (northwestern São Paulo and southwestern Minas Geraes); an isolated colony in the Paraguayan Chaco.

Measurements (average in parentheses).—Twenty-three males: wing, 127–144 (138.3); tail, 86–103 (97); culmen, 24–28 (26.8). Eleven females: wing, 131–144 (137.4); tail, 91–104 (95.8); culmen, 25–29 (26.8).

Remarks.—Although specimens of this race from northeastern Paraguay are uniform and well marked, populations from northwestern São Paulo are more variable. Birds from Ituverava and Itapura are identical with Paraguayan specimens, but those from Fazenda Varhao and Barra do Rio Dourados, between the first-named localities, are smaller and paler. Neither Laubmann (1934, p. 304) nor Pinto (1937, p. 342) considers that *cristatus* extends into Brazil; the former had no São Paulo specimens and referred his Minas Geraes ones to *flavilumbis*; the latter referred all São Paulo and Minas Geraes birds to *nattereri*. Birds from Villa Rica, Villeta, Itape and Puerto Gibaja in central Paraguay are intermediate in size between *cristatus* and *melanochloros*, but are more like the latter in color.

***Chrysoptilus melanochloros nattereri* Malherbe**

Picus nattereri ou *Chrysoptilus* (Swains.) *nattereri* Malherbe, Mem. Soc. Roy. Sci. Liege, 2, p. 66, 1845—Brazil, coll. Natterer=Cuyaba, Matto Grosso (see Hellmayr, Field Mus. Nat. Hist., Zool. Ser., 12, p. 410, 1929).

Diagnosis.—Smaller than preceding races; paler and more nearly yellow; belly and rump lightly spotted or immaculate.

Range.—Eastern Bolivia and Brazil from southern Matto Grosso through Goyaz to Maranhão.

Measurements (average in parentheses).—Twenty-seven males: wing, 121–137 (129.7); tail, 77–98 (84.6); culmen, 23–27 (25.1). Eighteen females: wing, 123–136 (130.2); tail, 78–90 (86.7); culmen, 23–27 (24.9).

Remarks.—Throughout most of its range, from Bolivia through Goyaz, this is a well-marked race, smaller and paler than any of the others. There is a great deal of individual variation, but a large part of this appears to be due to age. Young birds give the appear-

ance of being dusty or badly worn with only a light wash of coloration, and the spotting is reduced. This plumage, however, lasts only for one or two months after the birds leave the nest, and is then replaced by the adult plumage. In the northern part of its range in Maranhão, this race blends into the following race, *flavilumbis*, under which heading is a more detailed discussion.

Chrysoptilus melanochloros flavilumbis Sundevall

Picus flavilumbis Sundevall, Consp. Pic., p. 74, 1866—Bahia.

Chrysoptilus melanochloros juae Cory, Field Mus. Nat. Hist., Zool. Ser., 13, pt. 2, no. 2, p. 444, 1919—Jua, near Iguatu, Ceará.

Diagnosis.—Somewhat larger than *nattereri*; above barred with greenish-yellow instead of yellow, rump a clean bright yellow; below, darker than *nattereri* but clearer yellow; rump and belly almost immaculate; smaller than *cristatus*, more yellowish, particularly below; much less heavily spotted.

Range.—Brazil: Bahia, Pernambuco, Ceará, and northern Piauhy.

Measurements (average in parentheses).—Nine males: wing, 123–144 (132.2); tail, 92–110 (98.5); culmen, 23–31 (26.6). Five females: wing, 126–140 (132); tail, 88–99 (94.2); culmen, 26–27 (26.4).

Remarks.—This race, although recognized by most recent authors, has been the source of a great deal of confusion. This seems to be due primarily to the variation, individual and geographic, within Bahia. Both Hellmayr and Laubmann found the birds from Joazeiro and Rio Preto in northern Bahia more greenish above and yellowish below than *nattereri*, and Laubmann also mentions that they are larger. I have no specimens from those localities, but the description fits a series from Ceará (= *juae* Cory) very well, and also a single bird from Recife. Sundevall's original description emphasized the yellowish color below, the greenish-yellow barring above, and the bright yellow rump—*uropygio laete lateque flavo, immaculato*—and almost certainly applied to this group. However, the two birds from Macaco Secco, near Andarahy, lack the yellow below, and the bright rump, and are much more heavily spotted. Also, of six Bahia trade skins only two are characteristic of the yellowish race, the others showing varying amounts of greenish wash and duller rumps. They show an approach to *cristatus* of southwestern Minas Geraes, specimens which Hellmayr listed provisionally as *flavilumbis*. Four specimens from Ilha Madre de Dios and Corupeba are juveniles, and resemble the young of *nattereri* at this stage.

At the other end of the range of *flavilumbis*, in Maranhão, the race blends into *nattereri*. A single bird from Ibiapaba, Piauí, is good *flavilumbis*, but three birds from central Maranhão are smaller and less markedly yellow below. Above they are barred with the pale yellow characteristic of *nattereri*. True *flavilumbis*, therefore, ranges from northern Piauí thru Ceará and Pernambuco to northern Bahia, and it is unfortunate that the birds from Bahia (city), the type locality, are somewhat aberrant. Sundevall's type was sent to Stockholm from Bahia by the Swedish consul, and its actual provenance might be anywhere within the state.

Chrysoptilus melanochloros mariae Hargitt

Chrysoptilus mariae Hargitt, Ibis, 1889, p. 59—Chamicuro, eastern Peru, ~~errore~~=Marajo Island, Pará, Brazil (see Pinto, Rev. Mus. Paul., 22, p. 344, 1937).

Diagnosis.—Barring above more yellow than in the preceding races; below, more buffy yellow, lightly spotted, belly immaculate; shafts of rectrices yellow for at least half their length; somewhat smaller than preceding races.

Range.—Islands of Marajo, Pará, and Mangunca, Maranhão.

Measurements.—One male: wing, 126; tail, 80; culmen, 25.

Remarks.—The only specimen available, from Mangunca Island, was examined by Hellmayr, who found that it agreed with a specimen from Marajo. Three specimens from Bõa Vista, near Miritiba, on the coast of Maranhão, belong to the continental race *nattereri*, and show no approach to this insular form.

This form concludes the list of subspecies of *melanochloros*. Typical specimens of all subspecies are easily identified, but, with the exception of *mariae*, there are wide zones where intermediates are found, and until adequate material, particularly from southern Bahia, Minas Geraes, and São Paulo, is available the geographic limits of the subspecies will be open to question.

Chrysoptilus melanolaimus

This species shows a peculiar size distribution. From north to south, that is, from Bolivia and Paraguay through Argentina, except for Santa Fé and Buenos Aires, there is steady increase in size, culminating in the race *patagonicus* from Neuquen. However, in Buenos Aires and Uruguay, at the southeastern end of the range, is the smallest race of the species, with only a small region of overlap in Santa Fé with the large race. Between the birds from Buenos

Aires and those from Cordoba and Pampa there is a sharp break in size (wing 145.3 and 158.7, respectively), with no apparent region of intergradation. It is difficult to see what geographic features keep the races separate, the only difference in the regions being a general decrease in rainfall from east to west. The other races of this species seem to be determined by faunal regions, or limited by geographic barriers.

There is also a gradient in the intensity of the orange of the breast. In this case, however, the geographical extremes resemble each other most nearly in the greater intensity of the orange, and the specimens from the middle of the range show it least. This species, *C. melanolaimus*, is the *C. cristatus* of Hargitt (1890, p. 112) and others, although Vieillot's description clearly refers to a race of *melanochloros*.

Chrysoptilus melanolaimus melanolaimus Malherbe

Chrysopicus melanolaimus Malherbe, Bul. Soc. Hist. Nat. de la Moselle, Cahier 8, p. 11, 1857—Bolivia and Chile.

Diagnosis.—Characterized by having the throat very dark, so that it appears black streaked with white; breast with a bright orange wash extending on to the barring on the back; belly pale orange, only lightly spotted; rump same color as belly, immaculate to lightly spotted; barring on tail confined to outer web of outermost rectrix; black spot behind malar stripe very strong, the black extending on to the sides of the throat.

Range.—Highlands of Bolivia and extreme northern Argentina (Jujuy and Salta) above 7,500 feet.

Measurements (average in parentheses).—Eleven males: wing, 145–159 (151); tail, 95–107 (99.9); culmen, 30–35 (33). Eight females: wing, 147–155 (150.6); tail, 95–107 (99); culmen, 30–34 (31.9).

Remarks.—This is the only race that has no trace of olive or green on the belly or rump, and may be distinguished immediately by that character. Malherbe's original description and subsequent plate (1862, pl. 89) had the throat pure black, but in the series before me there are none that fail to have a slight white edging on the black feathers of the throat. The black of the throat extends back and merges with the black spot behind the malar stripe, making the whole under side of the head, back to the upper breast, a uniform streaked black. This race is apparently confined to high altitudes, since according to Pergolani (1944, p. 362) the neighboring race

leucofrenatus is found at 4,800 feet, in the province of Salta. Malherbe lists specimens from Chile, as does Hargitt (1890, p. 112), but Laubmann (1934, p. 299) and Hellmayr (1932, p. 252, footnote) both maintain that it has not been collected from that country.

***Chrysotilus melanolaimus nigroviridis* Grant**

Chrysotilus nigroviridis Grant, Ibis, 1911, p. 321—Rio Pilcomayo, western Paraguay, 24° 53' S., 58° 30' W.

Diagnosis.—Differs from *melanolaimus* by having the throat whitish, streaked with black; breast with only a pale wash of orange; belly similar to *melanolaimus* but with a faint greenish tinge; rump and barring on back with even more pronounced greenish tinge; spot behind malar stripe small to absent; malar stripe in females heavily spotted white.

Range.—The Chaco of Bolivia (Villa Montes, Tarija), Paraguay and Argentina (Formosa and northern Chaco).

Measurements (average in parentheses).—Ten males: wing, 144–159 (151.5); tail, 90–108 (98.9); culmen, 28–33 (31.5). Seven females: wing, 140–155 (149.9); tail, 90–105 (98.9); culmen, 29–35 (30.9).

Remarks.—Easily distinguished from neighboring races by the light throat, weak or absent spot behind the malar stripe, and the pale orange wash on the breast. Within this race there is a sharp gradient in size from north to south, the specimens from the province of Chaco in Argentina being considerably larger than those from the Paraguayan Chaco. This is the race called *C. m. leucofrenatus* by Laubmann (1934, p. 300), who had no comparative material from Tucumán or Mendoza.

***Chrysotilus melanolaimus leucofrenatus* Leybold**

Colaptes leucofrenatus Leybold, Leopoldina, 8, p. 53, 1873—San Carlos, Mendoza.

Diagnosis.—Similar to *melanolaimus* but the breast less strongly orange, the throat less heavily streaked with black, and a slight greenish tinge to the abdomen and rump. Similar to *nigroviridis* but lacks the greenish tinge to the barring on the back; the throat more heavily streaked and the breast more orange; slightly larger than either *melanolaimus* or *nigroviridis*.

Range.—Argentina, from Salta, Santiago del Estero, and Tucumán to Cordoba, Pampa, and Mendoza.

Measurements (average in parentheses).—Eighteen males: wing, 147–163 (153.4); tail, 94–109 (101.9); culmen, 31–36 (33.5). Twenty

females: wing, 148–161 (153.5); tail, 94–108 (101.6); culmen, 28–37 (32.7).

Remarks.—This is the most variable race within the species, both in size and coloration. From north to south there is a steady increase in size, the extremes being nine birds from Salta with an average wing length of 151.7 and four from Cordoba with an average of 158. These geographical and size extremes more nearly resemble each other in color, however, than do the birds from Tucumán and Santiago del Estero. The former have the throats white, heavily streaked with black, the spot behind the malar stripe well developed, and the breast washed with a bright orange, which, however, is obscured by the heavy spotting and barring that extends over the flanks and belly. Many Tucumán birds, on the other hand, have fairly light throats and sparse markings below, in this latter character resembling *melanolaimus*. Within the Tucumán series, however, there is such diversity in the intensity of the spotting and coloration that it is possible to match specimens from anywhere within the range of the subspecies. So far, the attempts to correlate the heavy spotting below with age or sex have not been successful. The malar stripe of the female is lightly spotted with white, but not to the degree found in *nigroviridis*.

***Chrysotilus melanolaimus patagonicus* Laubmann**

Chrysotilus melanolaimus patagonicus Laubmann, Verh. Orn. Ges. Bay., 20, p. 302, 1934—Rio Lamay, Neuquen, Argentina.

I have not seen any specimens of this race. The measurements of Laubmann's two specimens (wing 165, 168; culmen 43, 44) exceed the extremes of *leucofrenatus* and unless further collecting shows the two specimens to be extremes of individual variation, the race should be recognized. A single specimen from Victorica, Pampa (wing 161), falls within the range of the series from Mendoza and is *leucofrenatus*. Similarly, the two specimens from Colefufu, Pampa (wing 160, 163), that Pergolani lists as *patagonicus* should be referred to *leucofrenatus*. The color character, bright orange below like *melanolaimus*, is not of much value, since Laubmann had no specimens of the contiguous race *leucofrenatus* with which to compare his birds.

***Chrysotilus melanolaimus perplexus* Cory**

Chrysotilus melanolaimus perplexus Cory, Field Mus. Nat. Hist., Zool. Ser., 13, pt. 2, p. 442, 1919, footnote b—Conchitas, Buenos Aires.

Diagnosis.—Similar to *leucofrenatus*, but distinctly smaller, particularly the bill; whole of outermost rectrix and outer web of second rectrix barred in more than half the specimens.

Range.—Argentina: Buenos Aires, southern Santa Fé and southern Entre Rios; Uruguay.

Measurements (average in parentheses).—Thirteen males: wing, 140–150 (145); tail, 89–102 (95.5); culmen, 26–32 (29.7). Eleven females: wing, 141–152 (145.6); tail, 95–102 (97.8); culmen, 25–31 (28.4).

Remarks.—This race is practically a small version of *leucofrenatus*, but the sharp break between the two forms in Buenos Aires and Cordoba makes it definitely recognizable. The only intermediate populations seem to be at Ocampo, Santa Fé (wing 148, 151; culmen 30, 31), and Mocovi, Chaco (wing 149; culmen 30). A pair from Deniz Island, Santa Fé, appear to be more within the range of *perplexus*, and it seems probable that that race extends for some distance into Santa Fé. The measurements given by Pergolani (1944, p. 363) for four specimens from central Santa Fé place them nearer *perplexus* than *leucofrenatus*.

The only confusion arising within this race lies in the apparent differences between the Argentine and Uruguayan specimens. The Argentine birds are strongly marked with orange breasts and bright bellies. The Uruguayan birds, for the most part, lack the orange breast and warmth of color on the belly, and at first glance appear to be separable. This was evident to Wetmore (1926, p. 222), who assumed that his two specimens from Uruguay belonged to a race of *melanochloros*. However, 30 per cent of the Uruguayan birds match a series from Buenos Aires, and several of the others show evidence that lighter feathers are beginning to appear, so until more is known about the sequence of plumages, particularly in young birds, the Uruguayan birds should remain in *perplexus*.

The sequence of the juvenal plumages appears to vary within the species. Four young birds from Bolivia (*melanolaimus*) with the wing and tail feathers only half grown are practically identical in coloration with adult birds, and all the examples of this race, adults and young, are remarkably uniform. Two young from 200 kilometers west of Pto. Casado, Paraguay (*nigroviridis*), lack almost all warmth of color below, but one is very lightly spotted and the other heavily so. Since *nigroviridis* is not a vividly colored race, the young still resemble the adults to a considerable degree. In the race *leucofrenatus* I am unable to correlate the various plumages

with age. Heavily spotted January birds from Salta are apparently young, but October birds from Mendoza must be adult and they are equally heavily spotted. In *perplexus*, several of the dull-colored Uruguay specimens appear to be young, and the lack of orange on the breast may be an age character in this race. Further field work will be necessary, however, before the sequence of plumages is properly understood.

Specimens examined.—The following specimens were examined:

Chrysoptilus m. melanochloros.—ARGENTINA: Misiones (Eldorado, 3 males, 1 female). BRAZIL: Santa Catharina (Joinville, 1 female); Parana (Candido de Abreu, 1 female; Rio Baile, 1 male; Fazenda Morungava, 2 males, 2 females; Jacarezinho, 1 male; Roca Nova, 2 males, 3 females); São Paulo (Fazenda Cayoa, 1 male, 2 females; Victoria, 1 male, 1 female); Rio de Janeiro (Rio de Janeiro, 1 male; S. do Itatiaya, 1 female). PARAGUAY: Colonia Nueva Italia, 1 female; Itape, 1 female; Rosario, 1 male, 2 females; Villa Rica, 2 males; Aregua, 1 male, 1 female; Pto. Gibaja, 4 males, 2 females.

Chrysoptilus melanochloros cristatus.—PARAGUAY: Horqueta, 6 males, 1 female; Cap. Bado, 4 males, 3 females; Molinasque, 1 female; Riacho Negro, 235 km. west, 4 males. BRAZIL: São Paulo (Ituverava, 1 male, 1 female; Itapura, 2 males, 1 female; Valparaizo, 1 female; Fazenda Varhao, 3 males, 2 females; Barra do Rio Dourados, 1 male); Minas Geraes (Araguary, Rio Jordão, 2 males, 1 female).

Chrysoptilus melanochloros nattereri.—BOLIVIA: Santa Cruz (Buenavista, 8 males, 7 females; Sara, Camp Wood, 1 female; Chiquitos, Palmarito, 1 female). BRAZIL: Matto Grosso (Fazenda Capao Bonito, 2 males, 1 female; Descalvados, 1 male; Coxipo, 1 female; Palmiras, 1 male; Chapada, 1 male); Goyaz (Nova Roma, 4 males; Barra do Rio São Domingos, 1 male, 1 female; Rio Verde, 2 males; Rio dos Almas, 1 male; Inhumas, 1 female; Jataby, 1 male; Fazenda Esperanza, 2 females; "Goyaz," 2 males); Maranhão (Bõa Vista, near Miritiba, 2 males, 2 females; Cocos, 1 male; São Francisco, 1 male; Barra do Corda, 1 female).

Chrysoptilus melanochloros flavilumbis.—BRAZIL: Minas Geraes (Rio das Velhas, 1 female); Bahia (Ilha Madre de Deus, 2 males; Corupeba, 1 male, 1 female; Rio Pardo, Verruga, 1 male; Macaco Secco, 2 males; "Bahia," 3 males, 3 females); Pernambuco (Recife, 1 male); Ceará (Jua, 3 males, 2 females; Quixada, 1 female); Piauhy (Ibiapaba, 1 female).

Chrysoptilus melanochloros mariae.—BRAZIL: Maranhão (Mangunca Island, 1 male).

Chrysoptilus melanolaimus melanolaimus.—BOLIVIA: Cochabamba (Pocona, 1 male, 3 females; Tin-Tin, 1 male, 1 female; Aiquile, 1 male; Totora, 1 male; Mizque, 1 male; Chorros, 1 male, 1 female); Santa Cruz (Comarapa, 1 male); Sucre (Pulque, 2 males, 2 females); Rio Pilcomayo, 1 male, 1 female; Rio Cachimayo, 1 male).

Chrysoptilus melanolaimus nigroviridis.—PARAGUAY: Chaco (Gen. Diaz, 1 male; Orloff, 2 males, 1 female; Guachalla, 3 females; Col. Fernheim, 1 male; Pto. Casado, 170–265 km. west, 5 males, 2 females). ARGENTINA: Chaco (Las Palmas, 1 male; Vedia, 1 male, 1 female).

Chrysoptilus melanolaimus leucofrenatus.—ARGENTINA: Salta (Rosario de Lerma, 3 males, 4 females; Valle de Lerma, 2 females); Chaco (Mocovi, 1 female); Santa Fé (Ocampo, 1 male, 1 female); Tucumán (Tapia, 4 males, 3 females; Concepción, 1 male, 2 females; Sarmiento, 1 female; Aguilares, 1 male; Toro Muerto, 1 male; Ingenio Lucan, 1 female; "Tucumán," 2 females); Santiago del Estero (Suncha Corral, 1 male; Cavalla, 2 males); Cordoba (Noettinger, 2 males; El Carrizal, 1 male, 1 female); Mendoza (Mendoza, 1 male, 3 females; Tunuyan, 1 male); Pampa (Victorica, 1 female).

Chrysoptilus melanolaimus perplexus.—ARGENTINA: Santa Fé (Deniz Island, 2 males); Buenos Aires (Tigre, 1 male; Conchitas, 2 males, 1 female; Lavalle, 1 male, 1 female; Islas delta del Parana, 1 male, 1 female); Entre Rios (La Soledad, 1 male, 1 female). URUGUAY: Rocha (San Vicente, 1 male, 1 female; Dept. Rocha, 1 female); Dept. Soriano, 1 male; Dept. San José, 1 male; Minas (Polanco, 1 male); Maldonado (Laguna del Sauce, 1 female); Quebrada de las Cuervas, 1 male; Concepción, 1 male, 3 females.

REFERENCES

CORY, CHARLES B.

1919. Catalogue of birds of the Americas. Field Mus. Nat. Hist., Zool. Ser., 13, pt. 2, no. 2, pp. 317–607.

HARGITT, EDWARD

1890. Catalogue of the birds in the British Museum. 18, 15 pls., 597 pp.

HELLMAYR, CHARLES E.

1929. Ornithology of northeastern Brazil. Field Mus. Nat. Hist., Zool. Ser., 12, pp. 235–501.

1932. Birds of Chile. Field Mus. Nat. Hist., Zool. Ser., 19, 472 pp.

LAUBMANN, ALFRED

1934. Zur Avifauna Argentinien. Verh. Orn. Ges. Bay., **20**, pp. 249-336.

MALHERBE, ALFRED

1861-62. Monographie de Picidees. 4 vols., Metz.

PERGOLANI, MARIA JUANA I.

1944. Los Picidos Argentinos. El Hornero, **8**, no. 3, pp. 347-369.

PINTO, OLIVERIO M. DE OLIVEIRA

1937. Catalogo das Aves do Brazil, Pt. I. Rev. Mus. Paul., **22**, xviii+566 pp.

WETMORE, ALEXANDER

1926. Observation on the birds of Argentina, Paraguay, Uruguay and Chile. Bull. U. S. Nat. Mus., **133**, 448 pp.

UNIVERSITY OF ILLINOIS-URBANA



3 0112 027924171