

COLECCION ORNITOLOGICA PHELPS

WILLIAM H. PHELPS  
WILLIAM H. PHELPS Jr.

APARTADO 2009  
CARACAS, VENEZUELA

August 1, 1965.

Dr. Martin H. Moynihan, Director,  
Canal Zone Biological Area, Drawer C, Balboa, C.Z.

Dear Dr. Moynihan:

I refer to your letter of July 9 regarding where  
*D. carbonaria* and *lafresnayi* might be found in close proximity.

I am addressing this letter care of Dr. Lehmann in accordance with  
your request. The delay in answering is due to my ill health. I am  
sorry.

I am attaching a list of all of our specimens. You will see that  
only at the following localities did we find the two species together:

Parámo Tama, Táchira. Not recommended as need a camp with mules. Not  
reached by auto.

Parámo Zumbador, Táchira. Recommended as can collect from auto.

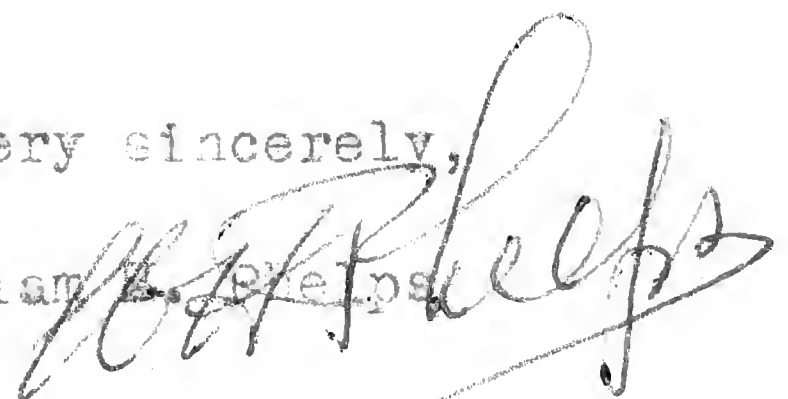
Parámo Aricagua, Mérida. Not recommended as you need Mules. Auto does  
not get there.

Téleferico. Recommended, but you say you have failed to see *lafresnayi*  
there.

I trust that this information will be of use. Kindly write to me for  
anything additional.

Very sincerely,

William H. Phelps



COLECCION ORNITOLOGICA PHELPS

WILLIAM H. PHELPS  
WILLIAM H. PHELPS JR.

APARTADO 2009  
CARACAS, VENEZUELA

November 23, 1962

Dr. Martín H. Moynihan,  
Canal Zone Biological Area, Draweer C, Balboa, Canal Zone.

Dear Dr. Moynihan:

I have yours of 13th. I have been ill so this answer is delayed. I am very glad that you found your birds at Páramo La Negra.

DIGLOSSA CLAUCA. It is not a Venezuelan bird.

DIGLOSSA CYANEACYANEA. I am enclosing sheet showing all specimens collected, with the altitudes. You will see that all C. sitticolor localities are also D. cyanea localities, but not vive-versa.

You will see, from my correspondence, that you can collect all four species, D. cyanea, D. gloriosa, C. sitticolor and D. lafresnayii, from the 2,700 y 3,000 stations on the Mérida Teleférico (overhead, trolley suspension cars). You would not have to even hire a car to do so as the Teleférico starts from close to the city of Mérida and goes up the show mountains to the snow line. You could go up in the early morning and return late in the afternoon. You get to the city of Mérida by frequent planes from Caracas and I think Maracaibo. There is an excellent tourist hotel in Mérida.

DIGLOSSA LAFRESNAYII. It is not rare as we have 18 specimens. Páramo La Negra was the only locality where the others occurred and not it, so you did not find it there either.

I trust the above covers your questions. Kindly let me know if I can be of any further use to you.

Sincerely,

  
William H. Phelps

*institución de la Universidad*  
 DIGLOSSA LAFRESNAYII LAFRESNAYII

Paramo Misisi, Trujillo	2000m
" Acarigua <i>Merida</i>	3000m
" Zumbador, Tachira	2600m
" Tamá, Tachira	3000-3275m
Rio Chiquito, Tachira	2300-2200m
Teleferico, Merida <i>Merida</i>	3500m

DIGLOSSA CYANEA CYANEA

Paramo Misisi, Trujillo	2100m
" Cende, Trujillo	2700m
" Zumbador, Tachira	2300-2600m
" Tama, Tachira	2400-3000m
Rio Chiquito, Tachira	1800-2100m
Pregonero, Tachira	2280-2400m
Santo Domingo, Tachira <i>Merida</i>	2500-2700m ✓
Paramo San Antonio, Merida	2750m
" Aricagua, Merida	3000m ✓
" La Negra, Merida	3000-3200m ✓
Tobay, Merida	1800m
Llano Rucio, Merida	2500m
Valle, Merida	2200m
Quintero, Merida	2500m
El Escorial, Merida	2800m
Teleferico, Merida	2700-3000m ✓
La Azulita, Merida	2100-2300m

DIGLOSSA CYANEA OBSCURA

Cerro Fejochaima, Perija	1900-2300m
" Tetarí, Perija	2900m
Campamento Avispa, Perija	2175m

DIGLOSSA CYANEA TOVARENSIS

Colonia Tovar, Aragua	1800-1900m
El Junquito, Caracas	2000m

- - - - -

APARTADO DE CORREOS No. 1289  
CARACAS - VENEZUELA



MR. WILLIAM H. PHELPS  
APARTADO 1289  
CARACAS, VENEZUELA

OS

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Associate

26 March, 1963

Dear Moynihan:

Welcome to Peru. Maria has told me of your objectives; and if it were possible I would have enjoyed being on hand to discuss them with you and to offer you whatever aid and encouragement that I might. By the time you receive this letter I'll probably have arrived in southern Peru, from which I hope to return to Lima within about ten days before completing arrangements to go to several points in the Department of Junin.

It is my impression that you have selected an inhospitable time of the year for your studies. Not that the situation is hopeless. At the present time, however, both weather conditions and the political weather are unfavorable in the Sierra, or so at least my recent experiences at Chachapoyas, Machu Picchu and Maraynioc have led me to believe. All of these places are remote. I can tell you a little about each of them.

Chachapoyas. There are two roads to this city, one going to it from Cajamarca, the other going to it from the north, via Olmos and across the Rio Maranon. The former road is now absolutely impassible (it is a new road, its surface still so soft that the slightest rain modifies it and quickly churns it into a quagmire). When I was in Chachapoyas during the third week of February, not even the most intrepid great trucks could use this road. The other road is much better; but when the true dense rainfall of the rainy season arrives, it too becomes impassible. It was still good when I was there but the heavy rains had just started. Perhaps it is still all right; but it would be best to fly to Chachapoyas. Fawcett Airlines, according to my information, flies into there on Wednesdays and Saturdays, in DC-3's; rate is about \$52.00 US, roundtrip. (Fawcett reservation office is in the building of the Bolivar Hotel and faces onto the Plaza de San Martin). As for the Humid Temp. Zone of Chachapoyas, it is difficult to reach from the town; much logging of it has occurred (the "woods" at Maraynioc

see e

seem to be much better preserved).

Macchu Picchu. The Sierra of Southern Peru has received unusually heavy rainfall this year. It rained daily in Macchu Picchu when I was there in early December last year. According to missionary friends of mine who live near Cusco, the rains still have not abated but have actually increased in the Cusco region. There is no place to stay at Macchu Picchu except the very expensive Tourista Hotel, and the Urubamba Valley at that point now is in terrific political ~~form~~ turmoil; the army is there in force. Local Communists daily roll rocks down upon the railroad ~~from~~ <sup>to</sup> Cusco to Macchu Picchu (the only route to the place). I doubt if Diglossa carbonaria is still breeding there, though it was in December (they began breeding in October at Chihuata, east of Arequipa). This species is of course a very common bird in many places, including places near Lima that Maria knows extremely well.

Maraynioc. The Temperature and Humid Temp. of this place are ~~xxxxxxx~~ famous (it is East of Tarma in Junin) and it is the place I most wish to return ~~visit~~ to, complete my own work. But you can't get to it now, and to get to it at all you must either have a vehicle or pack animals. I was there only a few weeks ago, in my Volkswagon. The road to it is very steep, a one-way road but I think quite good; ~~xxx~~ its rules of traffic are: up in the morning, down in the afternoon. As I say, you can't get to Maraynioc now, for the road must be really in bad shape at present, owing to the recent rains in the Central Sierra, the heaviest of the year. I am hoping that by ~~the~~ mid-April the situation will improve. (No busses run to Maraynioc; it is simply a hacienda located among touring meadows)

I have yet to encounter Diglossa lafresnayii, so I can't help you at all there. If you're interested in Xenodacnis, I can help you; also with Oreomanes fraseri. The relationships of these species can not help being of interest to anyone interested in Diglossa, verdad?

Perhaps you will still be in Lima or nearby when I return. What I have written so far is totally inadequate, and is gloomy; too gloomy perhaps. The fact is, however, that the upper regions of the Sierra will generate serious problems for your enterprise even in the dry times, and for the next few weeks up in those regions you must be prepared to cope with almost continuous heavy rain. It is a good thing to know this, and not to underestimate it. I think it is imperative that you travel to a place where you can have a roof over your head. At any rate, my best wishes to you. I am much interested in your studies and know from our mutual friend Gene Eisenmann that you are doing excellent work.

Sincerely yours,

*Bill*

Bill George

*F. ...*

- \* *...* 2000m<sup>m</sup> 2
- ...* 2300-3000m<sup>m</sup> 3
- \* *...* 3000m<sup>m</sup> 1
- \* *...* 3000m<sup>m</sup> 18
- \* *...* 3000m<sup>m</sup> 1
- \* *...* 3500-4000m<sup>m</sup> 4
- \* *...* 2900m<sup>m</sup> - 12
- ...* 2900m<sup>m</sup> 7
- ...* 3050-3300m<sup>m</sup> 16
- \* *...* (La Aguada) 3000-3300m<sup>m</sup> 1
- ...* (La Aguada) 3900m<sup>m</sup> 1

*D. ...*

- \* *...* 2000m<sup>m</sup> 1
  - \* *...* 2600m<sup>m</sup> 1
  - \* *...* 3000-3215m<sup>m</sup> 8
  - \* *...* 3000m<sup>m</sup> 2
  - \* *...* 2200-2300m<sup>m</sup> 4
  - \* *...* (La Aguada) 3500m<sup>m</sup> 1
- Was absent.



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DR WILLIAM H PHELPS  
APARTADO 2009  
CARACAS, VENEZUELA

10-

PRINTED MATTER



April 1, 1942  
Purdie

Went out with Dora to photograph on March 29 and 31. Did not observe intensively, but did note the following:

1. Most of my birds are not breeding now
2. Heard a few pairs of Hummers and Whitestarts
3. Heard and saw several pairs of *Agelaius* just below the guano on the Purdie side and in V.T.F. on the other side
4. *Agelaius* seems to have more "up hill" lots of birds fighting (and probably singing) just below guano on Purdie side

Diglossini

A  
April 17, 1972  
Cerro Punta

11:30 am Road to Las Flores. Looking for diglossa  
"plumbea" ("Plumb")

Area much cut over. Some second growth. Cloudy. Warm.  
Zonotrichias singing. Otherwise very quiet.

Near Whitestart song. No other birds singing.

Yellow-throats around. Apparently above. Then see Silver-  
throats and BCBT's further on. Scattered scrub in pasture. Pairs  
usually mixed flock.

12:20 Some distance further on. See mixed flock, Yellow-  
throats, BCBT's, Yellow-throated Atlapetes, etc. Dense second growth  
scrub near pasture.

See Whitestart in tree in pasture. Slate-throat. Singing  
few phrases NODWA. Then some more phrases in scrub. NODWA

Further on, more slate throats. Singing NODWA. But some  
apparent overlap with Zonotrichias.

Stopping 12:35 pm

April 18, 1972  
Cerro Punta

Going to work in and around town today. Arrive  
at 1:35 am. Mild sun and light drizzle.

at 1:42 am. See single ♀ Plumb. Yellow-throat  
in rather isolated trees and bushes edge small pastures.

Diglossini, Apr 15 1972 II

B

crop fields, near houses

feeding on white "Datura"



← Mesquite  
made here

5  
points

♀ Plumbeous nighthawk, quite alone.  
Utters occasional "Tsit"s. Moving  
over, rapidly over wide area. Diam-  
eter at least several hundred yards.  
Then disappears from sight. Reapp-  
ears 6:33 am. Moving thru non-  
flowering trees now. A little more  
sedate than earlier. Disappears into

large orange tree NOTE. Now I see that this  
area is not very far from a rather large commercial flower  
garden.

Then walk around for quite some time. There are lots  
of flower gardens in the neighborhood! (SE VENDEEN FLORES  
signs at 4 or more houses) But I don't see a single Diglossini  
or hummingbird (altho I hear what may be humming  
bird song or dispute sounds in distance).

Why are nestboxes so comparatively rare here?  
Climate? Or just not too many flowers under semi-natur-  
al conditions a few years ago.

Finally see hummingbird 14:32. In commercial  
flower garden. Rather large. Long straight bill. Undulating

Diglossini, Apr 18, 1972, III

C.

washed tail. Venter dark green. Purple on forehead. Blue-green bright throat patch. Feeding on large cup shaped yellow flowers. Flies away.

A few minutes later and a few yards further on, seen single ♀ *Plumb.* Obviously alone. Ident. In garden. Feeds on dark purple small *Gleditsia*. Also same type of yellow cup shaped flowers taken by hummingbird. Bird definitely cutting in from side. Presumably not same ♀ seen earlier.

7:55 a.m. Arrive back at first area. First ♀ *Plumb.* feeding on *Datura* flowers as before.

Stop observations here 8:00 a.m. Quite dense jungle, but unique, seems to be settling in.

COMMENTS: There are lots of *Fuchsias* and Fox gloves in flower here now, but I have yet to see a nectarivorous bird go to them during this visit. Why?

The rarity of nectar-feeders here applies to individual as well as (or even more than) species.

9:30 a.m. Going to work around the Dublin's house. This area is comparatively low. Probably only a few hundred feet above the El Estero Cava plain (although several miles along road). The Dublin's claim that one or more *Diglossini* (do) feed at *Fuchsias* at this lower level. Certainly there are holes in corollas. The Dublin's have also seen two species of hummingbirds here feeding on the same *Fuchsias*. Their accounts would suggest that interspecific encounters among nectarivores may be "random". But Jane Rosenthal did see one fight between a *Diglossini* and

Douglass, Apr 18, 1942, IV

D.

a "blue" hummingbird (Wood's Hummer). Hummingbird  
the appearance

9:42. Single small greenish hummer shows up.  
Feeds buff on Fuchsia. Gongsu from front, not  
side. Flies away

9:55. Hummer appears. Quite small, same kind  
as before. Get good view. Bill straight, not with long. Tail  
square, with small white tips to at least outer feathers.  
Whole bird greenish above. Large orange-buff below.  
Head with whitish stripe behind and above eye, merging  
with buff of chest. Dark stripe below whitish



few minutes  
above both times  
back again. Off again.  
off again.

Feeds on Fuchsia as  
before. Flies off. Back again a  
later. Flies off again. Definitely  
Back again 10:03. Off again. 10:11  
Back 10:25. Off again. Back again  
off again.

Go for a walk without seeing anything of interest  
Return to Fuchsia 10:45 a.m. Saw hummer around it  
goes off again. Back again almost immediately. Off again

10:50 Same hummingbird (I shall call it X) back  
above and feeding as usual. A single ♂ Tanager lands on  
Fuchsia plant a few inches away. X continues feeding; then  
perches and feeds same plant. Another Tanager (imm. ♂)  
lands on green a few feet away. Joined by first ♂ Tanager.  
Both Tanagers feed on ground. X continues feeding, then starts

Dryden, Apr 13, 1972, V

E

to feed as usual again. Then a Plumbe-flies straight into  
Fuchsia bush. Lando 0" - 1" away from X. Starts to feed in  
usual Dryden fashion. X also continues feeding. But the  
feeding is interspersed with obvious hostile behavior. X makes  
at least 12 "jaws" at Plumbe. Most of these are so mild  
or "inhibited" that they are hardly interpretable. But one is  
more serious, and another may involve actual body contact. In  
both the latter cases, the Plumbe hops off a few inches, uttering  
a few harsh sounds, but then resumes feeding, apparently  
undisturbed. On another occasion, the Plumbe (accidentally?)  
supplants the X. Finally, Plumbe flies off, apparently of her  
own volition. X flies after her in hot "pursuit".

X back immediately. The Terns have been joined  
by 2 or 3 other inds. (immatures, perhaps with adult ♀) of  
their own species. Hearing them, small shrubs beside Fuchsia.  
X makes what may be one inhibited jaw at them. Then flies  
away. Terns soon move on again in opposite direction.

X comes and goes again several more times in the  
next few minutes.

COMMENT: This area is obviously part (probably cent-  
er) of X's territory. It is obviously willing to defend the area,  
even in some cases against inds of other species. But the inter-  
specific hostility may not be as strong or as specialized as  
among some forms in the Andes.

11:18 X back, alone and feeding as usual. Stays  
around for several minutes. Then a 7 Plumbe flies in.  
(So 5+ ♀ Plumbe do overlap, even though - or when - the

Dyerswood Apr 17 1972 II

F

birds, do not associate with one another), X swoops at it immediately. No effect. ♂ Plumb starts to feed. Occas. utterances weak, whirring sounds. X does some feeding, interspersed with half-hearted jabs, periods of gleaning (watching the Plumb). Then Plumb flies off, obviously of his own volition. X follows, "in hot pursuit".

The Plumbs certainly do not seem to bother much about X here and now!

Stopping observation 11:35 a.m.

Return to same site 3:30 p.m. Sunny and warm

X back almost immediately. Alone. Feeds as before.

Then jabs in *Fuchsia*. ♂ Plumb shows up a minute or so later. Feeds in typical manner. X makes several jabs. X ignores them. X jabs. Plumb eventually flies away into tree 20 ft away. X follows in pursuit. ♂ Plumb hops from branch to branch, 10-15 ft up. Gleaning? (there are no visible flowers in this tree). Eventually lost to sight. X jabs in tree. Then flies off.

3:45. X back to *Fuchsia*. Feeds. Off again.

4:02. Look up to find ♂ Plumb back. Feeding actively but quietly. 2 *Tyrannus* (1 ad. ♂, 1 ♀ or immature) appear in gulch below *Fuchsia*. Hop up into branches. Plumb pays no attention. ♀ or imm. *Tyrannus* jabs at *Fuchsia* flower. (Could these birds be interested in nectar???) Then *Tyrannus* fly off. Then a tiny hummingbird of another species appears. (♀ or young? Dull brownish green above. Large buff, whitish below. Light of underparts extending some distance up side of neck.)

Diglossini, Apr. 16, 1972, VII

G

(Bill straight and not very long.) Feeds on *Fuchsia* flowers a few inches to a foot away from Plumbe. Neither ind. pays any obvious attention to the other. I think that the tiny hummingbird is feeding from straight in front. Then tiny flies away. Plumbe flies away a few minutes later.

Then tiny re-appears. And X comes in like a bolt of lightning. Dive-bombs tiny. Tiny dashes away. X goes in pursuit. Both disappear.

4.20. X back again. Goes again. Back again. Feeds. Perches and rests for some minutes. Feeds again. Off again (to tree in which  $\sigma$  Plumbe disappeared). Back again. Off again. Back again. Off again. Back and off again 4.32. Back and off again. Then  $\sigma$  Plumbe shows up. Feeds. X comes back. Immediately attacks. Forces Plumbe to move a foot or so, further into *Fuchsia*. But Plumbe relaxes immediately. Goes back to feeding. X starts to feed too. Interrupts feeding to make pass from time to time. All very halfhearted now. Plumbe ignores the fuss. Then Plumbe flies off away, perches in rose bush (no flowers now). X seems to relax, even though Plumbe is still perfectly in view. I.E. it probably is only defending *Fuchsia*, not antagonistic to Plumbe in general. Then Plumbe flies away. X follows.

Stop observations 5:05.

Go down to lower house (of Olga's expedition). There is a *Fuchsia* here too. Some of the flowers have holes. And hummingbirds have been seen around. Start observing 5:30. Stop 6:15 pm.



Small Lepidoptera delatres

Myrmica calceana  
(Cartagena)

Halasius

see also usual genome accounts

①

ECOLOGY &  
INTER-SPECIFIC RELATIONS NEAR MÉRIDA  
DIGLOSSINI

Sept. 15, 1962

BB

One or more BB's in thickets and trees near hotel in afternoon. One (at least) singing.

Barr

A single Diglossa (♀ or juv, rather greenish yellow gray, streaked underneath — albilateralis?) seen in thicket which had previously been visited by a BB. Quite silent.

Sept. 16

Albi

??? One ♂ albilateralis and (probably) one intermedium associated with mixed flock near first stop of Telcelmex. 10:40 a.m. Other members of flock included at least 1 Basilentemus (same species as at Hono), 1 Thraupis cyanocephala, 2 Atlapetes (no. II on list), and others. I don't know if the Diglossini associated with this flock were really integral members of the group, but they certainly disappeared when the other birds did. The albilateralis and the presumed intermedium were not particularly closely associated with one another within the flock.

Albi

The members of this flock were scattered through several layers of vegetation, from low scrub to 20 or 30 ft high in trees. Some members probably moved between several different layers.

Jan

A single adult glauca seen in scrub above fruit station of Teleferico at 11:00 a.m. Quite alone. Not feeding.

also

A single ♀ or juv. Diglossa seen in area slightly above glauca. Grayish. Obviously baritula or albilatera. Looked buffy on breast, but definite light patches under wings. Couldn't tell if it was streaked or not. Feeding in tree on pink flowers with tubular corollas. Feeding methods like those of other Diglossas.

CC???

Pair of uncinum seen near Chonos de Milla. 5:15 p.m. One feeding on eucalyptus or eucalyptus-like flowers. The other singing from high exposed perch. This is an area of scattered bushes, small trees, in grassland. CC's were relatively high in the vegetation here, but just about as low as they could get without actually getting down into the grass.

???

A single Diglossa (probably ♀ or juv. - albilatera) may have gone into the same tree about 10 minutes after the CC's left. If so, it did not feed there. Moved on almost immediately.

BB

A single BB began to sing high (but not exposed) in a tree about 30 ft away from the tree in which the CC's fed about 2 minutes after the presumed Diglossa had left.

Jan

None of the Diglossini have shown any definite reaction to any of the common finches (Yellow bellied seed-eaters, Andean Sparrows, Dark-backed Goldfinches), tanagers (BT's, a single ♂ White line

and some unidentified *Tangara*-like forms), or hummingbirds in the same area.

There were a number of (single) North American Redstarts in this area, feeding in the tree in which the BG sang (and presumably also fed). They compete with the *Diglossini* for food.

Sept. 17

*Barn* A single ♂ *Basileuterus* seen in outskirts of town of Mucurubá. In trees above a small abandoned backyard. Altitude 4330 (uncorrected). 7:15 a.m.

Feeding on flowers of eucalyptus. (Not the same species of eucalypt as at Guato. Flowers smaller and in clusters. Also quite different from the eucalypt or eucalyptus-like tree frequented by some *Diglossini* in Mérida and near Chonos de Milla.) Also perched at bases of small trees of some conifer or conifer-like tree. Presumably extracting insects. Usually 10 - 30 ft above ground.

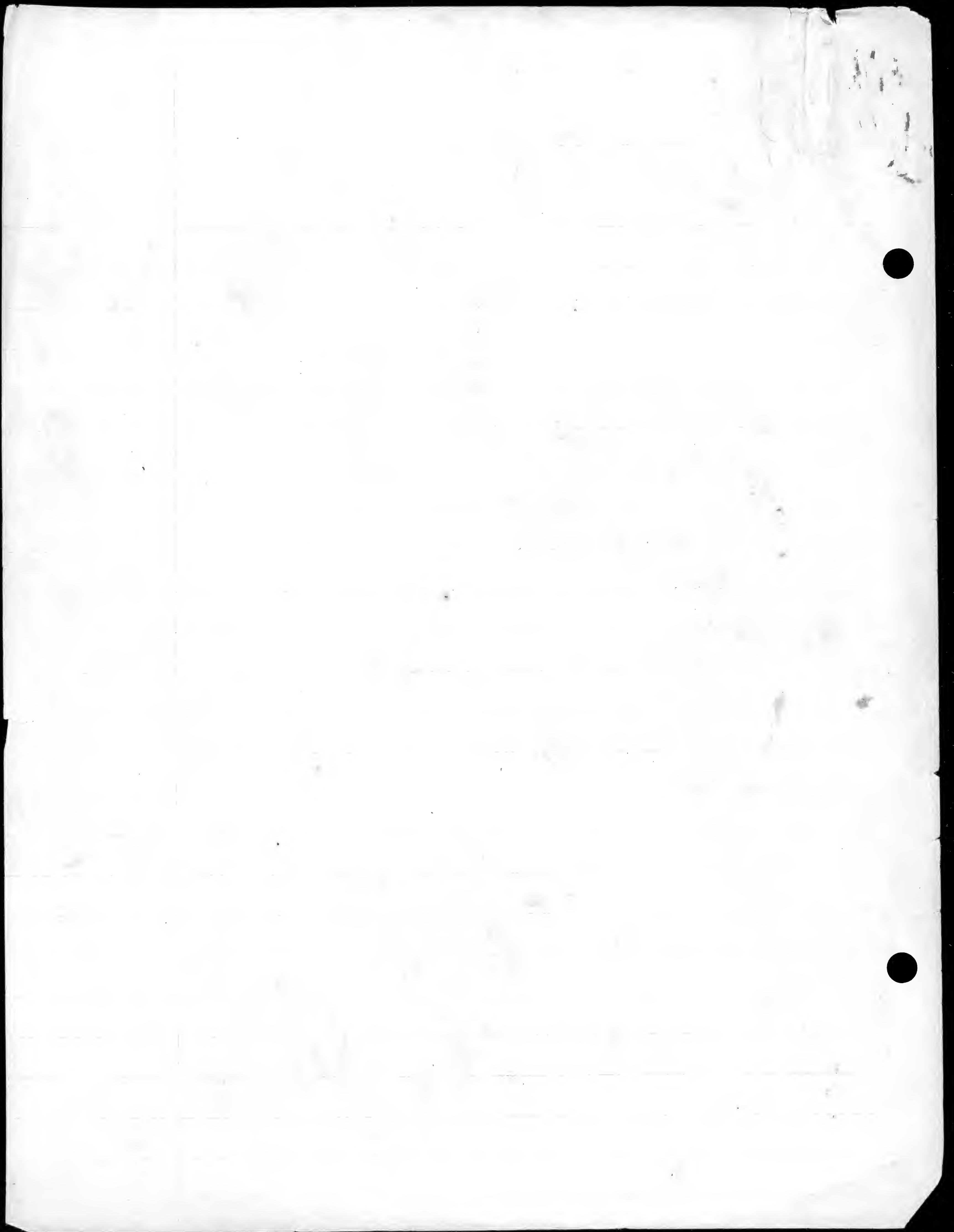
*Barn* Bird also sang perched high and exposed (about 15 ft above ground) in conifer or conifer-like tree.

No other *Diglossini* visible in neighborhood at any time during my period of observation.

*Barn* Is this species the only *Diglossa* which can survive in habitats which are sub-optimal for *Diglossas* as a whole ????

*Barn* While this individual was feeding, it quite ignored Dark-backed Goldfinches, BT's, and hummingbirds in the same trees.

SEE ALSO MIXED DIGLOSSIAN NOTES



Diglossa, Sep 20, 1958, II

(3)

♂ paid no attention for a while. Young bird followed the adult. Then the two birds flew off, returned in a few minutes. Repeated behavior as before. Finally, the ♂ went over & fed the young. Young started FB again, ♂ fed it again, & the whole thing was repeated again once more.

(It is just barely possible that the "young" bird in the above incident was an adult ♀. It is also possible that some of the notes were also given by the ♂.)

E.E. also saw a ♂ Diglossa with the usual mixed flock of Wilson's Warbler, Slaty-throated Redstart, Bush-tanagers, Yellow-throated Tanager, Brown-capped Vireo, etc. But again the Diglossa separated from the flock after a short while.

Most of the birds one sees around here are in pairs, but there are also quite a lot of apparently solitary birds around - at least ♂'s.

Diglossa, I

March 3, 1959

Cerro Punta



flits through.  
is also a ♀ here  
always at differ.

Early this

lot of "muzzing" 1, 2, 3, or 4 "T-reese" Notes. The 4-note series is sometimes organized "T-reese-t-reese t-reese-t-reese" (I am

there is a ♂ around the Pension here, who  
the garden from time to time. (He is  
from time to time, but usually  
out times from the ♂)

morning the ♂ did quite a

Diglossa, Mar. 3, 1959, IV

(4)

not sure that this "doublet" organization was always present.) The bill opened & closed (but not completely) with each note. Sometimes, I think, the ♂ gave this song from a completely unmutualized sitting posture. Sometimes he did it in the intervals of intensive preening - then the song was given from the very fluffed posture drawn on the preceding page.

Otherwise his behavior (i.e. fluffing & CD's) has been just like last year.

Diglossa, I.

March 6, 1959

Cerro Punta

The same apparently unmated ♂ was in the garden by the house this morning at dawn singing repeatedly. Could check the song very well. The commonest form is "tree-tree tree-tree". But this is probably only moderately high intensity. 5-note songs are not uncommon.

"Tree-tree tree-tree tree" Sometimes the place of the fifth note is taken by a very brief, fowls, warble, but this is relatively very rare. More common is the replacement of the 4th note of a 4-note song by three very brief notes "tut tut tut".

The ♂ did most of this apparently higher intensity type song while he was flitting about from Fuchsia bush to Fuchsia bush, feeding. Every once in a while, he would stop feeding and fly up into a tree. There he would continue to give songs as before - at least for a while. Twice he gradually began to preen after sitting in the tree for a second or so. Once he stopped singing after the preening began. The other time he continued to give song phrases in the intervals of preening. It is my impression that there were relatively fewer of the higher intensity type song phrases dur-

Diglossa, Mar. 6, 1959, II.

(5)

ing this preening than when he when he was singing in the intervals of feeding — although he did utter some phrases of all types during preening. In general, it is my impression that the song of this species may be less intimately connected with preening than is the song of Coereba.

(The term "preening" in the above paragraph is used in a rather broad sense, to include some other comfort movements in addition to preening s.s. It was almost always introduced by a few B.W. movements — not surprising as the bird had just been feeding. And the actual preening s.s. was occasionally interrupted by scratching.)

It is obvious that the ♂'s and ♀'s of this species maintain separate territories (or, at least, remain in separate areas — as I have seen little or nothing in the way of real territorial defense.) I have only once seen a ♀ in the garden where the ♂ whose behavior I have been watching usually hangs out, and this occurred when the ♂ himself was absent. Later on this morning, I spent a good deal of time watching a ♀, and her area was only visited once, very briefly, by a ♂ (I think that the ♂ and ♀ fought at this time). A second ♀ also visited this area once very briefly, but only when the first ♀ was absent.

The ♀ I watched was engaged in nest-building. She had the nest almost or completely finished (with at least some of the lining in).

A large proportion of both the ♂'s and ♀'s of this form I have seen, both this year & last, have white feathers in the crown. Variable in extent, forming a patch of feathers of variable shape & area.



August 4, 1959  
Mt. Atacaso

Flocks of lots of a new species of Diglossa here  
cafresnayeri = ~~XXXX~~ = (see notes of July 29, 1960)

Mostly in the area where the humid paramo and humid temperate zones come together. (Most of the area is actually paramo, but scrubby brush extends along the water courses. And the House finches stuck to the brush)

A most distinctive looking species. Females just slaty blue-gray. Essentially uniform all over. (W. J. Smith says that the female is darkest between the eyes and the bill, and possibly the crown - ?). The ♂ is essentially black all over. Possibly really just dark slaty blue black all over, with a slight bluish gloss. Light yellow at base of lower mandible, but bill otherwise blackish. Light blue under wing coverts. Also a small patch of light blue visible when the bird is just sitting with the wings folded. This might be part of the upper wing coverts, or a patch of flank or side feathers covering the bend of the wing. (Just conceivably the light under wing coverts "showing through".)

It is presumably the breeding season for at least some of these birds now.

We disturbed a female, apparently feeding her from a nest or young, and she then stalked about the underbrush in our neighborhood. Occasionally uttered single "Hoop" notes. Most distinctive in quality. Probably very high intensity alarm notes, provoked by and directed toward us.

When we flushed males from the underbrush, they occasionally utt

Diglossa, Aug. 4, 1959, II.

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ered single "Tee" Notes as they flew off. Presumably either ordinary CN's or relatively weak ALCN's.

The males did lots and lots of "singing", for several hours after dawn. The general effect of the song of this species was rather unexpected: a long warbling, possibly almost twittering phrase. The general effect, in fact, is not unlike the song of the Dark-backed Goldfinch in Panama; although the notes are actually much less varied. And if one listens to the song of the Flower-piercer very carefully, one can see that it is actually composed of a long series of essentially similar "Tsee" Notes. Sometimes essentially uniform "Tsee" Notes uttered one right after the other. More often a little more varied. Perhaps the majority of the "Tsee" Notes are really organized into doublets "Tsee-uh-tsee-uh". Some songs occasionally interspersed with one or

more shorter doublets "Tsee tsee". All this would suggest that the song of this species is based upon the same elements as the song of the Slaty Flower-piercer at Chiriqui.

I only got one good clear view of a male of this species singing. Front view. Apparently sitting more or less upright, in an apparently unneutralized sitting posture.

Most of the time, the males seemed to be singing when (just because?) they were separated from their mates. But I also heard some males (unusually?) loud & prolonged singing just before, and in the intervals between, a prolonged and apparently territorial dispute. The song of this species may, therefore, contain a "direct" hostile component.

Most of the singing was done from moderately exposed perches, near the top of bushes or small trees.

Actually, I saw quite a few cases of one male chasing another, in

Diglossa, Aug 4, 1959, III

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what appeared to be territorial boundary disputes. Most of these choruses were apparently quite silent, but once one or both birds involved in a chase uttered one or two loud "Tseet" or "Tseeee" Notes.

As far as I could tell, the WF's and TF's of these species were exactly the same as those of the species at Chiriqui.

This species does appear to be larger (and relatively smaller-headed) than the Slaty Flower-pickers at Chiriqui.

Diglossa, I

August 5, 1959

Cerro Picancha

? other species

A male and a female, presumably paired, feeding 10 or 15 yds apart. Gradually approaching one another. Then the ♂ suddenly flew toward the ♀, uttering a long R "Zzzzzzzzzzz" as he did so. Nothing happened after this, as the rain suddenly came down in buckets.

Diglossa, I

August 7, 1959

Cerro Alacaso

I saw a magnificent encounter between two birds this morning. My notice was first drawn to the birds by watching an adult ♂ feeding in a bush. Quite silent & apparently relaxed. But another bird, in the same bush, which I could not see well, was uttering constant hoarse notes, very much like the scolding notes of juncos, although somewhat less abrupt sounding, and perhaps uttered somewhat more slowly. Might be transcribed as "Waa-ah Waa-ah Waa-ah..." or even "Waa-waa Waa-waa Waa-waa" (The "sh" sound at the end of these notes was

Diglossa, Aug. 7, 1959, II.

(9)

not very conspicuous, at this time.) The first bird (which I shall call "♂ I" seemed to be quite undisturbed by this commotion. Probably because he was in his own territory (see below). Then both birds flew to another bush about 10 ft away. They landed very close together, and one bird (probably ♂ I) uttered a definite typical song as it landed. This new bush was almost certainly in the territory of the other bird (which turned out to be a male - see below - and which I shall call "♂ II.") I could see both birds pretty well in this new bush. ♂ I was continuing to feed in an apparently relaxed manner, and ♂ II was continuing the "Waa-ah... .." notes (which I shall call "WHAC" from now on). I could now see that ♂ II was performing highly ritualized movements with his WHAC. Wings held way out, sometimes just very slightly drooped, sometimes quite horizontal. Waved slowly and asynchronously in a Butterfly-like manner (these movements may have been nothing more than balancing movements). (I thought I once saw a very brief trace of G-like movements, but this may also have been balancing). The bird was held low, in a rather semi-hunched manner, throughout all or most of this performance, which I shall call "BV".



Notice head shape!

Wings very broad and rounded

♂ I hopped around and ♂ II followed + WHAC, only a few ds of this, ♂ I flew off, and disappeared from the area for several minutes

from perch to perch in the new bush. him everywhere, continuing to do BV inches away from ♂ I. After a few seconds

Diploma, Aug. 17, 1957, III

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♂ II stopped displaying immediately and retired to the center of the bush, out of sight, presumably to relax. (At this time, I thought that ♂ II must be a ♀ or a juv., but when I finally located him again in the same bush, I got a good view of his plumage.) Eventually ♂ II came out again and started to feed normally.

Then another bird gradually approached, by short flights, from a distance. This was presumably ♂ I; as he eventually went to feed in the bush where I first saw the 2 birds, and stayed there for a little while at least. When ♂ II first saw ♂ I approach in the distance, he first fixated him intently, and then gave a brief soft "Brrrrrrp" note. Presumably a form of R. Then started to feed again. As ♂ I came still closer, II continued to feed, but uttered occasional WHAC notes during the feeding. Not certainly enough, he did not do any BV while uttering these WHAC's. The WHAC's themselves, however, were quite similar, nearly identical, with the WHAC's uttered with BV. They were of the "Waa-aaah" type; and it was my impression that the "ah" sound was much more conspicuous in these circumstances than earlier.

All this hostile display is most peculiar. Certainly not reminiscent of Cyanerpes - Chlorophanes. Perhaps more like Coereba ???

When I go back again to look at males I and II again, after an hour, I find that they are still continuing their dispute. In ♂ II's bush (at least, he seems to consider it his bush, although ♂ I seems to feel some degree of possession over it too.) Much as before. I not displaying II doing frantic WHAC and BV. This time I could see the BV better. The waving and S-like movements of the wings are really balancing — definitely not integral parts of the display. The head, throat, breast and belly feathers are very ruffled. The tail is partly spread during all BV, but is suddenly sprung

I much more widely when each WHAC is uttered (and partly closed again, just as suddenly, after a note). This time, ♂ II repeatedly attacked ♂ I again & again. Actually jumping on II and pecking him vigorously. This was done right after vigorous WHAC + BU, and vigorous WHAC + BU was resumed right after the attack. It is possible, in fact, that the WHAC + BU were even continued during the actual pecking!!!! The whole WHAC + BU complex must be very very aggressive indeed!!!!

♂ I did not resist the attacks very vigorously. He eventually flew away to another bush (II did not follow). As soon as I got to the other bush, he began to sing loudly & vigorously! This would seem to almost prove that the song of this species is hostile. (I have also noted, in several other cases, involving other birds, that when 2 ♂'s are close to one another, they seem to do an unusual amount of singing. And, of course, even when ♂'s are far apart, they tend to answer each other's singing by singing of their own.) But song must be much less aggressive than WHAC + BU (or even WHAC alone - I imagine that WHAC alone is probably just lower intensity than WHAC + BU.)

The short soft R's, such as uttered by ♂ II earlier this morning may be just as aggressive as any WHAC pattern, but probably much lower intensity.

One thing I did notice during the fight was that II's WHAC's became conspicuously harsher than usual, almost rasping, during the very few seconds just before he delivered an actual attack.

When a ♂ is alarmed by my presence, he keeps his head feathers smoothed down very flat.

When ♂ II  
I noticed that he had his head

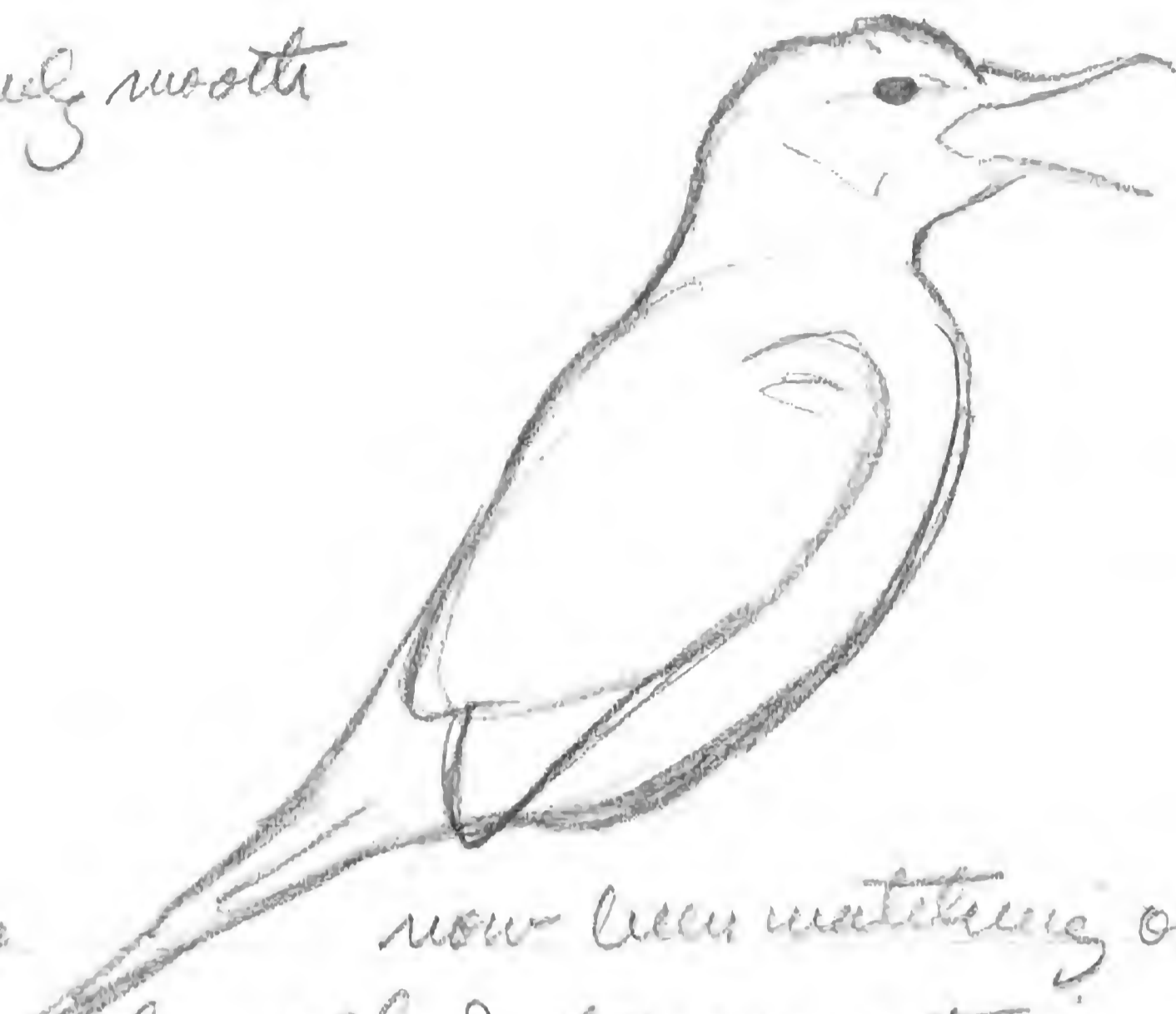


rang after the fight, I notice feathers quite ruffled, but the

Diplona, Aug. 7, 1959, I

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st of his plumage fully smooth



Singing Posture

♂ II

After Flight

I have now been watching one of these ♂'s (II, I think) singing by himself. In the same posture as above, but crown looks more rounded (feathers very ruffled - but evenly). Also body more diagonal, breast & head lower. The wings & tail seem to quiver a little with the notes. The wings are definitely drooped a little, and the lower part of the wings (i.e. not the carpi) may be held out from the body a little.

Then the other ♂ (I?) flies into the same bush, and the singing male suddenly accelerates his song very noticeably. Then there is a chase back & forth between the two birds in the bush, and this chase is accompanied by many snatches of accelerated song. Further proof of the hostile nature of the song.

I forgot to mention that earlier, when it was doing intense BU + WHAC, he could hold the body & head at an angle (with the neck almost always short, except during actual picking). Not always inclined diagonally upward as in my drawing on p. 9.

Diplona, I

August 8, 1959  
Cerro Pedernales

This afternoon, at a level of about 2000 m, which may have been

Diglossa, Aug 8, 1959, I

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At the upper edge of the humid temperate zone, I saw a Diglossa which was probably the female of this species (although I am not sure I could tell the female of this species from the ♂ of the Chlorospiza form) attacked by a hummingbird. The Diglossa immediately assumed a BV posture with back feathers ruffled. Probably silent (although I was so far away that I couldn't have heard any very soft calls) *Coucou ca*.



Neck more or less straight

(The Diglossa which did this performance disappeared from my sight almost immediately, but as confirmation of my tentative identification I should note that when I did get to the place where the performance had occurred there was a bird in the bushes giving "Hoop" notes quite like those of the female described on Aug. 4, p. 6).

late August 9th

I went back this morning to the same place where I watched the Diglossas yesterday — and I must admit that I am more confused about their identification than ever!

I must have seen at least 4 or 5 different individuals today; and they were all essentially uniform dark slate-blue (one of them may have had a tinge of brownish on the flanks). In other words, they were all females of the same species as the one I have been studying on



Diglossa, Aug 9, 1957, II

(14)

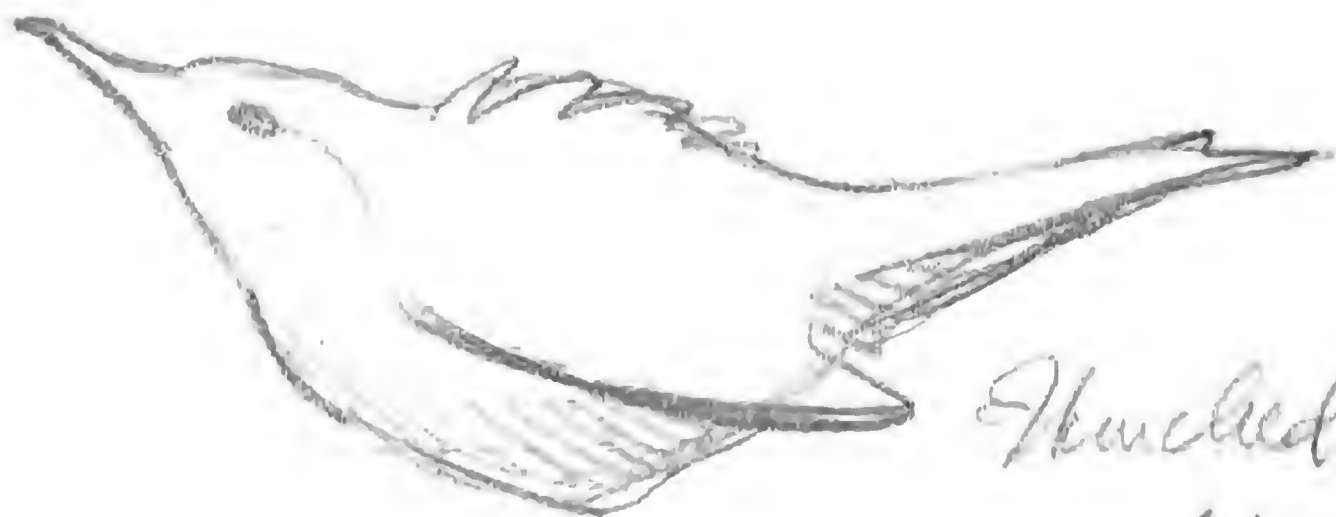
?

Cerro Ataraso, or males and/or females of another species. I rather incline to the latter belief at the present time. If they are another species, then my observation of yesterday probably refers to this new species. If this is a new species, then I might note that it seems to sing less frequently than the species I studied on Ataraso (although the song is at least roughly similar in form), and utters WHAC more frequently. Unfortunately I have not been able to get a really good view of the birds here on Piedra uttering either WHAC or song phrases.

March 20, 1960  
Cerro Punta

We saw at least 3 ♀'s and 1 ♂ Slaty Flowerpecker today quite high above Cerro Punta, about 7000 feet

One brief encounter between two ♀'s. Probably hostile. Facing one another on twigs in the same bush. In more or less hunched posture, sometimes pointing bill diagonally upward, in what may have been an intention movement of an St. Constant WF-ing and TF-ing by both birds. Both birds also uttering lots of "Tsit" CN's. One of the birds also ruffled the feathers of its back quite conspicuously, and fluffed the breast and belly feathers to an appreciable extent.



Hunched posture, with ruffled back, WF, and trace of St.

The whole thing was just slightly reminiscent of a low intensity indication of the BU of alternans.

Diglossa, I

(15)  
March 24, 1960  
Cerro Punta

Watching a ♂ & ♀ Diglossa feeding a few feet apart. Suddenly the ♂ flew at the ♀ (this looked quite aggressive), apparently uttering "Tut Tut" sounds as he did so. The ♀ immediately flew away, and the ♂ followed.

Diglossa, I

May 19, 1960  
Cerro Atacero

Back to the same place I saw ♂'s I and II last year. Two ♂'s there again fighting again, with songs & WHAC's!!

The song is more or less the same as last year. Largely, but by no means completely, doublets. One type of doublet (uttered by ♂ presumably disturbed by our presence, is "Tza-a Tza-a"

Another type of song doublet is "Tza-a Tza"

Alternate high pitch & low pitch notes are not uncommon in some song phrases.

It is my impression that the higher pitched "beeee" or "freeeeee" type notes are most common during songs uttered by rival ♂'s close to one another — while the lower pitched "Tza" or "Tza" type notes are most commonly uttered by solitary ♂'s reacting to human intrusion.

Diglossa, I

May 20, 1960  
Cerro Pichincha

We went back to the same place here where I was greatly puzzled by the identity of the Diglossas last year (see pp 13 & 14). There were still a lot of Diglossas around — and all the ones we saw and heard were probably members of a species distinct from the lapernoyi birds on Atacazo.

All the ♂'s we were able to see clearly were pure glossy black — without blue spots on the sides. All the ♀'s were slaty blue, more or less uniform all over. The ♂'s appeared to be definitely smaller than the ♂'s of lapernoyi. All or most of the ♀'s also appeared to be relatively small.

All my notes on the behavior of ♂'s below definitely refer to the ♂'s of this small black species. All my notes on the behavior of ♀'s, below, and above pp. 13 and 14, probably also refer to the ♀'s of this small species (although I cannot absolutely discount the possibility that some of the ♀'s I observed were ♀'s of aterrima, or even ♂'s of some third species).

All the notes which probably refer to this small species are marked ~~xxxxxx~~ (= aterrima & see notes of July 29, 1960).

The ♂'s uttered "Tut" CN's of the usual Diglossa type. Quite weak and sibilant. I think that ♀'s also utter CN's of the same type — but I can't be quite sure about this — as the ♀'s lurk in bushes and are usually extremely difficult to see.

At least 4 ♂'s did a lot of singing this morning. Surprisingly enough, not right at or after dawn. Some little time later, when the sun began to shine on the area. Their songs were most reminiscent

Diglossa, May 20, 1960, II

(17)

of the songs of *lafrenoyi* ♂'s, but still quite easily distinguishable. A moderately long formless twitter, not including distinct doublets. Some of the songs seem to be an absolutely uniform twitter, but David thought that others might be represented by the following diagram



With a distinctly accented note in the middle!

(It is possible that the songs with such accented notes are really compound of two essentially identical phrases.) I must add, however, that none of the songs, to my ears, had as distinctly accented note as indicated in the above diagram.

Most of the songs we heard were uttered by solitary ♂'s, obviously unmated or separated from their mates. Such ♂'s would pick out a relatively high perch and then sing and sing and sing. The long repetitions of song were rather reminiscent of the unique behavior of Bananaquits.

All these songs were given from quite unritualized postures. A singing ♂ would sit still, in a more or less diagonal-erect sitting posture. Crown possibly slightly ruffled. Breast and belly feathers definitely not ruffled. Wings meeting above rump. Once I saw a ♂ sing with slightly fluffed back feathers — but this was probably purely "coincidental", as the same ♂ later sang many more songs without any trace of fluffing of the back feathers. The bill opened & partly closed with each note of the song. (This revealed the fairly bright pink inside the mouth — quite conspicuously.)

Many of these songs must have been produced by some frustrated sort of graving and/or sexual drive, but we never saw a ♀ come

Diglossa, May 22, 1960, III

(18)

anywhere near a singing ♂ or respond overtly to a singing ♂ in any other way

Other songs of the ♂'s were almost certainly or completely hostile. Solitary ♂'s singing from high perches tended to respond to one another's songs — sometimes singing antiphonally. Such songs may well have contained a hostile component, although they sounded exactly the same as the songs uttered by completely solitary ♂'s.

The most obviously hostile songs were associated with direct attack & escape. Once, for instance, we heard an obvious fight in the bushes (without being able to catch more than the brief & most obscure glimpse of the birds) which was accompanied by singing and lots of WHAC Notes (see below). This song was apparently higher-pitched than the ordinary "pawing" song, and sounded very intense. Similarly we watched a ♂ chase another bird (probably another ♂). When the pursued bird landed, and the pursuer immediately supplanted it. This supplant was accompanied & followed by an R (see below) and a brief burst of song by one or both birds.

Thus, it would appear that the song of this species is of the primitive gannet type.

The only time we heard WHAC Notes this morning was during the fight described above. This morning there was certainly no indication that this species utters WHAC Notes more frequently than Lafrenoy (see comments p. 14)

This species certainly also has an R pattern. Quite typical by high-pitched trill. Obviously hostile (almost certainly aggressive), but unfortunately I could never observe its circumstances very clearly. I heard the R but during 2 incidents. One was the supplanting attack described above. Another long & relatively loud R was

Diglossa, May 20, 1960, IV

(17)

uttered by a ♂ flying very rapidly after another bird, probably attacking it. This latter R was not followed by song.

The ♀'s were so skulking that we saw relatively little of their behavior. We did, however, observe one extreme alarm reaction by one ♀, and heard a lot of alarm notes by many others.

Every once in a while, when we walked past a particular dense bit of hedge, we would hear a bird utter one or a few single "Hoop" Notes. These were quite like the notes uttered by ♀ aterrim when disturbed (see notes of Aug. 4, 1957, p. 6). Obviously provoked by our presence. I shall call these notes "♀ ALCN's". Unfortunately we could not see the ♀'s uttering these single ALCN's, and so I don't know if they were accompanied by any special movements or postures.

Later on, a dog came down the road, barking quite loudly and steadily. As soon as it started to bark, a ♀ Diglossa in a dense hedge began to utter many ALCN's. Most of the ALCN's she uttered were double: "Hoop hoop" arranged in series comme ça

While she uttered these notes, the ♀ moved slowly down the hedge still keeping well hidden. Then, after the dog had left, David and I found that we could provoke the ♀ into even more frantic bursts of ALCN's by squeaking at her. She also tended to come toward us as we squeaked, so that we got some fairly good views of her. We squeaked at her off and on for quite a long time, and as a result we can summarize her alarm reactions as follows.

The doublet ALCN's are higher intensity than the single ALCN's. She uttered almost nothing but doublets when we were actually squeaking, but gradually declined into single notes when we

were silent. (David says that once she became so excited that she uttered a triplet ALCN — — —) The higher intensity ALCN's, most of the doublets, were noticeably higher pitched than the lower intensity ALCN's, the single notes and (probably) a few of the doublets — but there seemed to be complete intergradation between the highest and lowest pitched notes.

We could only see the ♀ when she was most excited, uttering lots of doublet ALCN's in response to our squeaking. At such times she behaved in a most peculiar hysterical, almost epileptic, manner. Hopping & flitting about very rapidly. Performing erratic bowing movements. Occasionally pecking down at the ground or a branch (once she even picked up something in her bill). All the time her wings were held out a little and either vibrated rather slowly or waved rather rapidly, and her tail vibrated (vertically, I think) almost continually. All looked very disorganized. Her plumage seemed to be quite generally fluffed. I couldn't see this fluffing very well, but her breast & belly feathers were certainly at least moderately fluffed, and it is possible (?) that her back feathers were at least slightly ruffled.

I think we must have put this ♀ off her nest. Her disorganized, generally hysterical, reaction is the sort of thing from which a distraction display could easily be derived.

The comparative significance of this ♀ behavior is difficult to estimate, but there is no doubt but that the behavior of the ♂'s of this species is generally quite comparable to that of the ♂'s of Lafresnayeri.

This species would seem to be more closely related to Lafresnayeri than either is to plumbea.

Diglossa, I

May 21, 1960  
Cerro Pichincha

Watched the same birds of the little black species again today.

One ♂ repeatedly interspersed R's into the middle of his songs, when he was apparently all by himself. Not all his song phrases included R's; but at least a third did.

I observed two cases of what were probably actual attacks or supplanting attacks deep in the shrubbery. Involving different birds. Each attack was accompanied by an R, followed immediately by 2 distinct notes: "Sreeeeeeeeee Ja-ta"



These terminal notes may have been "intention movements" of song.

Cerro Atacazo

This afternoon we went up Atacazo looking for Diglossas. At one point, a couple of thousand feet below where aterreus is so common, all the Diglossas we could identify were of the small black species. (Unfortunately, we couldn't investigate the region where the ranges of laphamiae and the small black species must meet or overlap, as the rain & fog came down.)



Diglossa, I

May 25, 1960  
Cerro Pichindá

We watched the same little black Diglossas this morning as on May 20th. They seemed to be behaving in essentially the same way as before. (The ♂'s sang a little less, and we saw a little less chasing, but this may have been due to the fact that this morning was particularly windy.)

I checked the WF's and TF's of this species this morning. Both are comparatively rare - much rarer than the corresponding movements of many other tanagers & finches (I can't really compare their frequencies with the frequencies of the TF's and WF's of other Diglossas). The WF's seem to be even rarer than the TF's. When WF's do occur, however, they can be quite extreme. The TF's are D-U, sometimes (almost always?) with a strong lateral component.

The songs of different ♂'s may be rather different. Some songs seem to contain a definite trace of "zee-zee" doublet structure, almost throughout, while others are much more warbling. One ♂ I watched today always began his song phrases with a "real" "zee-zee" doublet. This was followed by warbling notes, and each song phrase usually ended with a fairly distinct "Tsa-wee-yoo".

One ♂ who had been singing steadily for quite some time, stopped singing completely when a ♀ came within a couple of feet of him, and then flew straight away from her! He did not follow. This incident is another indication that the songs of Diglossa are (at least) not strongly sexual.

Another ♂ flew toward a ♀ and uttered R-songs as he did so. Presumably hostile.

Still another ♂ flew away from us, twice, and uttered R, full

Diglossa, May 25, 1960, II

(23)

owed by a few brief jumbled notes (perhaps an "intention movement" of song each time. I couldn't tell if he had a ♀ near him at the time or not.

I must say that I have been quite surprised by the apparent absence or comparative rarity of overt hostility between neighboring ♂'s of this species here this year. We have yet to see a prolonged territorial boundary dispute with ritualized postures and movements (This morning, we didn't even hear any WHAC Notes!)

Ca de Inaquito

This afternoon we watched a few of the small black Diglossas here. There were in a hedge, along the edge of a Eucalyptus forest, facing a fairly open brushy field.

One thing I noticed this afternoon — which I have also noticed in the other areas where we have watched this species, but have forgotten to write down — is that the ♂'s of this species (and possibly the females, to some extent) are remarkably aggressive toward birds of other species. Just as again we have seen them chase all sorts of hummingbirds. They also get involved in disputes with Andean Sparrows quite frequently. This sort of extreme aggressiveness is quite reminiscent of hummingbirds. Presumably correlated with the habit of feeding on nectar of flowers.

Very late this evening, after sunset, a ♀ Diglossa of this species began to utter a long series of WHAC notes. Quite rapid and almost continuous. — — — — — She began this while she was hidden in a hedge, and she continued as she gradually moved down the hedge. I was only able to locate

Diglossa May 25, 1960 II

(24)

her in my glasses after several minutes at that time she was sitting facing an Ardean Sparrow. She was in a low-bowled posture, with head drawn in on the shoulders, without either ruffling of the back feathers or waving of wings as in the BV of Lafresnayeri.

Diglossa, I

May 26, 1960

Cerro Ataraso

Watching in the same old area again this morning.

To my surprise, we found one ♂ of the small black species near this area this morning. Singing. Perhaps significantly, this ♂ had selected a territory which received much less before the territories of all or most of the ♂'s of the blue-spotted species.

We found it very easy to distinguish between the songs of the ♂'s of the 2 species, even at a distance. The song of the small black species may be considered an "ambling twitter". It also seems to have a definite "usual" length. The song of the blue-spotted species is stronger and slower; composed of comparatively distinct notes, and (almost certainly) much more variable in length.

I got some more detailed information on the songs of the blue-spotted ♂'s. There is considerable difference between the songs of different individuals at the present time. One ♂ we watched sang something like "Zraa Zraa Zraa Zraa-a-Zaa Zraa Zraa....." mostly single notes. Only a few "doublets" (underlined in red above). Other ♂'s sang almost nothing but doublets.

As further confirmation of the hostile nature of the songs of this species — it should be noted that, several times today, one or more males who had been silent for at least several minutes suddenly began

Diglossa, May 26, 1960, II.

(25)

to sing loudly when we moved about conspicuously near them. The song, in other words, may be used as a potential predator reaction.

Since I have not made it completely clear in the preceding pages, I must stress that the ♂'s and ♀'s of both the small black and the blue-spotted species seem to keep almost completely apart. They must come together for copulations, but we have very seldom seen a ♂ and ♀ together except when both were feeding on the same flowers. Such "feeding associations" seem to be essentially casual. The rarity or absence of close "pair" associations between ♂ and ♀ Diglossas is another feature in which they resemble hummingbirds.

We may have caught a brief glimpse, this morning, of a large bright blue Diglossa-type bird (which I definitely saw last year - without being able to study its behavior). I think that we may have heard it sing this morning - although I couldn't actually see the bird when the singing occurred. (I shall mark this species ~~new~~. It might be indigotina (see notes of July 27, 1960).)

The song we heard was as follows: "Da Zee Zee Zee Zee". More reminiscent of Baritula than of either the small black or the blue-spotted species.

After hearing the song of one of the local species of Cone-bills (see today's notes on Coccyzus), I am more than ever convinced that Diglossa is most closely related to the Bananaquit - Conebill group of warblers.

Cerro Piedra

This afternoon we made some more observations of the small black species, in the usual place.

Diglossa Maya

I noticed this afternoon that ♂'s tended to sing in response to any squeaking or "whooshing" noises I made. This occurred even when the ♂'s had been quite silent for some time before I began to make noises. The ♂'s usually sang with considerable vigor in response to my noises. Surprisingly enough, however, even when they sang most vigorously, they made no attempts to actually approach me!

In any case, this singing reaction of the ♂'s is still another indication that the song of this species is hostile.

One ♂, probably responding to my sounds, repeatedly sang song phrases, each one of which was introduced by a short but quite unmistakable R.

One brief fight between two neighboring ♂'s was accompanied by hurried emphatic songs & R's, in alternation.

It is obvious that the R of this species is either more aggressive or (perhaps more probably?) higher intensity than the song.

This is a very common type of singing posture of the small black species.



Notice the head slope. This sort of "semi-erect" shape is quite common, although no means always present.

The amount of fluffing of the breast and belly is quite variable, but never very extreme.

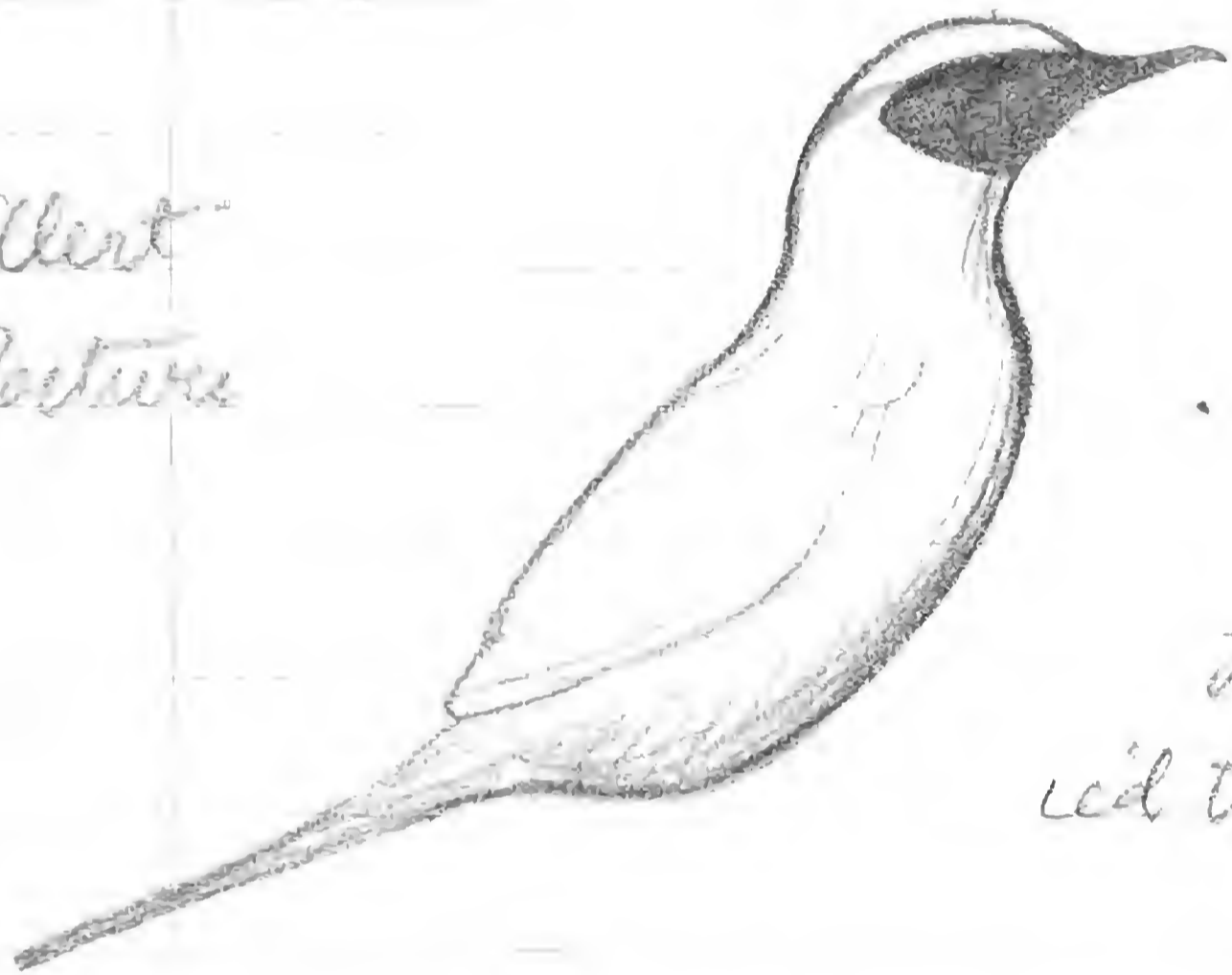
Diglossopus, I

May 27, 1960  
Cerro Pulevaca

~~XXXX~~ = colerianus

4 Much to my surprise, late this afternoon, ca. 5:00 p.m., 2  
4 Diglossopus individuals turned up here, in the same area where we have  
4 done a lot of watching with this year and last.  
4 They looked like this.

4 Alert  
4 Posture



Bill quite different from Diglossa.

Black mask.

Rest of plumage dull cobalt blue  
(perhaps slightly iridescent)

Looks smaller-bodied and longer-billed than Diglossa.

4 Both birds were in identical plumage. Presumably ♂'s  
4 Very, very active. Flying from bush to bush with  
4 great speed. Heavily constant call notes and/or song.

4 Their CN's might be transcribed as "Dit" or "Tit"

4 One or both birds uttered songs very frequently. (I think it  
4 quite likely that all or most of these songs were hostile. What would be  
4 expected of 2 ♂'s going around together. David also saw a trace of  
4 what may have been BU — see below.)

4 Their songs were very, very reminiscent of the songs of the  
4 small black Diglossa here. Twittering, warbling phrases, frequently  
4 repeated. David would transcribe a typical single song phrase as  
4 "Dit Dit Diddle-see Diddle-see" I would transcribe a typical

Diglossopus, May 27, 1960, II

(2)

single song phrase as "Trit Trit Tsewee Tseweeyoo"

There was considerable variation in these songs. Some songs were introduced by many more than 2 "Dit" or "Trit" Notes. Some songs included definite R sounds. For example:

"Trit Trit Tsewee Tsewee oooooooooooo yoo"  
oooooooooooo

These songs may be distinguished from those of the small black Diglossa here by 2 features. I They are always or almost always introduced by the "Dit" or "Trit" CW-like notes, which appear to be integral parts of the song. (The songs of the small black Diglossa may be preceded by CW's, but these latter appear to be more sharply set off from the song itself.) II The various notes of the main part of the song phrases of the Diglossopus are more "distinct", in some way, than the notes of the song phrases of the small black Diglossa. Apparently fewer also. (In any case, we could attempt to make transcriptions of the songs of the Diglossopus, while we could not attempt to make transcriptions of the song of the small black Diglossa.)

As far as I could tell, the songs of the Diglossopus were delivered from completely unventilated perching and feeding postures.

David caught a glimpse of our bird in a bush, with its wings stretched out horizontally, waving a little. This may have been part of a BV pattern. Unfortunately, we could not tell if the bird was singing or not at the time.

These birds did a lot of TF's. I saw one bird do both U-D and D-V types. They also did WT's; probably less frequently than TF's.

They seemed to be feeding on flowers in exactly the same way as Diglossa - and on exactly the same flowers.

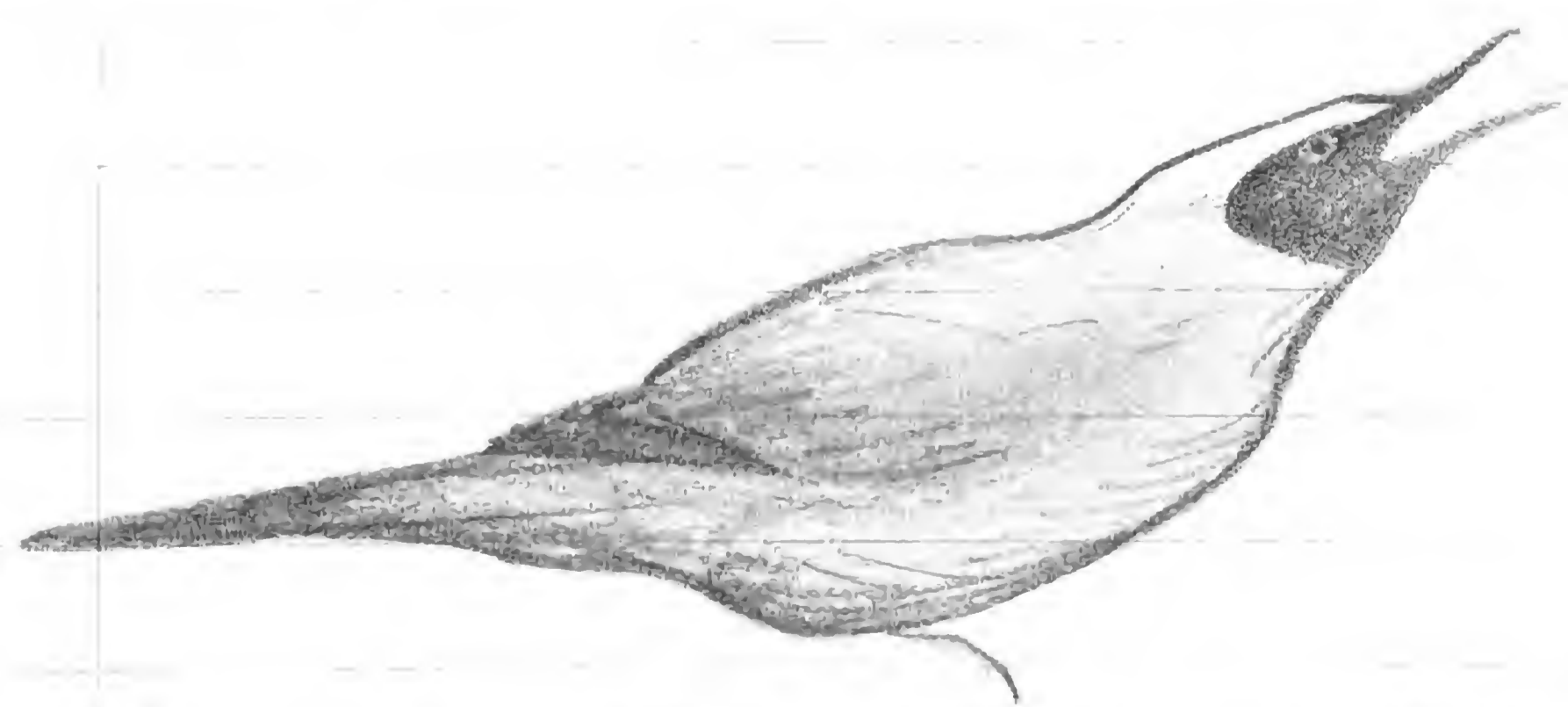
Diglossopus, I

May 31, 1960  
Cerro Pedernales

We finally found where the Blue Diglossopus is fairly common - and where the birds we saw on May 27 almost certainly came from (about 500 to a 1000 ft below the path here where we have been studying other species there is a fairly large stream, in a ravine, with very thick vegetation along the banks of the stream. (This is the western, or wet, side of Pedernales.) There are also cultivated fields, with hedges, on either side of the stream & ravine. (This is very close to the town of Nova.) We have seen Blue Diglossopus in both the vegetation of the ravine and in the hedges.

We saw a fight between 2 birds in a hedge this morning. Vigorous and frequent supplanting attacks. Both birds were apparently ♂'s. (One of them may have had a ♀ along with him, but, if so, she didn't get involved in the fight - and I never managed to get a good view of her.)

Both ♂'s sang almost constantly during this dispute. Their songs were either similar to, or identical with, the songs of this species we have heard before. Most (perhaps all?) of the postures accompanying songs were relatively low - stretched forward & slightly diagonally upward, comme ça:



Head very flat on top

During the intervals between supplanting attacks, the 2 ♂'s some times sang while sitting only a few feet apart. But I did not see any



trace of BV. Some of the songs included rattling "freeseeseese"s, but I did not hear any independent R's. As far as I could tell, there were no actual peals delivered during the dispute. Both birds eventually moved out of my sight, still disputing.

I got a very good look at the birds this morning, and can add some to my original description of p. 1. The eyes are red or (more probably) red-brown. They have a definite iridescent crown patch, which looks either white or very pale blue in some lights. (This is very reminiscent of the Red-legged Blue Honeycreeper.) The wings and tail appear to be dusky, definitely darker than the rest of the body plumage. Most of the body plumage appears to be quite a bright cobalt blue in sunlight.

David heard some more songs from a ♂ this evening, songs which would appear to be slightly from any we have heard before. He would transcribe one song as "Tit dewee dewee dewee". (I would probably transcribe this as "Tit Trewee Trewee Trewee".) Another song sung by the same ♂ was essentially similar, but included more "Dewee" or "Trewee" notes.

Diglossini, I

June 1, 1960  
Cerro Pulincha

Watching the birds near Hono again today.

We saw at least 2 different birds, presumably ♂'s, sitting on high perches (usually 10-20 ft off the ground, in Eucalyptus trees), singing apparently quite by themselves. Early morning - up to about 8:00 a.m. This is very reminiscent of both the small black and blue-spotted Diglossini as.

Both birds uttered songs of the usual type in such circumstances.

One bird uttered songs with a definite R element (at least during one burst of song), in spite of the fact that there seemed to be no other Diglossops (which could have provoked his hostility) in his immediate neighborhood. The other bird sang songs without any obvious R element. Each of his songs was composed of a single phrase, repeated 3 or 4 times. A single one of his song phrases might be transcribed as:

"Ja Ja Ja-sweet Ja-sweet-yoo"

All the songs of both ♂'s which sang by themselves were delivered from apparently unritualized singing postures. Comparatively low, but not quite as low as the posture drawn on p. 3. The ♂ who sang songs without any R element certainly did not have his crown feathers flattened during the songs. (I don't think that the ♂ who sang songs with R had his head feathers flattened either, but I can't be quite sure about this.) Below is a typical posture assumed by the ♂ who sang songs without R.

Notice position of wings!



Bill not very widely opened.

The tongue appeared to be raised several times, presumably during certain particular notes - but it was not raised throughout the whole of a song phrase.

The tail quivers (up and down) slightly with each note of the song. As in Diglossa.

Both ♂'s which sang by themselves did a lot of hopping or flying about, from one perch to another, during the general periods when they were singing, but I think that they seldom or never sang when they were actually moving. (These short hops and flights during song per-

ods were never more than a couple of feet long, and usually much shorter.

We saw one dispute which seemed to be a territorial boundary dispute between 2 pairs. Both ♂'s (at least) wigging madly, sometimes clearing back & forth, but not too much. Most of the time, the ♂'s just looped around, or flew from perch to perch, about 5 ft from one another. They sang both when perched and when flying. Their songs included R elements, but these elements were no longer than the R's in many other songs I have heard in other circumstances. They did not utter any independent R's, or WHAC Notes, or perform any BU.

During this dispute, and during an earlier dispute we saw less clearly (probably involving only 2 ♂'s without their mates), one of the disputants interrupted his wigging and flitting about to pick & pull vigorously at a branch. During the earlier dispute, the bird actually succeeded in detaching a piece of bark or a twig, and then sang, facing his opponent, with the twig or bark still in his bill! This may have been "displacement" nest-building or, more probably, redirected attack.

Birds of this species perform a lot of flailing movements. WF's often very extreme, especially during disputes. TF's also quite extreme, probably in almost all circumstances. Usually or always V-D, with a very strong lateral component.

I have yet to see any bird in distinctly different ♀ plumage. So it is possible that the ♀'s of this species are colored more or less exactly like the ♂'s.

I have seen at least several birds, in ♂ (and ♀?) plumage, which had some white near the anus.

This afternoon I noticed that a bird sitting quite peacefully in a tree, perhaps feeding a little from time to time, made occasional D-V tail flicks, without much lateral component. (I think that this is the only type

Diglossopus, Jun. 15, 1960, IV

(17)

pe of TF it performed.)

Both yesterday and today we have heard quite a lot of "Hoop" Notes coming from hedges here, without being able to see the bird uttering the notes. These notes sound quite like the "Hoop" Notes of ♀ Diglossas, (although perhaps a little softer and more plaintive), but they tend to be arranged rather differently. Occasionally single or in doublets. Most frequently in triplets. Quite frequently in series of 4, 5, or 6 notes. These may well be uttered by ♀ Diglossopus.

Diglossopus, I

June 2, 1960  
Cerro Pulevicha

Watching near Hono as usual.

The bill seems to be kept open throughout a whole burst of song, but the mandibles certainly move in rhythm with the notes.

Diglossopus, I

May 20, 1961  
Cerro Pulevicha

Watching the birds near Hono again. They do not seem to be very active or excited at present. I did, however, study their songs a little bit today.

One bird sang very frequently as it hopped about in a eucalyptus tree. Apparently alone. These songs were very long and generally twittering in effect. Included lots of R's. But began with CN's or CN-like Notes, like the songs I heard last year.

Later, this afternoon, I watched a bird (probably the same as above) flitting about in a eucalyptus tree and uttering lots of the

not "conventional" songs. Apparently no other bird of the same species nearby. Once the bird landed on a new perch, began to sing, just as a Redstart tried to land on the same perch. The Diglossopus immediately spread one or both wings horizontally. Extreme but brief. No trace of wing-waving or Q. I think the song continued while the wing(s) were spread. The Redstart flew away immediately.

Just at sunset, I watched a single Diglossopus perched, quietly, without moving, uttering rather peculiar songs. Each song consisted of nothing more than a or 7 rapid "Zee-za" notes. This similar to other songs in tonal quality. Differed from an ordinary sitting posture. Did not lead to anything. The bird eventually flew away and disappeared.

It would appear that this species has quite a variety of song patterns.

I think that the "conventional" songs of this species are usually louder, more "tinkling" than those of aterreina, but I shall have to check this.

Diglossopus, I.

May 24, 1961  
Cerro Picachucha

Watched the birds near Hono again this evening.

I have only seen one Diglossopus here at any given time this year. Probably always the same bird. Always in the same area. Probably a ♂? Sings quite a lot.

This evening, I saw the Diglossopus repeated supplanted by an aterreina. Made no resistance. (Once, I think, it held its wings out horizontally before the aterreina attacked, but I can't be sure of this.)

Diglossopus, May 24, 1961, II

①

u). After the alternata stopped attacking, the Diglossopus uttered one song phrase. "Til - <sup>mu</sup> - success - yoo."

Diglossopus, I

May 19, 1962  
Pichincha

Working near Horno both morning & afternoon today.  
Diglossopus scarce & inconspicuous, like last year.

This morning I heard one Diglossopus song phrase at dawn (approx. 6:00 a.m.), not repeated. Possibly provoked by my approach.

This afternoon, ca. 4:45 p.m., I watched 1 Diglossopus utter several song phrases. All with "success" components. Not initiated by "Til" or "Til" Notes. Uttered from unusual up'd postures.

Diglossopus, I

May 29, 1962  
Pichincha

Working near Horno this afternoon.

4:10 p.m. See a single Diglossopus singing in tree. Song phrases with introductory "Til" or "Til" Notes. Then singing bird flies to attack another bird in tree 30 ft away. Attacker utters song phrase during attack. Then attacker retreats. Both attacker and attacked sing after attack. I did not notice any bill or R's in any of the songs during this incident. Neither bird assumed any special postures or performed any special movements.

This is undoubtedly a more tree-loving species than any of the Diglossopus as I have studied. Very frequent 20, 30, or more, feet up in eucalyptus.

Diglossopus, May 22, 1962 II

(10)

Good heavens! There seem to be Diglossopodes all over the place this afternoon singing a lot. Possibly more conspicuous because sun has been shining off & on this afternoon. Apparently occupying same territories as last year and the year before.

I have now heard quite a lot of songs without "Tut" introduct notes. They are probably still a minority though.

Watching a single Diglossopus feeding, 5:05 pm. Apparently not a bird of its own species anywhere around. Suddenly the bird assumes it, spreads both wings horizontally, and Q's them very slightly but very rapidly. No TV. Apparently silent. Then resumes feeding as before. Eventually flies off.



Bill possibly more nearly vertical!!

5:13. Watching an apparently single bird feeding. Flies away. Utters one then, single pitched, plaintive "faccet", and then some ordinary CN's as it goes. The first note presumably a PN! (This may conceivably have been the same bird that "relucted" a few minutes earlier.)

Diglossopus, I

May 23, 1962

Pickinick

Working near home this morning.

Amie area where "relucting" bird was yesterday at 5:40 a.m. As far as I can tell, there are no Diglossopus sinuatus here at

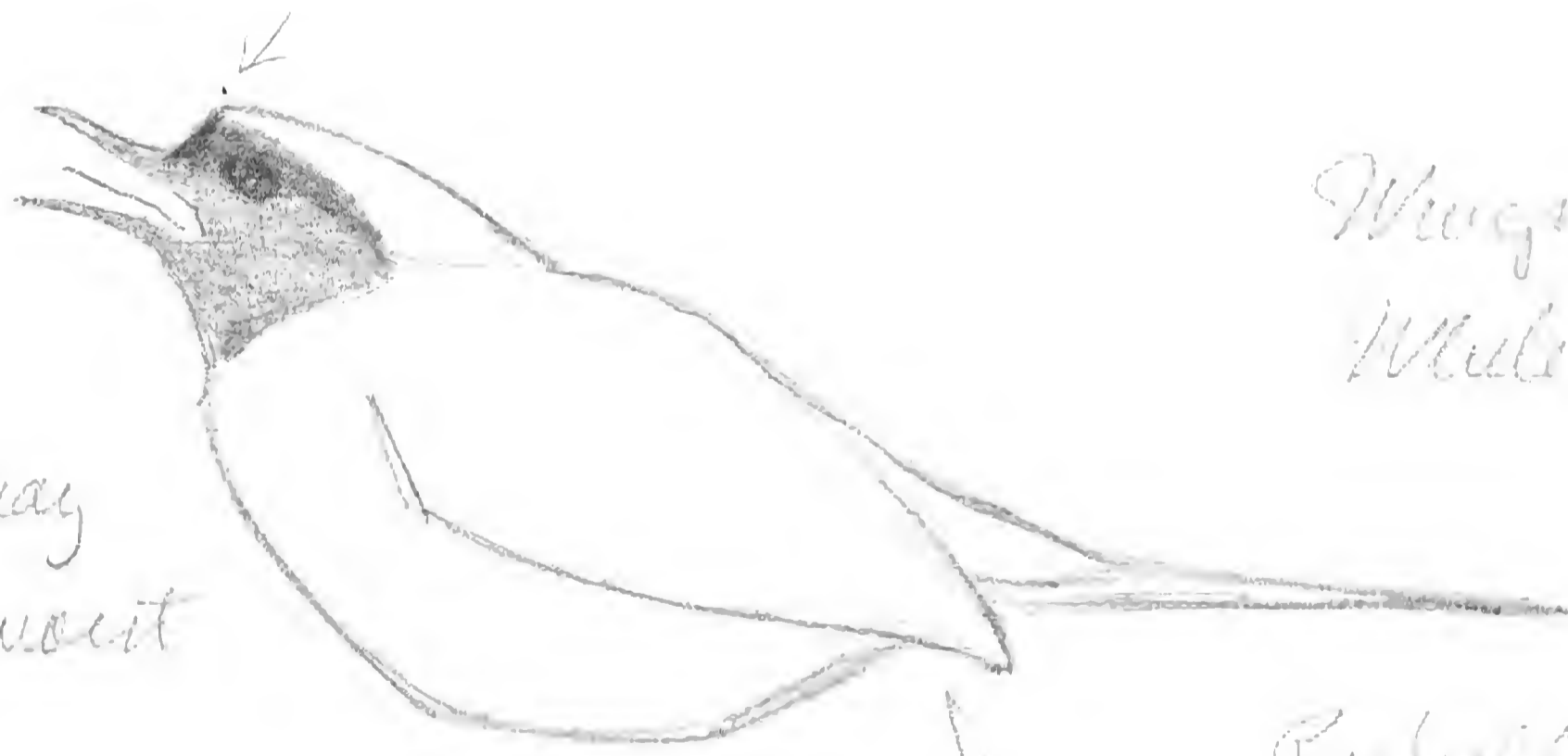
+ lower-substr.) utters 1 "scoot" in flight. Then one or both birds utter (2) loud-basal song phrases as "greeting" when they land together. This "greeting" does not include "scoot" components (Probably does not include introduction notes either). Then both birds continue feeding as before. Then both go down into scrub, to feed in insects. Quite silent there except for occasional "Tut"s. Then one bird drops ears. The other continues feeding in scrub for a few minutes. Then flies up into tree. Utters a few song phrases. Then flies away. Dropp can't see.

It would appear that this species uses song phrases in the same way as the local Cowbird.

NOTE: The only other place I have seen Diglossopus was at Alca, on the afternoon of May 20th. A single bird, feeding quite high in a bush. (It may be significant that there were also trees in the area.)

Built at Home 3:00 pm. Having O wood now

Sluffing may be due to moist plumage.



Wings slightly drooped  
White tongue some times  
rusty

Probably ♀

Find two birds feeding in closely adjacent trees. Definitely not pair mated this morning (I shall call these birds "c"). One bird is very successful. One bird buzzes from tree to tree. Then one bird flies away.



perched in tree. Song repeated, in posture shown above. Then disappears  
 So it does look as if ♂'s and ♀'s of this species may stay together  
 for brief periods of time fairly frequently. Truly intermediate between Drylongops  
sa and Conirostrum.

As far as I could tell, both birds were feeding on insects (where  
 they fed) They were in eucalyptus trees, but not in the parts where the  
 flowers are

A ♂ atrima sings & sings & sings, ca. 3:35, in area where  
 the C Drylongops had been. Doesn't induce any Drylongops to sing in  
 return.

Back to C area 4:05. Found both birds hopping about in some  
 eucalyptus trees as before. Possibly feeding. Both sing when separated  
 from one another. Then one flies over to a thickset and begins to feed.  
 Followed by second. Then both move thru thickset, feeding on nectar.  
 First bird always in lead. One or both birds may utter brief "seet"  
 when flying (not too close to the other bird). First bird occasionally  
 utters typical song phrase when perched some distance away from second.  
 Second bird doesn't sing at all. Both birds quite silent when close  
 together. No "greetings". First bird usually quite sleek. Second  
 bird usually with plumage slightly fluffed.

It is almost certain that the first bird of this pair is ♂  
 and that the second is ♀.

4:17 pm. See C pair still feeding as before

Interesting coincidence in reaction between Drylongops and atrima.  
 2 atrima ♂'s singing in pair. Approached, synchronized  
 then shut up. Then, about 30 seconds later, one or both of the Drylongops  
 sing a few phrases. Then shut up. In about 10 seconds, one of the atrima

Diglossopus, May 23, 1962, II

(11)

this time.

Then what may be first Diglossopus song 8:46 a.m. Each phrase preceded by "Tut tut" Some or all phrases include "fweeeeee" component.

This first burst of song quite over within a couple of minutes.

See what is probably the bird that "collected" yesterday (I shall call this bird "A"), 6:15 a.m. Flying rapidly & excitedly from tree to tree. Usually at least 30 or 40 ft above ground. Usually not feeding. Utters song phrases in at least some of the trees visited. Too far away for me to tell nature of song. Disappears from sight almost immediately.

6:35 a.m. See 2 or 3 birds flying about together. Utter "fweeeeee" notes in flight. One land in tree 2 disappear 1 remains behind. Sings. Goes to another tree. Utters more (single) "fweeeeee" notes in flight. These notes may be FCN's.

This remaining bird then flies from tree to tree feeding. Definitely probing eucalyptus flowers. Sings occasionally. All songs with introductory notes. All or most with "fweeeeee" components.

I am not sure if this bird is A or not. If it is, it has an enormous territory (at least 300 yds long).

7:30 a.m. There has been no Diglossopus song for some time now. (Sun has not reached this area yet.)

A back. Feeding. Singing occasionally 7:40. Songs without "fweeeeee".

Watching his feeding. TF's very common. All very lateral. All almost U-D. WF's very abundant. Tall quivers visible during song. Most of his song phrases now are very long and ...

Without introductory notes.

He is still going from tree to tree very rapidly, staying very long feeding and singing in each tree. Then goes down into low scrub and disappears 7:52 a.m.

A shows up again in a different area 8:05 a.m. Feeding & singing. Some times low in ground scrub, sometimes in trees. Then goes to perch in tree and utters and sings. All song phrases with one or two introductory notes. More or less "Tut tut tsewee-ee-yoo". Sometimes the "tsewee-ee-yoo" becomes "tsewee-ee-ee-ee-ee-yoo" sort of thing. This "wee-ee-ee-ee-ee-ee" but is probably more or less the same thing as the nasal pattern I have also transcribed as "scccccccc".

A few minutes earlier I saw A and a single Asterina feeding in the same scrub. At one point, they sat within 3 inches of one another!!! Without any sign of hostility of any sort.

When the 2 birds separated and both sang. A in tree. The Asterina in scrub. About 40 ft apart. There seems to be a definite tendency for the 2 birds to synchronize their song phrases to some extent. A frequently begins a phrase a second or two after the Asterina, before the latter had stopped his phrase. Many exceptions. Sometimes obviously no synchronization of any sort.

Then songs of Dryocopus maybe somewhat shriller than those of Asterina. And "thinner"?

8:30 a.m. See 2 Dryocopus, feeding in same tree. A and mate. Quite peaceful. Flying about more or less together. One or both utters occasional song phrases, but only, I think, when the 2 birds are fairly far apart. Asterina only utter some "tut" notes. Then one bird flies to another tree. The second follows. One of the birds D. ...

was says 1 or 2 more phrases. So it is possible that the sound of the song of one species inhibits birds of the other species, when it does not stimulate them to sing in return. In any case, the songs of the 2 species do not overlap in a random manner.

4:25 pm (15) singing resumed. Then silent. Then 1 ♂ aterina starts to sing. Then 1 of the C's starts to sing antiphonally with aterina. Then there is a brief overlap one song phrase of each species. Then both fall silent.

Then the C's go to feed in an eucalyptus tree. For a part in tree. Both sing. Songs of presumed ♂ longer and louder than those of presumed ♀. Then pres. ♂ flies about 20 ft away, to feed in shrub. Utters a "t" sound "secret" in flight. (I am now beginning to return to the idea that there are SN's.) Two C's continue to sing. Then 1 ♂ antiphonally. Some overlap pres. ♂ apparently following (in the course of beginning to sing) after the pres. ♂. Then ♂ flies back to ♀. Does not utter "secret" as he does so. Lands near female. A loud "gusting" song as he lands. All or most of the "gusting" by the ♂. Then both fly off. Silently.

Then the same ♂ aterina utters a few more song phrases!

I should mention that the inhibition of song between aterina and Diglossopus seems to be mutual. One species starts after other stops. Neither cuts off the song of the other.

Incidentally, the Diglossopus were definitely feeding on insects while they were in the eucalyptus during this last incident. Pecking at the bases of leaves, under hanging strips of bark, at the centers of twigs, etc.

As far as I know I have never seen...

X Regretting

Go for a walk and come back to Carra 3:10 p.m. C's silent & invisible. The Atenua who has been reacting to the C's all afternoon is singing vigorously. Then he shuts up too.

Find what may be one of the C's further down hedge 3:15. Apparent, alone. Sings. All phrases with ~~fr~~ component. Then the bird flies away.

Then I find both C's feeding in eucalyptus trees. Both quite silent, except for occasional "Tut"s, when close together. Then one flies away into adjacent trees. Just utters "Tut"s in flight. Then each bird feeds in a different tree for a while. They both sing, separately, more or less simultaneously. Then second bird flies over to join first bird (in second tree). Utters "Tut"s in flight. No "greeting".

Both birds are looking for insects in their trees.

X

3:23 ♂ Atenua sings in one of the trees in which both C's sing earlier. C's silent and invisible at the time.

Dryocopus =

May 24, 1962  
Tahurangi

Working in hedges again this morning.

Arrive area C birds 3:35 a.m. C birds apparently not singing - although neighboring atenuas are in full voice.

Hear what seems to be first Dryocopus songs and Atenua notes. Much thinner and more wary than songs of atenua at this time of morning. Hear after phrase. (Almost continuous).

Catch glimpse of singing bird a few minutes later. Definitive R.

Diglossopus, May 24, 1962, II

(17)

glanopsis. Expound in series. Then fly to trees. Utters some "fereet"s in flight. Sings in trees. Flies to another tree. Feeds & sings. Flies to another tree. Feeds and sings. Apparently alone all the time. Then she appears

Her songs were not usually overlapped by those of the atenuas during this behavior.

Both C's back, together, 6:15 a.m. Feeding in eucalyptus. Both insects & flowers. Not usually close together. Fly from tree to tree. Pres. ♂ utters lots of song phrases. All with introductory notes. All or most with a trace of "fereet" component. (It may be that introductory notes and "fereet" components are characteristic of all high intensity songs of at least the ♂'s of this species.) No "fereet" notes. Occasional "Tut"s (The ♀ may also have sung, at the same time as the ♂, beginning each phrase a second or so later, but I am not sure about this.) Then both birds fly off and disappear 6:20 a.m.

Both birds back a few minutes later. In Eucalyptus as before. This time both definitely sing when separated.

Then both go down into low scrub to feed (on nectar). Quite silent when down low (this seems to be characteristic). Apparently a dispute between one of the C's and a ♂ atenua over one particular flower. Silent. Can't see who wins. But the C flies away a few seconds later.

All the local ♂ atenuas were silent most of the time the Diglossopus were singing 6:15-6:23 approx. Only once in a while did one ♂ atenua utter a few phrases. Then occurred between the phrases of the Diglossopides.

Both C's gone now 6:33 a.m.

Back 6:37. Feeding & singing in eucalyptus as before. Same as

as both birds utter (s) series of "Tut"s accelerated into a "CN-hill" in flight. Then both fly off and disappear again.

Once one of the birds was joined by a small plump warbler (even smaller than the Diglossini itself). Don't know which species. Yellow below, olive above, with a very broad yellow or white supercilious stripe or patch. This warbler apparently also feeding on insects in trees. The Diglossini did not show any hostility to the warbler.

Both C's back 6:50. Feeding & singing in Eucalyptus as usual. One flies away, uttering several "seeet"s as it does so. Other follows later.

One C back 7:01 a.m. Apparently by itself. Flies from tree to tree singing frequently. All songs with introductory notes. Then flies away, uttering "seeet"s. ("seeet"s seem to be most characteristic of solitary birds and birds flying away from their mates)

Again & again this morning, I have noticed more correlations between songs of C's and atenuina ♂'s. Usually one silent while the other (s) utter brief or song phrases. Less frequently (but not actually infrequently) phrases of the 2 species alternate. I have seen both instances where a C seemed to be responding to the song phrases of an atenuina and incidents in which the reverse seemed to be the case. I E. sometimes a C will utter a phrase immediately after an atenuina, and sometimes an atenuina will utter a phrase immediately after a C.

Things very quiet now - 7:16. Going down to Area.

7:40 a.m. Heard a single "A" singing about 30 ft up in an eucalypt. Phrase after phrase. Almost continuous. None of these phrases have introductory notes or "seeet" components. I think that the tendency to omit introductory notes may be an individual peculiarity of A's.

Dryland wren, May 24, 1962, IV

(18)

(This is almost certainly the same bird that omitted introductory notes in its songs the first day I observed this year). Then the bird flies to cover in trees. Sings in cackles. Does not utter "beep" in flight. Then disappears.

8:25 am Come across same "A" as before. Apparently alone. Singing repeatedly on top of bush. Songs without introductory notes or "beep" components (which I shall call "SR" from now on). Then flies up into adjacent eucalypt. Continues singing. Then a ♂ atrima about 75 feet away begins to sing to. They are undoubtedly by the same 2 birds I watched singing together in the same place yesterday!! They seem to be real territorial rivals. Sometimes their phrases were alternated. More often they were partly synchronized. Sometimes the atrima began a phrase a second after the "A". Sometimes the "A" began a phrase a second after the atrima. Eventually the 2 birds shut up. I think the atrima had the last word.

At the same time that this "duel" began, I noticed that "A"'s phrases had begun to include both introductory notes and SR. There seems to be a definite (but not invariable) correlation between SR and introductory notes. Which probably means only that phrases with introductory notes tend to include more, and more accelerated, notes than phrases without introductory notes.

It is possible that phrases with introductory notes and SR are more strongly hostile than phrases without such elements.

8:47. The same 2 birds are engaged in another "duel" as before. In this case, the atrima definitely has the last word.

Come back to Cava 8:55. Find a single C singing in tree and includes. All songs with introductory notes & SR. (C is still uttering



Diglossopus, May 21, 1982, I

Secret "Guts" as flight.

Copied a single  $\rightarrow$  atenuatus uttered a few song phrases during the intervals in which the C was not singing. This time, however, the Diglossopus had the last word.

The territorial inter-specific relationships of these Diglossopus ides are not yet clear, in all respects. The territory of C pair obviously overlaps the territories of at least 2 (probably 3)  $\rightarrow$  atenuatus. But the territory (or home range) of A (or the A's) overlaps the territory of only one  $\rightarrow$  atenuatus (if that) and the single Conchell. It is obvious, in any case, that the home ranges and territories of Diglossopus are much larger than those of  $\rightarrow$  atenuatus (or  $\rightarrow$  Cafesuzagei). This may be another resemblance to the Conchell.

The home ranges or territories of Diglossopus are, of course, difficult to compare with those of Diglossa spp. simply because they are so much larger (literally) on the average.

It might be more useful or correct to estimate the areas occupied by individuals of all these species in terms of "perches used". They might all be nearly identical from this point of view.

Diglossopus, I

May 23, 1982

Perthuisla

Working near Home again this afternoon

Reach C area 3:10 pm. C pair feeding quietly in trees and Conchell. Only one does one of the ides utter song phrases when separated from its mate. All other local Diglossopus silent.

BQ

November 14, 1962  
Barro Colorado

Eisenmann saw BQ's copulating this morning, 8:00 a.m. In bushes in front of Old Lab. Introduced by ♀ begging. BQ with ♀. Little or no fluffing or ruffling of plumage. Copulated with her 3 times in rapid succession. No song of any type in immediate association with these cop. attempts. Some other notes, which Eisenmann cannot describe. Presumably, some sort of begging call.

This copulation behavior is not particularly reminiscent of Dryocopus.

November 15, 1962  
Barro Colorado

Watching BQ's myself. Beginning 6:20 a.m.

Two birds feeding in bush (presumably Humulus sp.) Feeding on orange tubular flowers. Frequently or usually cutting into bases. Birds not close together. Uttering occasional "Trit" notes. Not very loud or loud.

When one of the birds flies away. Apparently sings in nearby tree. Songs are determinate series of monosyllabic notes. I should transcribe them as "zee zee zee ..." (Not "zee zee zee ..." as in some of my earlier notes) 4 to 8 notes per series.

BQ's seem to ignore hummingbirds (and a single Jay).

BQ, Nov. 15, 1965, II

(2)

breasted Warbler) feeding in same bushes

Song continues off & on for the next half hour. Once a loud buzz while very near mixed flock of flycatchers and warblers. This is not usual.

As far as I can tell, songs are uttered only by birds separated from their mates (or other companions of their own species)

None of the birds I have been able to see singing have been in special postures or have performed special movements.

6:50 a.m. Burst of song composed of disyllabic notes. Might be transcribed as "zee-huh zee-huh zee-huh..."

I shall call songs composed of monosyllabic notes "MS", and songs composed of disyllabic notes "DS".

7:00 a.m. A single bird, feeding apparently alone in bush, utters occasional "Tacet" notes. Apparently "answered", with same notes, by another bird in bushes a considerable distance away.

7:10. More DS's, same as before. Each DS usually composed of 4 to 8 doublets. Sometimes (perhaps usually) terminal note is a simple "zhuh" instead of a doublet.

7:20. Looking at a bush on the side of the Lab. 2 BQ's in it. Chasing one another. This chasing accompanied by brief series of loud hard "Tsit"s. Sometimes accelerated into semi-R. Each "R" probably composed of no more than 3 or 4 notes. All or most "R"s followed, immediately, by hoarse HAC like note!! One of the birds eventually flies away.

7:35. Again see a bird uttering DS's in intervals of feeding. Each DS "zee-huh zee-huh zee-huh zee-huh" no special

BQ, Nov. 15, 1962, II

(3)

movements or postures

November 17, 1962

Barro Colorado

Watching same place as yesterday 6:00 a.m.

6:10 Single bird feeding. Utters both ordinary "Tsit"s and "Tseet"s. Then the "Tseet"s stop, and I see that there are now 2 BQ's in bush! Also warblers

6:25. Then both BQ's fly away. Then hear MS song, "zee zee zee ..." in nearby tree. Each MS phrase accelerating (almost to R) toward the end.

6:30. Pair feeding in bush. Close together. Uttering ordinary "Tsit"s. Probably a pair. I shall call these birds "I". Then one of the I's flies to nearby electric cable. Faces a 3rd bird, probably member of adjacent pair ("II") about 2 ft away. Both birds hop back and forth along cables, facing one another. Quite silent throughout. In more or less horizontal postures, head low. Heads usually horizontal; bills perhaps occasionally pointed just slightly upward. Crowns probably slightly fluffed or ruffled. Underparts slightly fluffed. Underparts of II more fluffed than those of I. Breast feathers of II more fluffed than feathers of the rest of its underparts. Sticking out and forward. II also has trace of an "upper back ruffle". II retreats more frequently than I. Then the whole incident is broken up by the arrival of a Tropical Kingbird.

The I bird which had been reacting to the II bird now

BQ, Nov. 17, 1962, II

(4)

immediately flies back to its presumed mate, which had remained in the feeding bush. One or both of the I birds utters a brief twittering phrase of variable "zee-zee-zee..." notes, apparently as "greeting"!!! Then both feed, close together, uttering occasional single ordinary "Tut"s. Then one bird flies away. Almost certainly same bird which had been reacting to II. Flies into nearby tree. Apparently sweeps MS phrases.

BQ

November 18, 1962  
Barro Colorado

Beginning observations 6:00 a.m. Clear, but still rather dark

BQ apparently arrives 6:10. Bird in bush. Can't see bird, but it is uttering lots of "Tset" 's. Some quite long, e.g. "Tseeet". Quite regular in rhythm. Almost dx.

See bird a few seconds later. Feeding. Utters occasional "Tset" in intervals between feeding.

I shall call these "Tset" - "Tseeet" type notes "PN"s. The ordinary "Tset"s I will call CN's. And the particularly loud hard "Tset"s I will call "SHN"s.

BQ gone again 6:12. Then back again, feeding and uttering occasional PN's, CN's, or CN-PN's.

6:15 a.m. Bird begins to sing in nearby tree. Possibly the same bird I have been watching feed in bush. Song MS type. Utters a few seconds later another bird flies into bush. Utters several series loud brief notes. Exactly intermediate between typical MS notes and typical SHN's. This second bird may be a II.

A minute or so later there are 2 birds in bush. Uttering cal's, nothing more. Then one flies away. Remaining bird utters one brief MS song, then apparently flies away too.

Then pair re-appears in bush. Utters CN's. One bird also utters brief series CN-SHN notes. Might be transcribed as "ta-zoo-zoo-zoo". Then birds are almost constant, both II's. A

BQ, Nov 18, 1972, II.

I is singing in nearly tree at same time

Then one "II" flies away. Remaining "II" utters several typical MS phrases. Overlapping MS phrases of "I". Then apparently flies away also.

Apparently single bird feeding back in same bushes. Utters lots of MS phrases. Overlapping a lot with MS's nearby bird (again). Also utters one (SHN-MS) phrase (as before).

Typical songs apparently uttered only by single birds, at least in most circumstances.

Bill kept open throughout MS phrases. Little or no movement of mandibles.

Birds continue to sing together for quite a while. No (other) overt aggressivity. Water?

Then, 6:45, regular song stop, and I see there are 2 birds feeding in bush. Uttering CN's and series of notes that are either (SHN-MS)'s or (CN-MS)'s. (It is possible that I can't distinguish between these 2 patterns.)

This evening Erenmany saw what was probably a border dispute between an A and a B bird. Lots of "Trit"s, presumably SHN's. Lots of wing "jerking" (WF's?) and raising of the tail (TF's?). Some preening. Birds kept heads fairly low. No visible CR. Perhaps slight fluffing underneath. Birds sometimes facing one another, sometimes parallel. Never very close to one another. In bushes and on electric cables. Presumed B bird eventually flew away.

BQ

November 19, 1962  
Barro Colorado

This morning, ca. 6:30 a.m., saw 3 BQ's, I(s) and II(s), engaged in aerial chase. Accompanied by long series herald "zee" notes (almost "zhaa"s). Presumably a form of HAC. No special postures or movements.

November 20, 1962  
Barro Colorado

Watching I & II area 6:05 a.m.

1 or 2 I's feeding in usual bush 6:10. Uttering CN's. Getting of interest afterwards. Still no song yet 6:27. Finally, first song, presumably by a I, 6:31. DS, not MS!! "zee-uh zee-uh zee-uh zee" type phrases including variable number of notes.

Leaving 7:03

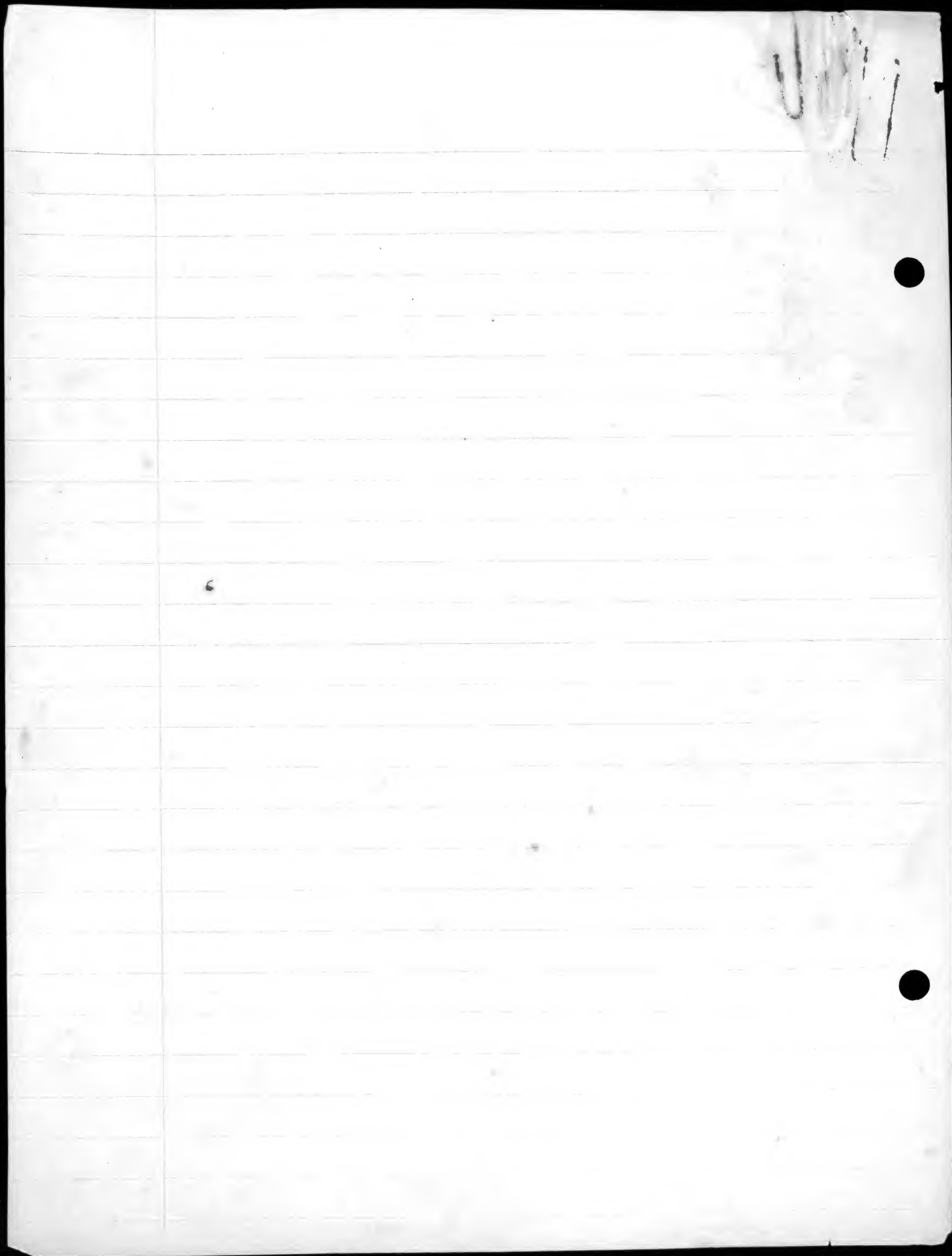
November 21, 1962  
Barro Colorado

Arrive I & II area 6:00 a.m. Still quite dark. Looks like

rain.

One or two birds feeding in bush 6:05. Quiet. Uttering a few CN's. Probably I's. Getting drier. Leaving 7:00 a.m.





Diglossa, I

(77)  
May 29, 1960  
Cerro Piedra

This morning, just before sunrise, one of the small black species was giving a song in which "zee zee zee zee" components were more conspicuous than usual.

Later in the morning we heard at least 7 or 8 R's, each of which was followed by 2 or 3 notes "Za za" or "Za za za". Uttered by ♂'s flying straight to some other bird. We were never able to see the other birds, but I am sure that some, at least, of these other birds were ♀'s. The following incident was most suggestive. One ♂ was singing vigorously, then flew straight to another bird uttering R-"Za za". Then both birds flew away a few feet — and the ♂ did not resume singing (i.e. he was almost certainly with a ♀).

I have suggested, above, that the "Za za" or "Za za" notes so frequently uttered immediately after the "real" R, the "freeeeeee" are an "intention movement" of song. This may be so — but the "Za za" or "Za za" notes are so very frequent, even usual, after the "real" R that they might be considered to be integral parts of a "compound R performance". If so, this species would seem to have a more complex R pattern than any other Diglossa I have watched.

We didn't hear any WHAC notes this morning — and I haven't heard any for days. Why? I am beginning to think that in this species the WHAC's are only uttered by ♀'s. We may have heard a few WHAC notes earlier this trip because some of the ♀'s were not yet incubating them. WHAC's may be absent now because all the ♀'s are incubating. I may have heard so many WHAC's last year because ♀'s were moving about with young then.

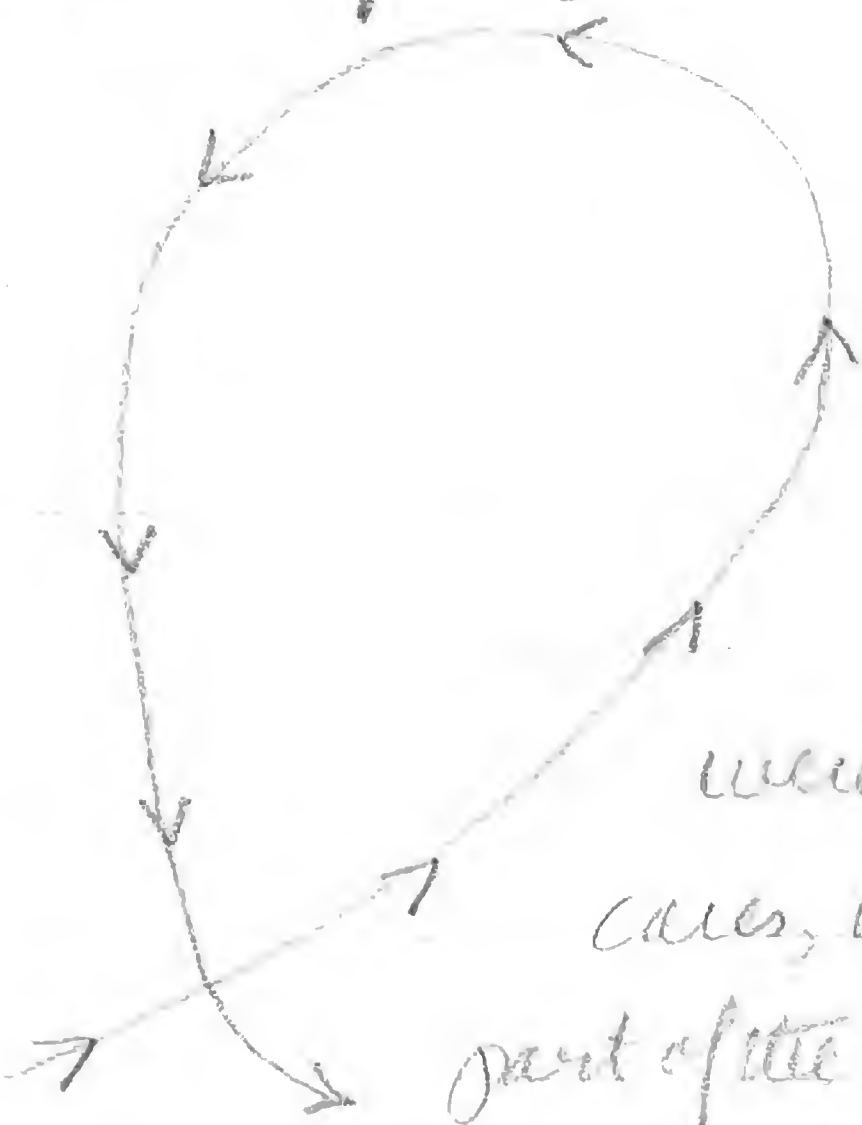
This afternoon David had a good view of a ♂ and ♀ in a bush together. Watched them for 10 minutes. They just hopped about, without performing any interesting overt reactions to one another. The ♂ seemed quite excited. Moving about rapidly. Lots of exaggerated flucking movements. Lots of "Tut" CN's. The ♀ was less active. Performed less extreme flucking movements. She also uttered CN's. These were quite like the CN's of the ♂, but slightly lower in pitch. Perhaps more like "Tut" or "foot".

This ♀ was almost certainly in the incubation phase of the breeding cycle!!

Diglossa, I

May 30, 1960  
Cerro Piculucha

Twice this morning, I saw a ♂ of the small black species sing during a very high steep flight. Looked like a ritualized flight performance. The path of the flight was more or less comme ça:



I think that the two flights I saw were performed by 2 different ♂'s. In both cases, the ♂ sang going up, and during the first part of the descent. In both cases, the actual flight movements appeared to be quite ritualized in form. The song appeared to be quite similar to, or identical with, the songs uttered by perched ♂'s.

I couldn't see what provoked these flights, or what they led to.

Diglossa, I

May 31, 1960  
Cerro Pichincha

Today we did most of our work near the village of Heno (see today's notes on Diglossops).

In spite of the presence of Diglossops coeruleus in this area, the small black Diglossa is still very common - much more common than the Diglossops in fact.

The only interesting reaction of the small black species I saw today occurred this evening. One bird, almost certainly a ♂, was hopping about on the ground and on very low twigs in very dense shrubbery. Very close to us. It uttered a whole series of single, soft "swee" notes as it moved about. The notes were uttered at fairly lengthy but irregular intervals. I wonder if these notes are homologous with the "soft weak little trill" of plumbea mentioned in my notes of Sept. 20, 1958, p. 2?

Thinking things over, I have come to the conclusion that the aggressive behavior of ♂'s is one of the most distinctive features of the species. Aside from singing (which may or may not be mildly aggressive) all the ♂'s of this species ever do is perform attacks (including chases), with or without R - "za za" patterns. They never stay close together and threaten one another at length, like ♂'s of the blue-spotted species performing BV & associated patterns, or even like ♂ Diglossops singing very close to one another. One presumes that this feature of the small black species is highly specialized.

In case I forgot to mention it before, the small black species is the only one which occurs near Quito and its environs. It is obviously adapted to living in quite a wide variety of moderately humid to moderately dry environments.

Dryas, May 31, 1960, II

(30)

In connection with the preceding discussion of the aggressive behavior of the small black species, I should add that I have never seen male ♂'s of this species engage in "puckulum" back and forth disputes.

Every time I look at these Dryas I am more impressed by their resemblance to hummingbirds. Even the songs of some of the species of hummingbirds here are like the songs of the small black and the blue-spotted Dryas (and the Cowbills and the Blue D. gougeoni).

Dryas, I

June 2, 1960  
Cerro Pulewicha

For the last 2 days, we have been working only near Hono. The small black birds here would certainly appear to be well past the peak of display here now. The ♂'s sing relatively very rarely.

I think that the ♂'s usually or always keep the bill open throughout a single burst of song, only moving the mandibles a little with each note. Certainly the bill is never opened very widely during song.

Late this evening, I heard a ♂ utter R - brief warble 3 times in rapid succession. Couldn't see him at the time. The brief warbles after the R's were sort of slurred, but one, at least, might be transcribed by something like "Za za wee wee". This is more confirmation of the hypothesis that the usual "Za za" notes after R are a brief "intention movement" of song.

Dryas, I

July 29, 1960  
Washington

After looking at the collection in the USNM here, I am certain

Diglossa, July 29, 1960, I



(31)

444 that the small black species is aterrima and that the blue-spotted  
444 species is cafusnayeri. The bright blue species is probably indigot  
444 ica.

Diglossa, I.

October 8, 1960

Cerro Punta

I was watching a mixed flock just below the upper pasture today, when I saw a solitary ♂ Hated Diglossa fly up and perch on a stump, about 3 feet from the ground (this was in a field covered by very low-vegetation, so the ♂ was very exposed and conspicuous). On this perch he sang repeatedly. His posture during the singing appeared to be quite unritualized, but he did WF and TF, at times repeatedly, between each song phrase. The first 5 or 6 song phrases he uttered were "zee zee zee" (one "zee zee zee zee zee"). These were not divided into very obvious doublets. Then he uttered about 4 song phrases which included both "zee" notes and brief fowlers warbles. Comme ça "zee zee zee ". At least two of these latter phrases, the fowlers warble ended with 3 very brief descending notes. More or less comme ça "zee zee zee ". These last 2 notes might

possibly be transcribed by something like "Duh duh duh". I think that this must be the most elaborate form of song of the species. (Compare with my notes of Mar. 6, 1959, p. 4).

After singing these phrases the ♂ just flew away

Diglossa, I.

October 9, 1960  
Cerro Punta

Watching the same ♂ as yesterday. He sang for more or less lengthy periods, off and on, all morning (up to 10:30 a.m.). Song phrases essentially the same as yesterday. Always from a more or less elevated perch (once from the top of a tree, at least 50 feet from the ground - but usually much lower). No response by any ♀. In other words, the singing of this species is essentially the same as that of atrimia and lefermayeri.

Diglossa, I.

May 21, 1961  
Cerro Piedrucha

Yesterday, both morning and afternoon, I worked near Hona, and this morning I worked along the path above Hona. Atrimia was still very common all over the place, but by no means as conspicuous as last year. One or two ♂'s sing almost as frequently as they did in May last year, but the others are relatively silent. It is my impression that they have not yet begun to show much in the way of breeding behavior!

I have been impressed, again, by how extremely shabby the birds of this species are. Singing males are almost the only birds that expose themselves for more than a very few moments ♀'s usually stay way down and inside very thick shrubbery. (But I have seen ♀'s more frequently this year than during my observations last year. I.E. the ♀'s are not incubating yet.) Non-singing ♂'s seem to come to the top of shrubbery more frequently than do ♀'s, but the

Diglossa, May 21, 1961, II.

(33)

ey are still usually very inconspicuous. And all the birds are really quite remarkably shy. (I shouldn't be surprised if the local children use catapults)

The songs I have heard uttered by ♂'s this year have been much the same as the corresponding songs I heard last year. Probably many of the same birds involved. This morning, for instance, there was a bird singing songs, each phrase of which was preceded by an R, in exactly the same place where a bird sang similar songs last year.

The most active ♂ I observed this morning sang at the same times as the ♂'s I observed last year. I.e. a few songs just after dawn, and then a lot of songs later in the morning.

I have not seen any ♀'s associating with ♂'s for more than a few seconds. This species certainly does not seem to form pairs.

Around 8:00 a.m. this morning, I saw a bird which was probably a ♀ aterrima (possibly a ♂ of another species, like plumbea), sitting by itself in an eucalyptus tree, uttering very, very soft songs!!! These songs appeared to be quite similar to the old male songs of ♂ aterrimas in form, but they were barely audible at a distance of 10 feet. Uttered from an ordinary sitting posture. No OCB. But tail vibrated in rhythm with the notes of the song.

I shall call such songs "SS". The bird uttered at least 3 SS's, and then flew down into a bush and disappeared.

I have heard quite a lot of single "Hoop" notes coming from the scrubbing along the path above Hona and near Hona itself. These were probably uttered by ♀ aterrimas, but I have not yet been able to see the birds utter them.

I have not heard any WHAC's this year yet.



Diglossa, I.

May 23, 1961  
Ca de Maqueto

I have been working here, all day yesterday and this morning, in the same field where I studied so many birds last year. Small black Diglossas are still common here, but, surprisingly enough, I have yet to hear one sing here this year!

Diglossa, II

May 24, 1961  
Cerro Atacaso

Went back to the same place this morning where I observed Diglossas in 1960 and 1959.

There were a lot of Cafreswayer around — in exactly or almost exactly the same places as on previous years. Possibly the same birds. There were also quite a number of aterrina around. In the same area I saw them last year. There are some Cafreswayer in the area where aterrina occur (the 2 species may be approximately equally common in this area), but aterrina are apparently lacking in some of the areas where Cafreswayer is common. The altitude of all these areas is approximately the same, and the vegetation seems to be similar everywhere Diglossas occur here. I think that the critical factor controlling the distribution of aterrina here may be sunlight. The areas in which aterrina occurs, here, receive the morning sunlight much earlier than the areas where aterrina are absent.

The 2 species seem to react to one another rather significantly. At least, ♂ aterrina may start to sing when they hear ♂ Cafreswayer singing.

Diglossa, May 24, 1961, II.

(35)

Rather surprisingly, the territories of ♂'s of the 2 species may overlap with little or no friction. I saw one ♂ Cafresuayei and 1 ♂ aterreus this morning which seemed to be using the same tree as "headquarters". These 2 birds seemed to ignore one another, but they did not usually sing at the same times.

The ♂'s of both species sang quite frequently this morning. But not at dawn. Singing began in earnest about 1/2 hour after dawn, and continued, in full swing, until about 1/2 hour after the sun reached the zenith.

I saw quite a number of ♀'s of both species moving about quite freely this morning.

All this would suggest that the birds are just beginning to breed.

I was able to study the songs of ♂ Cafresuayei in detail. The most common songs were more or less comme ça: "Zraā zraā ti-ti zraā-zraā . . . ." Essentially a series of "Zraā" notes, interrupted at regular intervals by doublet "ti-ti" notes. It was this type of song which was sung by ♂'s apart from their ♀'s. Delivered from high exposed perches. When singing was at its height this morning, the ♂ Cafresuayei would sing this type of song suddenly, but divided into distinctly separate phrases. The whole performance was quite reminiscent of the "dawn song" of the Yellow Grosbeak. The songs of the Cafresuayei actually sounded like the songs of the Yellow Grosbeak - delivered by a tiny dwarf grosbeak.

It is possible, therefore, that the song of Cafresuayei is relatively "primitive" among Diglossas.

These songs by the ♂ Cafresuayei were much "slower" than

Diagona, May 24, 1941, III

36

in the songs of ♂ aterrima. Longer notes, separated by longer pauses.

I don't know why the ordinary lapemayer songs I heard this morning seemed to include fewer distinct doublets than the corresponding songs I heard last year. Different intensity? (Perhaps higher this year ???) In any case, it should be stressed that they were essentially uniform this morning. I heard at least 4 or 5 different lapemayer ♂'s utter similar songs.

The ordinary lapemayer songs this morning were also similar to the songs of Yellow-Groateds insofar as they occasionally included a few notes of different pitch from the rest. Usually or always "Zraa" notes I think. Usually or always higher than the rest of the "Zraa" notes. I don't think the relatively high notes were produced by any significantly different motivation. Just inserted more or less at random.

The ordinary songs of ♂ aterrimas I heard this morning were much the same as last year. These songs were uttered by isolated and exposed ♂'s. Much more rapid than the ordinary songs of ♂ lapemayer and divided into distinct phrases. All the phrases essentially similar to one another. A typical phrase might be transcribed by something like:

"tuh-tuh-tuh

tuh-tuh-tuh - wheeyoo"

tuh tuh tuh

(This looks very different from the diagram of aterrima song drawn on May 20, 1940, II. It is possible, however, that the latter diagram represents two phrases "run together". The ampliative note in the center might be a "wheeyoo".

Diploma, May 21, 1961, IV

(37)

I rather think that the atermina may have been showing some sexual behavior today. At least, I caught brief and uncharacteristic glimpses of some peculiar reactions, each of which seemed to involve one ♂ and one ♀ atermina.

In one case, I saw a ♂ atermina chase a ♀ repeatedly. This chasing was largely aerial (although the ♂ also sometimes hopped after the ♀ when they were both in a bush). Some of the aerial chasing was quite prolonged, the two birds twisting and turning very rapidly. The ♀ made no attempt to leave the area. Most of the chasing was quite silent, but the ♂ did utter one R - "Za Za" at one point.

Another time, I saw even more prolonged aerial chasing. I think that the 2 birds involved in this chase were the same as the ones involved in the chase described above, but it was all so rapid that I could not be absolutely sure of either the sex or the species of the two birds. This very long chase was also largely silent, except for a few ordinary-sounding CN's, 1 soft WHAC or HAC Note, and one very brief burst of very rapid, somewhat twittering song.

(If the 2 birds involved in this last chase were really atermina, it is interesting that the chase appeared to stimulate a neighboring Cafrenayer ♂ to begin singing.)

It seems quite likely that "pursuit flights" are a prominent part of atermina "courtship".

Rather late in the morning, around 8:30 a.m., I caught some brief glimpses of 2 birds flitting rapidly about in a very dense thicket. I think the 2 birds were atermina. In any case, the rapid flitting was accompanied by lots of R - "Za Za" calls (by a ♂?) and single WHAC Notes, "Whaah Whaah Whaah...." (by a ♀?). Unfortunately, I could not see if these calls were accompani-

ed by any special movements or postures.

There were also a few interesting reactions among the Lafresnayeri this morning.

Just at dawn, I saw one of Lafresnayeri moving through a thicket very rapidly. Uttered "zee-zee-zee-zee-zee MMM see-a see-a see-a see-a". The MMM was a definite, quite loud R. I think this bird was following or chasing another bird in the same thicket.

Somewhat later, I heard several more "zee zee zee zee zee ...." calls. Unfortunately, I was never able to get a very good view of the bird(s) uttering these calls. But they were uttered in an area which appeared to contain only Lafresnayeri. And I think these calls were associated with aerial chases.

All this would suggest that Lafresnayeri has a hostile "zee zee zee zee ...." pattern more or less like that of Coccyzium fraseri.

I also think that this "zee zee zee zee ...." may be closely related to (perhaps a low-intensity form of?) the WHAC. I heard some "zee zee zee ..." notes this morning which seemed to be very-very upon typical WHAC.

This afternoon I went to look at the birds near Hono, in the usual place.

It is obvious that the songs of aterina here, at the present time, are slightly different from the songs of aterina on Utao. The songs of the Hono birds are even more rapid and forceful. Probably also include more notes. As far as I can tell, the songs of all the aterina at Hono are essentially similar. They might be translated more or less

"zeewa zeewa zeewa zeewa zeewa      zeewa zeewa      zeewa zeewa zeewa zeewa"

(All very rapid).

It is possible that the songs of the Hondo birds are characteristic of a latter phase of the breeding cycle than are the songs of the Ataraso birds.

Late this evening, I saw another song-aerial flight performance. A ♂ flew up, about 10 feet above the level of the shrubbery, and then down again, singing all the while. His song was quite ordinary, quite like the songs of other birds singing on perches here. The course of his flight was comme ça:



One ♂ aterrena repeatedly supplanted a (♂) Diglossopus feeding in the same tree. He uttered a few songs during the period he supplanted. One quite ordinary. A couple of others even more hurried, and probably briefer, than usual.

Aterrena ♂'s seem to have two types of "CA" "Tut"s and "fist"s. I don't know what the difference between them is yet. "Tut"s more hostile? Or more aggressive?

Diglossa, I

May 26, 1961  
Cerro Atacazo

Watching both atermina and lafresnayeri here, in the usual places, this morning.

The ♂ lafresnayeri I listened to on May 24th seemed to be singing in exactly the same way today.

But I also came across another ♂ lafresnayeri which was singing a song which included more "ee" sounds. Comme ça:  
"Zee zee zaa-zaa zaa zee zaa zee zaa-zaa zaa zee-zee  
....."

The only CV's I have heard uttered by lafresnayeri have been ordinary "Tut"s. By birds in bushes near me.

This morning, the atermina began singing frequently some minutes before the lafresnayeri. This might be another indication that the former are more advanced in the breeding cycle than the latter.

This morning, I made a special point of watching the two birds, one of which was uttering lots of "Waaah" Notes on May 24th (see description bottom p. 34). I was able to establish that these two birds definitely are atermina. One an adult ♂. One apparently juvenile; in gray plumage with very short tail! The juvenile uttered many more "Waaah" and similar notes this morning, and it was obvious that these notes were "begging", probably partly FB (see also below).

The juvenile followed the ♂ steadily. But it usually kept very well concealed, down in thick scrubby. It seldom came up to feed and sit in the open, although the ♂ did so very frequently.

The juvenile uttered the "begging" notes almost steadily for at least two hours this morning. Only taking occasional pauses of 5 or 10

Diglossa, May 26, 1961, II.

(41)

minutes.

The rhythm of the "begging" notes was fairly distinctive:  
"Waaah waaah waaah - waaah waaah waaah waaah . . . ."

Sometimes the individual notes were more like "zhaa" than like "Waaah", but this variation appeared to be minor.

A few of the "begging" notes were much louder than the rest. Almost trills.

The only time I got a good view of this juvenile while it was "begging", it was hopping through the bushes in a more or less "normal" hopping posture, with wings drooped (quite appreciable) and slightly spread. No trace of G. Back rather ruffled. Head pulled in, in what may have been an indication of H.

I never saw the ♂ feed this juvenile this morning. He seemed to ignore the juvenile almost completely. He did not utter R - "Zoo" calls this morning.

The fact that the juvenile kept up "begging" so steadily this morning, with so little apparent response, might suggest that its "begging" is not purely FB. Probably, partly hostile (this is confirmed by the fact that some of the "begging" notes were almost trills).

I think it is highly probable that all or most of the "WHAC"s I heard on the path above Hono on Aug. 9, 1959, (p. 14), were really begging notes. The birds which uttered the "WHAC"s near Hono on Aug. 9, 1959, were remarkably "skulking" and difficult to see, just like the juvenile on Ataraso today. The "♀" observed uttering "WHAC"s near Maqueto on May 23, 1960, (p. 23) may also have been uttering "begging" notes.

Asterina does, however, have a "real" WHAC pattern - see below, and also some earlier descriptions, such as that on May



20, 1960 (p. 18) — but it seems to be comparatively rare. It might also be called just plain HAC.

The pair which performed all the chasing reactions on May 24 (see p. 37) were still around this morning. I shall call this pair "Z". Their behavior this morning was very much the same as on May 24th. The ♂ chased the ♀ repeatedly, sometimes for minutes on end. Sometimes silently. At other times, one of the birds (presumably the ♂) uttered R — "Za za" calls. Every once in a while, when the ♂ got too close to the ♀, one or both birds would utter 1, 2, or 3 notes which seemed to be "real" HAC. Might be transcribed as "Zhaaa" or "Whaaaa". Hoarser than the "begging" notes. Less harsh. Usually longer than most "begging" notes. As far as I could tell, these HAC's were not accompanied by any special movements or postures.

In spite of all this chasing, the 2 Z birds stayed more or less together all morning. Seldom or never more than 20 or 30 feet apart from one another — although seldom very close except when feeding vigorously or during chases.

I noticed again, this morning, how prone the atermia ♂'s are to sing in response to almost any sound of any other species. This morning, they responded particularly vigorously to the song notes of the large rosy Phryzulus (see today's notes on the latter genus).

I watched one solitary ♂ preening, vigorously and quite silently, for two or three minutes. Then he suddenly flew up, singing, to perform a song flight just like the ones I have observed before. Then went straight back to his old perch and began to preen silently again.

I think the "Tut" and "Sect" CN's of atermia are nothing

Diglossa, May 26, 1961, III

(43)

more than slight variations of a single pattern. The birds seem to give "feet" in flight, and "hit" when hopping or landing in bushes.

Diglossa, I

May 27, 1961  
Cerro Ataraso

Working in the same place this morning, 5:45 - 7:10 a.m.

Began by watching the Z pair. The ♂ sang a little, apparently by himself, just at dawn. Quite ordinary songs. Then disappeared for a few minutes. Then, around 6:00 a.m., re-appeared, with the ♀. Then the 2 birds did a little chasing, in much the same way as yesterday. The ♂ pursuing the ♀. I couldn't see the details of this chasing, but I did hear a few HNC Notes from time to time while the chasing was in progress. This chasing did not continue very long. Afterwards, the 2 birds were most uninteresting. I saw them occasionally, but they did little but feed. A few brief chases — but many fewer than on May 24th. I got the impression that the birds were settling down into happy domesticity. Hostility greatly reduced.

I then began to watch another pair of aterura, on an adjacent territory. Call this pair "X". (The X ♂ is the one who did the song flight yesterday.) The X birds seemed to be definitely less advanced than the Z birds. The X ♂ only approached the ♀ occasionally.

Most of the time, the X ♀ hopped and fed, quite peacefully, in a restricted area of bushes. The ♂ spent a large part of his time at least 20 or 30 feet away from the ♀ (usually out of my sight), probably feeding. He did not, however, utter many song phrases while he was thus separated from the ♀. I.E. he knew she was around.

Diary, May 27, 1931, II

(44)

When he did approach the ♀, the reactions between the 2 birds were quite variable.

Sometimes the ♂ just flew into a bush near the ♀, or even the same bush as the one in which the ♀ was feeding, and began to feed peacefully himself. No "greeting" display by either bird. All that happened was that one or both birds occasionally uttered a few "Tilt" CN's as they continued feeding (probably no more "Tilt" than they would have uttered if alone).

At other times, the ♂ would fly straight at the ♀, uttering R-Za Za as he did so. The ♀ usually retreated at this, but not very much. The ♂ would then fly away immediately. The X ♂, in other words, was too afraid of the ♀, or the ♀ was not sufficiently afraid of the ♂, to enable chasing to develop.

Even once in a while, just as the ♂ flew at the ♀ with R-Za Za, I would hear one or two faint HAC Notes.

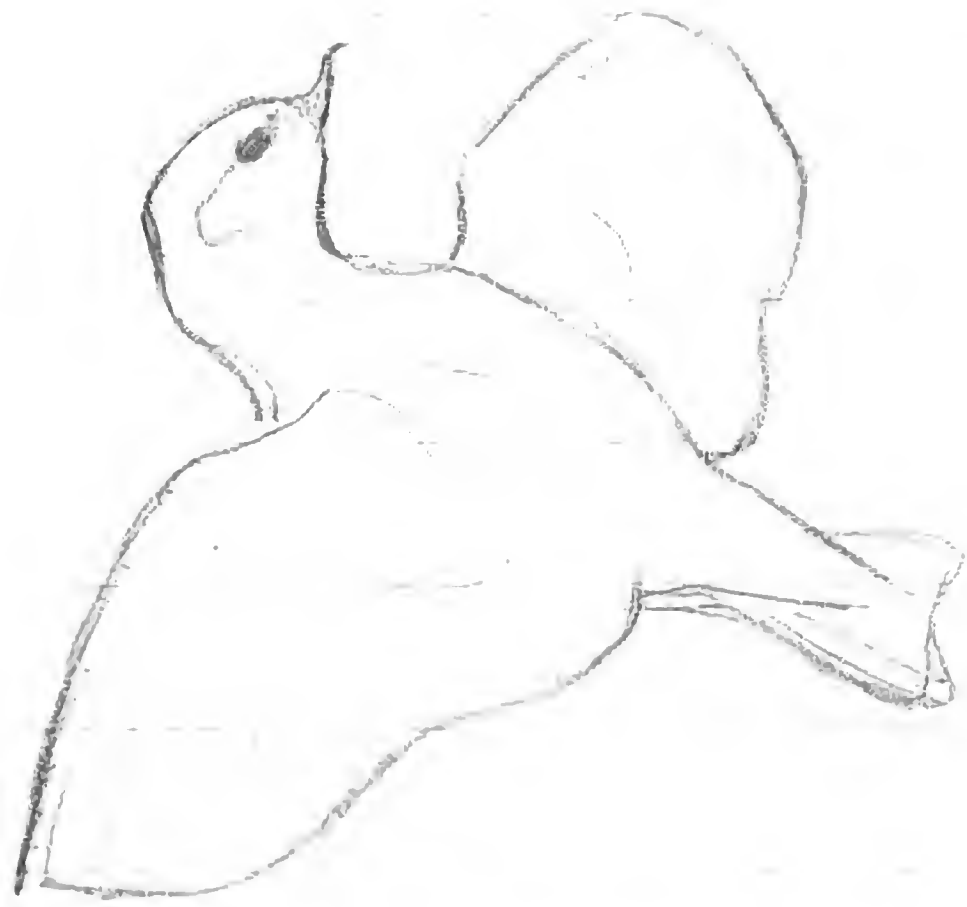
I think these HAC Notes, and the HAC Notes uttered during the Z chasing performances, were usually, or always uttered by the ♀'s of the pair.

The reactions of ♂ aterrum to ♀ aterrum are certainly reminiscent of the "pouncing" of Embury's!

Just before leaving this morning, I saw a particularly interesting series of reactions between the X birds. They had both disappeared from my sight, and then re-appeared quite suddenly. The ♀ was hopping through the shrubbery, and the ♂ was following her. Every once in a while the ♂ would hop particularly close to her (it looked very much as if he wanted to mount her). The ♂ was silent throughout. But the ♀ uttered nearly constant HAC's. Definitely "WHAC"s "Whoash whoash whoash whoash . . . ." Very buzzy. Moderately loud. Every time

the ♂ came particularly close, the ♀'s HAC notes became noticeably loud or even faster. At the same time, when the ♂ came particularly close, the ♀ began definite BV! Wings held out, waving asymmetrically and irregularly (usually not rapidly). No back-fluffing. This BV was superimposed upon a variety of ordinary cropping & perching postures. The only regular feature of these postures was that the ♀ usually tried to face the ♂.

\* ♂ approximately here



A typical BV posture

The wing nearest the ♂ was sometimes raised higher than the wing away from the ♂.

This BV appeared to repel the ♂. At least, he always dropped back a little, or stopped following the ♀ so closely, when she began to perform the BV.

This behavior by the ♀ is a good indication that HAC + BV is threat, and higher intensity than HAC alone.

After approaching the ♀ very closely, and being repelled, 3 or 6 times, the ♂ just flew away — still without uttering a note or performing a display of any kind.

At one time early this morning, a Sparrow Hawk appeared in the area, and perched on a nearby tree top. The ♀ dived into the bottom of a bush, uttering 2 or 3 faint HAC's as she did so, when she saw the hawk.

I noticed this morning that when a tern was approaching a bird, the

TF's are usually V-D.

Diglossa, I

May 20, 1962

Atacaso

Arrive usual place 5:40 a.m. Not quite light yet.

Hear what appears to be first song of blue-spotted diglossa 5:48. Compound of distinct notes (not a formless twitter), but with out any very conspicuous doublet structure. "zee zraa zee zraa zee zraa zee-zee-zee" is one phrase I hear clearly. Considerable variation. Can only get a glimpse of bird.

Same bird utters song with more obvious doublets 5:59

"zee-zraa zee-zraa zee-zraa"

It is obvious these birds can sing at dawn if sufficiently motivated.

Hear what is probably first aterrima song 6:09 (Hear as soon as I reach a fairly typical aterrima area.)

6:13 a.m. Now there seems to be a general lull in Diglossa songs. Birds presumably feeding.

6:19. Watching a single ♂ singing. Almost certainly a blue-spotted bird. Uttering phrases more or less comme ça:

"zee zee zee zee zraa zee-zee zraa"

Frequently more abbreviated than this, but seldom or never any longer. (Yes! This is definitely a blue-spot). Sitting in perfect, normal, upright, rather erect posture while singing. Feels free to take lateral glances. Occasionally interrupts singing to go feed.

6:40. Apparent zig-zag behavior, dispute between two ♂ Blue-spots. Flying back & forth, uttering lots of songs. Rather

Diglossini May 20, 1962

(17)

accelerated for the species. No other display

7.40 am. Whistling ♂ → atermina singing. Apparently all by himself, but some of his songs have rattle or trill component. Ends of "messing" uuuuu

In the same area where I thought I saw pre-cop behavior last year, I can occasionally hear soft "Wah wah wah wah ...." notes. Sound like begging of young last year. In the same area, there is a ♂ atermina who has done little or no singing this morning, in spite of the fact that he has not been accompanied by a ♀. I think he must have young (probably still in nest, as begging sounds seem to be stationary).

7.45 am. I have now heard a lot of ♂ Blue-spots singing on their stations (quite apart from obvious hostility). Most songs consist of distinct notes, with only an occasional "zee-zee" or "zee-zee doublet", usually toward the end of a phrase. (I am using "doublet" to include sub-notes which are closer together than most of the other notes in a song phrase.)

Thus, my observations of the song of Blue-spots today would seem to confirm my observations of the song of the species last year.

When I first observed these birds 3 or 4 years ago, I may have been misled into supposing that most of the songs were largely or completely composed of doublets because the birds frequently alternate all notes of slightly higher and slightly lower pitch (i.e. "zee's" and "zoo's").

The doublets I have transcribed as "zee-zee" and "zee-zoo" today may be the same as the ones I transcribed as "te-te" last year.

One of the ♂ aterminas here seems to have a large white patch on its

Diglossa, May 20, 1962, II

(48)

6 am!

Diglossa, I

May 21, 1962  
Palmira

Working near Lora this morning.

6:50. See a ♂ aterina attack and chase a Chimcol. With "Zu-zu-zu-zu" so perhaps this species does show a lot of inter-specific aggressiveness, like hummingbirds. It may not attack the Blue-spots on Ataraca simply because the latter species is larger.

Diglossa, I

May 22, 1962  
Palmira

Working near Novo this afternoon.

3:50 pm See an aterina ♂ attack & drive away a hummingbird.

Diglossa, I

May 23, 1962  
Palmira

Arrive Novo 5:30 a.m.

As I walk along path immediately after dawn, I hear lots and lots and lots of aterina song!!! It isn't till night at this time, but the sun is full and very bright.

Heard a phrase of aterina singing phrase after phrase.

5:50 a.m. All phrases almost formulaic, but each one seems to

Diglossa, May 23, 1962, I

(17)

Begin with a "zee-zee" This may be a resemblance to *Diglossopsis*  
Just burst of *Diglossa* songs quite finished by 6:00 a.m.  
Songs beginning again by 6:16 a.m.

7:30 a.m. There has been little or no *Diglossa* song for some time  
now. (Sun has not reached this area yet)

8:05 a.m. Watching a single ♂ *aterina* singing repeatedly.  
All phrases "Zewazewazewazewazewa" type. Quite like those  
of the Cornbill (see today's notes on *Cornisornis*). I simply can not  
tell some of the song phrases of the 2 species apart.

SEE ALSO TODAY'S NOTES ON DIGLOSSOPSIS

Back to Noua again in afternoon. Cloudy and occasional rain

3:45. See a ♂ *aterina* give a long song phrase in flight.  
Flying more or less horizontally over ravine. Wing beats fast, but not  
very deep, and head moves forward slowly.

Diglossa =

May 24, 1962  
Pechincha

Arrive Noua 5:20 a.m. Still dark. *Atterina*s already singing.  
All least 3 or more birds. In singing area of *Diglossopsis* there  
are at least 3 *aterina*s singing in this area. Notice that the song  
phrases of these 3 birds do not usually overlap (rather there are, of  
course, exceptions)

Just burst of song seen by 5:30 (if not a few more to come)

Starts again 3:55. Again phrases of different birds do not usually  
overlap

Now birds do not seem to pay any attention to



Diglossa, May 23, 1962

(2)

|||||

species singing at same time. Overlap with latter in perfectly random manner.

///  
///  
///

6:10 a.m. A ♂ aterrima is now singing in tree where Diglossa sing quite frequently. They are absent now. And the aterrima is singing from a perch which is much lower than the singing perches usually selected by the Diglossa in the same tree.

Atacaso & Maqueto

Went up to Atacaso this afternoon. Arrived 3:00 p.m. Heavy mist & rain, so I didn't stay long.

|||||

Both cafrensis and aterrima sang quite a lot while I was there. My impression was that the songs of the 2 species were not correlated in any way. Once, at least, a single ♂ of each species (quite far apart) sang songs simultaneously. A couple of other times I heard phrases of the 2 species overlap. I don't know if these reactions were coincidental or not.

5  
5  
7

I arrived at Maqueto, at the usual field, at 4:45, and stayed until 6:20. During all that time, I didn't hear a single aterrima song phrase, altho I did catch occasional glimpses of ♂'s (see also today's notes on Conirostrum).

Diglossa, I

May 23, 1962  
Atacaso

Working in misty place. Arrive 5:38 a.m. Very misty and cloudy

Diglossa, May 25, 1962, I.

(51)

C First atenuans (or Cowbell) song heard 5:35 a.m.  
C Several birds in chorus. Then fall silent.

First Blue-spot songs 5:43 a.m., when the atenuans  
are silent. First Blue-spot starts by alternating song phrases  
with Atiaptera rufinucha!!! Then continues song from rufinucha  
phrases (apparently ignoring latter) 5:47.

Then hear some Blue-spot and atenuans (or Cowbell) phr  
are alternating. Then overlapping.

3 times C overlaps A

1 A overlaps C

5:57 Two atenuans carefully alternating phrases and  
C bursts of phrases. All song phrases seem to be "zee wee zee wee zee wee  
C zee wee ..." or "zee wee zee wee zee wee zee wee ..." Then become more  
C warbling a few minutes later.

All the Blue-spots near me silent while the atenuans are  
singing.

6:02 a.m. All local atenuans type song now back to  
C "zee wee zee wee ..."

6:04 a.m. Two "atenuans" repeatedly uttering phrases almost  
C synchronously. Then alternately. Then synchronously again.

~~NOTE: I have not been able to see any of the birds uttering  
these songs, but I am almost certain that they are really atenuans. Notes  
relatively loud & melodious. I think Couros-trum notes would be atenuans~~

All birds silent 6:09 a.m.

Oh oh!!! Now there is a single Cowbell singing in area where  
C the "atenuans" were a few minutes ago. See the bird. Song phrases relatively  
C direct "zee wee a wee a" Quite then. When bird begins to sing these phrases  
C it provokes a neighbor to sing also. Two birds alternate almost ...

C the second bird is a Cowbird too, but I can't be sure about this.

Then silence again 6:15 a.m.

S All the Blue-spots have been very quiet this morning. Why?

No sooner said than done! Single Blue-spot begins

singing 6:16 a.m.

Arrive area where I know atenua & Blue-spots both occur.

Blue-spot singing when I arrive. Shuts up. Then Cowbird sings. Then

Blue-spot starts again. Then Cowbird. Then Blue-spot. Then silence.

Then Blue-spot again. Then silence.

The only atenua ♂ I can see around now is the one who

has young in the nest, and he is silent.

Blue-spots singing off and on.

All birds silent now - 6:27. Then Blue-spots start again

Then an atenua ♂ starts (this time I can see bird). First alternates

phrases with Blue-spot. Then twice overlaps Blue-spot. Then Blue-

spot shuts up. atenua sings many phrases. Then atenua stops and

Blue-spot starts again. Then atenua starts again. Some Blue-spot

overlaps atenua. Then atenua stops. Blue-spot continues. Then

stops.

All these atenua phrases were quite different from the "Coo-ee"

or "rough heard earlier. Beginning "zee-zee-zee..." accelerating into

a fowless twitter, ending with an "ee-ee-yoo".

The atenua quite ignored a female or flycatcher singing

at more or less the same time. Sometimes overlapped, sometimes not.

The atenua and the Blue-spot were singing from situations

at least 30 ft apart, but I have since seen them feeding in the same

areas (altho not at the same time)

Duglana, May 25, 1962 III

(53)

So it looks as if all 3 species here react to one another more or less like Dyloropus and atrimina at Howe.

6:40. Blue-spot alone singing now. Seems to ignore Atlapetes refumida singing day song. Then shuts up, while refumida continues. Then starts again while refumida continues.

Two Blue-spots largely alternating phrases. Only partial overlap.

I should not be surprised if the sound of one Blue-spot singing stimulated others to do the same, even when they do not overlap.

Now 2 Blue spots singing simultaneously but not really synchronously. Then one gives up, leaving the other a clear field. This bird is sitting in one of the favorite bushes of the atrimina →

Then an atrimina (on station far from Blue-spot) sings, twice overlapping Blue-spot. Then Blue-spot shuts up!!! Then atrimina stops, and a different Blue-spot starts!!!

At least 3 Blue-spots have sung within the last 2 minutes with little or no overlap!

All fairly quiet now 6:55. Only an occasional Blue-spot singing. Then two birds singing simultaneously. These Blue-spots would actually appear to be more scrupulous about overlapping on the song of the other species than upon one another's.

All absolutely quiet 7:00 am. Going back to Council area. Blue-spot suddenly bursts into song as I round corner and it sees me. Almost certainly reaction to me. Another indication song is partly hostile.

The thicket on the Council area is definitely looser, possibly up to 100 ft. in the areas where atrimina occurs or Blue-spots.

When I arrive at the Coumbill area, a Blue-spot is singing. Shuts up. Then a Cowbill sings. Shuts up. Then another Blue-spot starts to sing !!! Shuts up. Period of silence. Then first Blue-spot starts to sing again. All 3 birds are singing from stations rather far apart from one another, but the station of the Coumbill is closer to that of one of the Blue-spots than the two stations of the Blue-spots are to each other.

I have seen several cases (involving at least 4 different birds) of ♂ Blue-spots chasing other ♂ Blue-spots in flight. Always quite silent.

7:15 a.m. Blue-spot sings. Shuts up. Then Coumbill sings. Shuts up. Then sings again. Shuts up. Another Coumbill sings. Shuts up. Then another Blue-spot sings. Shuts up. Then a third Blue-spot sings! Shuts up. Then first Coumbill sings again. Shuts up. Then a (fourth?) Blue-spot sings. Shuts up. Then another Blue-spot sings. Then first Coumbill. Then a Blue-spot !!!

This sequence of songs seems to be almost too good to be true!

7:30 a.m. Hear burst of "zeewee zeewee zeewee zeewee" song, exactly like the song I thought was uttered by atenua at dawn this morning, but this time I can see it is uttered by Coumbill.

Then Blue-spot sings. Then Coumbill sings again.

I think the 2 Coumbills here may be rival ♂'s. I have seen several cases which may have been hostile. Difficult to tell exactly what is going on, as birds are usually obscured by vegetation.

7:40 Several more cases of Blue-spots beginning to sing when I appear.

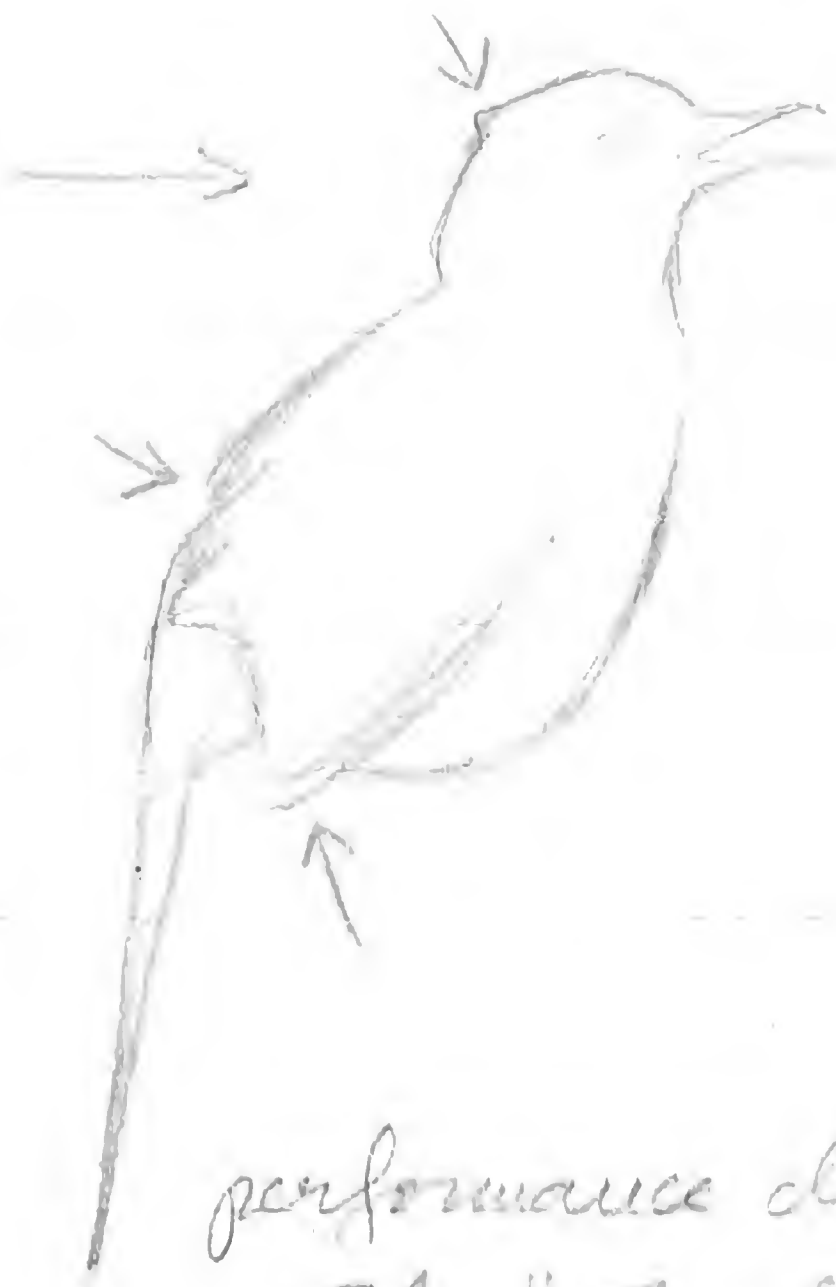
song of the first bird would be the releasing mechanism for the song of the second.

8:55 a.m. A song by a Blue-spot seems to be provoked by a song of an atenuata.

It might be better to say that the song of one bird has both an inhibiting and stimulating effect on the song potential of another bird. Usually inhibition stronger than stimulation while song of first bird persists. But inhibition abruptly removed after song of first bird stops, while the stimulating effect remains.

Most peculiar! Come across a ♂ Blue-spot, sitting on exposed perch. Repeatedly utters "Took took", followed immediately by a note of "ss". Bill O/B (very widely) 2, 3, or 4 times, while the bird remains silent, or, possibly, utters something like a very soft "see-see-see". I don't know if this was provoked by me or by another Blue-spot singing loudly a few ft. away. 9:05. I think probably the latter. This performance may have been partly inhibited song.

This is the posture of a Blue-spot giving a long burst of ordinary song. 9:20. Probably more relaxed than some song postures:



NOTE: The "ss" performance described above may well have been compound. The "Took took" notes may have been largely or completely A/CN's. The subsequent muffled notes may have been the "real" inhibited song.

Wagons, May 25, 1962, I

(59)

Back to atenuis area 7:13. Blue-spot singing. atenuis starts. Partly overlaps Blue-spot. Blue-spot stops. atenuis stops. Blue-spot starts again. atenuis starts again, partly overlapping Blue-spot again. Both shut up. Blue-spot starts again. Shuts up.

7:50 am See parts of a long dispute between 2 Blue-spots.

One chasing the other in air. Long twisting & turning flight. Accompanied by "secret" notes. Then 2 birds land in same bush. One sings briefly. Hop around excitedly. Silent. One or both fluffed underneath, with tail fanned. One BU's 2 or 3 times. Then aerial chase resumes. Again with "secret" notes. Then birds apparently separate. Sing from perches approx. 50 ft apart. First synchronously, then alternately. 8:00 am.

Come back Conbill area 8:12 am. A Blue-spot sings briefly. Then another. Then various Blue-spots sing from time to time. Not very prolonged. No overlapping.

There also seem to be at least one atenuis in this area. Largely silent. Gives a couple of brief phrases when the Blue-spots are silent. Quite like the phrases of the other atenuis heard singing here this morning.

8:50. See a pair of Conbills feeding. Definitely probing at base of tubular flowers. Then one bird flew over to its mate, and apparently feeds it!!  
No display.

One of these Conbills sang quite briefly when separated from its mate by a few yards (the bird who did the singing was the one who also did the feeding - i.e. almost certainly the ♂). This seemed to provoke an edgy cont. Blue-spot to sing. Then Blue-spot shut up. This was a guess. Then the Conbill sang another phrase.

The sound of one bird singing might be considered a "priming" mechanism, getting another bird "ready" to sing. Then the silence after the

Diglossa, May 25, 1962, VII

(57)

C NOTE: It is obvious that I got the D. atrinana and Coumbill  
C songs mixed up this morning. I have indicated coumbills by "C"  
C Other references to Coumbills are indicated by /.

Pickensia

Working in ~~the~~ this afternoon. Cloudy & rainy

3:25. Watching a ♂ atrinana sing. Long phrases like those of  
atrinanas on Atreca this morning.

3:28. Now another ♂ atrinana sing. Phrases more or less  
"see-wee-wee-wee-wee-ee-yoo". This bird then alternates phrases with  
another bird. The phrases of the latter are similar to those of the former.  
One of the birds doing this alternation is the one who alternated with the  
"A" Englecoptes.

4:45. Watching another ♂ atrinana singing in C Englecoptes area.  
Long phrases more or less as transcribed above.

It is amazing how much all the birds here do on bad days  
(chante-wee) than on good days.

Diglossa, I

September 16, 1962  
Deliberico #1  
La Montana

- ~~XXXX~~ = carbonaria glauca
- ~~XXXX~~ = albilateralis
- ~~XXXX~~ = local form of varitula

11:00 a.m. Come across a single ♂ glauca in the lot



Diglena, Sept. 16, 1962, II

38

Obviously nervous about me. Lots of flying out, noise. Uttered lots of loud "Trit"s. In rapid but slightly irregular series.  
12:05 p.m. Came across a single bird which may have been a ♀ or juv. albilatera. Also uttered lots of "Trit"s. But not very rapidly repeated.

Diglena, I

September 17, 1962  
Mucurubá

7:15 a.m. ♂ baritula feeding & singing. Singing moderately high and upped. Song consisting of "Tazeezeezee" phrases. Quite reminiscent of chiriqui form. Bird uttering in erect unritualized posture. Sang about 20 phrases and then disappeared.

This bird appeared to become involved in some sort of apparently hostile chase with another bird, shortly before singing, but I couldn't identify the other bird.

Casaba, I.

9

November 11, 1957

Banco Colorado

There are a lot of these birds here, and they seem to be fascinated by the captive birds. I haven't been paying much attention to them, but I did notice one brief conspicuous display.

Two birds flew into a tree, and one of them apparently began to "beg" from the other. Fluttering wings, and uttering a long or rapid series of whistling notes. Then stood for a few minutes in posture common to:

Looking unbelievably round and puffed.



Yellow-rump particularly conspicuous

Casaba, I.

November 13, 1957

Banco Colorado

Another glimpse of some of the same displays above. A single bird, apparently alone in a tree, uttering a particular call. "Tee tee tee tee tee" again and again. In posture common in (see next page), with fluttering wings, but little or no puffing or ruffling. Just went on with this until another bird appeared. Then shut up and stopped flat.

Coshiba Nov 12, 1952

During these little birds flew away in opposite directions.



I am fairly certain that the tongue was raised during part of the song.

The number of syllables in the song may have varied somewhat, but it was certainly usually five, and the terminal note was always differentiated.

Later on I hear the same call from the same tree, presumably being uttered by the same bird, and look up just after the call stops. A bird, presumably the one who just finished singing, is then sitting in a position common for looking quite unachably plump, but without any wing-flutter.



Perhaps a slight trace of CR. White stripe looking broadest at rear of head.

Just sat there for quite some time, uttering a series of single pure CN's, each note being accompanied by a single wing-flutter which gradually grew less evident and finally disappeared, while the bird continued to give a few more CN's. (I should add that the bird I heard singing earlier today also uttered CN's, from an unneutralized posture, during the intervals of songs.)

December 2, 1957,  
Barro Colorado

This is certainly the most conspicuous honeycreeper in & around the clearing on the island. Both in fairly low bushes and high in tree-tops. They had some displaying in October, but I have lost the notes I took, and they have been fairly quiet since then, until yesterday and today.

At least one bird has sung persistently, off and on (for long periods) most of the last 2 days. (Sketch is certainly right about their persistence). The usual song is a phrase of 3 or 6 notes, harsh, loud, shrill, "Kree kreee..." all more or less in the same tone or pitch. I got a long view of the bird giving this song this morning, but unfortunately only from below. This bird held its head approximately horizontal and pointed straight forward. The neck did not seem to be greatly extended, and both the head & neck, seemed to be moderately low, at about the same level as the back. The breast & belly feathers were fluffed to a moderately great extent. This posture was maintained throughout each song. In the intervals between song phrases, however, the bird did a lot of preening, especially of the breast feathers & under wings. The preening movements themselves did not appear to be ritualized in physical form.

The same bird, or another in the same place, was also singing the same song this afternoon. But at intervals the song changed into one of 3 notes. I got the bird several

Coahuila, Dec 13, 1954

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using the 3-note song several times, then sang few songs of 3 notes, and then went back for a few more of the 3-note type. The notes of the 3-note type were rather distinctive. "Kreecoo kreecoo kreecoo". I couldn't see the performer, but through the foliage, so I don't know what posture(s) or movements may have accompanied this performance. As far as I could see, none of these songs during the last two days has had a response of any kind from anyone.

Coahuila, I.

December 13, 1954

Barro Colorado

Apparently the same bird back - at least a bird singing in the same place. Sometimes singing the 3-note "Kreecoo kreecoo kreecoo" type song, then changing to a slightly modified "Kreecoo kreecoo kreecoo kreecoo" type. It perched again. From posture more or less comme ça.

This was intermingled with a few single "Kree" notes when the bird began to preen.



Breast, belly & yellow rump feathers slightly fluffed

Flew off eventually of any sort from anyone

without having got any response

December 20, 1957  
Barro Colorado

One bird appeared from time to time today, and gave bursts of the "three three three three" "song". I only saw the accompanying postures & movements during one burst. When the bird was alternating and interrupting its songs with lots of preening, the preening being quite vigorous but not obviously exaggerated in physical form. Most of the song notes were usually uttered from a posture similar to:

This is posture head & the last note was obviously a feather or under the wing.



obviously a sort of pre-preening. And the bird often pointed its bill downward during of the song, in what preening (the breast wings) int.

It would seem that the association of pre with this vocalization is quite usual. Rather remarkable that the preening is so extreme without being modified in physical form.

This bird was quite alone, and, as usual, there was no response to the performance.

Coculia, Dec 20, 1957, I

11-6

A bird singing at the same old stand this evening, the "Kreecoo-kreecoo-kreecoo" type song. Again all sorts of comfort movements between each series of notes. Lots of preening, scratching, and lots of a sort of wing-fluttering which also seems to be a comfort movement (wings drooped and vibrated rapidly). The song itself varies from variable postures, more or less like those of pp. 4 and 5. The fluffing was particularly variable. It may be purely a reflection of the "comfort activities element" in the performance; and seems to vary according to the comfort movements performed before and after the song. (Four times, for instance, the wings were kept raised over the back, so that the yellow-rump was hidden!) This incident would seem to indicate that the comfort movement element is present in both the main types of song performance.

Coculia, I

January 5, 1958  
Barro Colorado

What seems to be the only resident bird near my house the one who has performed most of the behavior patterns described above, is still as active as ever, singing for long periods time and again. He seems to have a favorite station and several definite subsidiary ones within his home range or territory, where he definitely prefers to sing. I have still to see him get any response, however.

I have been watching him give the "Kreecoo" type

Coeleba, Jan 5, 1958, I

(7)

song again. Usual posture. Not fluffed on back or rump, slightly fluffed underneath and slight trace of CR. Interspersed with comfort movements in the usual way. Among the latter were bill wiping, OCB, and "tongue-pumping".

Coeleba, I

February 3, 1958,  
Barro Colorado

Watching an apparently single bird singing again. (Almost certainly not the same bird I watched a few months ago - at least it was in a rather distant area, clear on the other side of the clearing). Giving long bursts of "Kreecoo" type song without any preening at all. Not much fluffing of feathers either - just the breast and, particularly, the belly feathers. Just like the drawing on Dec. 15, p. 4, without the slight fluffing of the rump feathers (and probably with the neck pulled back or in even more, so that the back of the head appeared to merge smoothly with the back).

Coeleba, I

March 7, 1958,  
Barro Colorado

I have now seen several cases of the "Kree kree kree" type song without much preening either (Probably by the same bird I watched on Feb. 3). So it is possible that the preening and other movements sometimes associated with both types of song are not integral parts of the displays.



Coereba, I

February 25, 1960  
Barro Colorado

A young bird hatched in a Panamiquit nest, almost certainly on Feb. 21 or 22, and I began to make observations of its behavior yesterday (Feb. 24), early in the morning. Only watched it very briefly yesterday.

Most of the time I held it in my hand yesterday, it lay curled up, with neck bent downward, so that the head & bill pointed downward, or even downward and backward. Usually quite silent, even when I picked it up awkwardly, dangling it by the neck, etc. Only once did it utter a single "Peep", presumably a distress note, when it was being handled. Apparently uttered with bill closed.

It did a little "begging" yesterday from time to time. Stretching neck far upward, and pointing head & bill upward. Sometimes without opening the bill (presumably low intensity, or rudimentary, begging), sometimes (perhaps less frequently?) with bill wide open, held motionless, without any trace of opening and closing movement. All types of begging were absent, utterly silent at all times!

By this afternoon, its behavior had changed considerably. Still apparently quite naked (although traces of pin feathers seem to be visible under the skin with eyes closed, and swollen abdomen; but apparently stronger). Struggled a little more when I picked it up rather roughly. Uttered more constant, single, "Peeps" when being handled. Again with bill quite closed. Still showed tendency to sit in head-down posture.

Also begged much more vigorously and frequently. Neck and bill up, with bill wide open. This was also accompanied by more constant single "Peeps". But again absolutely no trace of any opening or closing of

Coereba, Feb. 25, 1960, II

(7)

the bill movements even when "Peeps" are being uttered most frequently.

The little wings are sometimes (perhaps always?) held away from the body during begging. Yesterday I noticed that they vibrated very rapidly, a little bit, when they were held out during at least some begging.

This will presumably develop into Q, but it is still very slight and inconspicuous.

We recorded the "Peeps" of this young bird today. I call it "A" bird on the tape.

Coereba I

February 27, 1960

Barro Colorado

Took little A out of the nest today, to find that its behavior has changed quite considerably. (Lots of pin feathers are now visible under its skin and its eyes have just started to open.) We took it out at 8:30 a.m., and then at 10:00 a.m. Decided not to record.

Most of the time it was being handled, or when it became too hot, it did a lot of what I shall call "SG". Opening & closing the bill, as if it were uttering notes, but without any sound (or only "c" - see below). This looked very much like a "short Peep" pattern - except that the bill is not opened & closed during Peeping. The bill was usually opened quite widely during SG, although less widely than during the extreme Begging we saw on Feb. 25 (see above). The SG was not accompanied by any ritualized postures or movements, but could be combined with all sorts of unritualized postures or movements.

Some of this SG was accompanied by what I shall call "c" (for "clicking"). A single faint clicking noise, probably due to a single opening & closing of the bill. This did not seem to be produced by the mandibles but

one another. I think probably produced by something in the throat like the by-  
 and apparatus. Similar C was also uttered when the bill was completely  
 closed, quite apart from any SG. I am also certain that I heard the same  
 C the first day I investigated the little bird, Feb. 24. (I ignored it  
 then because I thought it was unimportant, perhaps just the heart-beats of  
 A, or the blood pounding in my own ear. But this morning it was louder  
 and quite unmistakable.)

The SG is usually slow. Usually or always in rhythm with the breath-  
 ing. It looks very much as if the little bird were just gasping for breath,  
 except for the fact that it stops when the little bird seems to be comfortable, i.e.  
 when it is just sitting comfortably in my hand. The C seems to be approxi-  
 mately as slow.

C may be rather more common than SG, but I am not quite sure ab-  
 out this.

I think that SG must be a relatively low intensity distress pattern.  
 C may be an even lower intensity distress pattern.

A also uttered a few Peeps today, but much less frequently than  
 on Feb. 25. They sounded just the same as they did on Feb. 24 and 25.  
 Usually or always uttered with bill completely closed. Never with any situ-  
 alized posture or movement. They were always uttered when the little thing  
 was being man-handled, and were, therefore, presumably, at least partly a  
 distress reaction, but they were most frequently uttered when the little  
 thing was probably hungry as well (i.e. after it had not been fed for some  
 minutes). Possibly in process of becoming an essentially pure FB reaction.

It was difficult to judge the significance of these Peeps simply be-  
 cause A did not do any Buzzing today like it did Feb. 25. Never stretched  
 its neck up or opened its bill wide, and kept it open for several seconds. Poss-  
 ibly it is already frustrated on its parent(s). But it did perform one reaction

Coacaba, Feb. 27, 1960, III.

(11)

which may have been closely related to Begging, or even a low intensity version of Begging. Every once in a while, when it was being manhandled, especially when its bill was being tapped, it would point the head's bill upward (almost vertically) without stretching the neck upward at all (or at least extending the upper part of the neck upward a little bit), and then vibrate the whole head's bill very rapidly for a second or so. Always silent, without any opening of the bill. The reason I think this may have been related to Begging is that it vibrated its head in essentially the same way when swallowing food that had been forced into its bill. I shall call these vibratory movements "V".

A somewhat similar-looking pattern may possibly have been a Affirmation. Every once in a while, especially when I lifted its head a little, A would throw the head & neck backward, so that the head & bill were nearly vertical, keeping the neck stretched up to a considerable extent, and then "sway" the whole head & neck from side to side, moderately rapidly. These movements were much more extreme than my V, and also much slower than my V. The whole performance was quite reminiscent of some of the "shake" displays which are known to be performed by the young of some hole-nesting birds. I shall call it "SS".

Coacaba I

February 29, 1960

Barro Colorado

Took A out of its nest today again.

While I was trying to get it out of the nest, it uttered a faint series of "Peeps" and struggled quite violently (holding on to the nest with its feet, etc.) These "Peeps" seemed to be essentially similar to the ones heard on previous days. But then, as soon as I got the little thing out of the nest

and into my hand, it shut up completely and I had the greatest difficulty in getting it to utter anything more. I jiggled it up and down, dangled it by a foot, etc. etc., and it remained obstinately silent throughout. Finally, after quite a lot of man-handling, it started to utter a few more "Peeps" and we managed to record these. They also seemed to be essentially similar to the peeps recorded on previous days - but definitely much softer. Possibly low-intensity or, more probably, somewhat inhibited.

None of these "Peeps" seemed to have anything to do with hunger.

When being treated roughly today, A did SS and C just as on Feb. 27. I must say that it is difficult to believe that either of these patterns is ritualized - they are so little exaggerated!

I didn't see any trace of V or SS today (although this may not be significant, as we only kept A out of the nest a little while).

A did not do any Begging today, although it did swallow food put into its bill.

I was rather to find that A was not much more developed physically today than the day before yesterday. Pin feathers of wing (primaries and secondaries) more or less well developed, but eyes still only partly open.

Coereba, I

March 2, 1960

Barro Colorado

Just recording A again today, around 1 p.m. Its eyes are a little wider open now; and its pin feathers are considerably longer.

When I first approached the nest, I tapped repeatedly on the rim. This stimulated A to do a lot of food begging. Neck stretched up, bill wide open and kept wide open while it uttered a long continuous series of loud notes. These seemed to be similar to the "Peeps" it uttered before in a variety of circumstances.

Coereba, Mar. 2, 1960, II

(13)

instances, except that they were higher in pitch and almost "bell-like" in tone (also louder than any "Peeps" we have been hearing since the first few days of recording A).

Then, when I tried to extract A from the nest, it struggled violently, uttering "Peeps" all the while. I think these "Peeps" were exactly the same as those it had just uttered while FB.

When we got A into the Cab to record, however, there seemed to be an appreciable difference between the FB "Peeps" and "pure distress Peeps" in actual sound. It only FB'd into the microphone, once. This was accompanied by the loud and long "Peeping" I heard while it was in the nest (During the recording, we realized that the individual FB "Peeps" are almost bell-like.)

During the recording session, A also uttered a lot of "Peeps" which seemed to be provoked by "pure distress", i.e. handling. These sounded very much like the FB "Peeps", but were always or almost always much softer (probably also less high pitched and less bell-like). It is possible that the difference between FB and pure distress "Peeps" in sound, at the present time, is still purely one of intensity.

But the movements and postures accompanying pure distress "Peeps" are now quite different from the movements and postures accompanying FB "Peeps". The neck is not stretched upward during the pure distress notes. More important, the bill opens & closes with each pure distress note. This latter feature is a big difference from earlier behavior.

A still does SG as before. This is pretty obviously a pure distress pattern still. A tends to perform SG's after pure distress "Peeps" have stopped. The SG now looks exactly like "silent pure distress Peeping".

It is interesting that the bill movements which are now combined

Coereba, Mar. 2, 1960, III

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with pure distress Peeping developed independently some time before they became associated with the Peeping.

A may still be doing a little C, but it is now at least very faint and irregular. Difficult to distinguish from miscellaneous background and noise.

I didn't see any trace of V or SS today (not even when I peeked in to the nest before removing A)

Coereba, I

March 5, 1960

Barro Colorado

Took A out of the nest again around 8:30 a.m. Jerted and recorded it. It is much better developed now. Eyes open. Yellow feathers out of sheath underneath.

Surprisingly enough, however, its behavior (i.e. its vocal signals) seem to have remained essentially the same as before.

It still does a lot of SG when moderately distressed by handling. It also still utters a lot of "pure distress" Peeping when handled. Some of the "pure distress" Peeping today was accompanied by opening & closing of the bill (as on Mar. 2); but most of it was uttered with the bill absolutely closed throughout (as before Mar. 2). This is rather remarkable! I am beginning to think that the causal difference between SG & Peeping is not purely intensity. A uttered quite a lot of "pure distress" Peeping today as it appeared to relax in my hand after being handled rather roughly. It is possible, therefore, that the SG contains a relatively stronger escape component than the "pure distress" Peeping; or that the SG contains both escape and attack components which are absent in Peeping. (The latter alternative may be supported by the fact that it is always Peeping and never SG which is used d.

Coereba, Mar. 5, 1960, II

(15)

wing FB - see below).

I didn't hear any C today.

A did do quite a lot of FB today (when tapped on the bill by a meal worm). Much as before. Neck up, bill kept wide open throughout, while a whole series of Peeps was uttered. It is obvious now that the FB Peeping is merely a higher intensity version of the "pure distress" Peeping. The actual Peeps during FB are essentially the same as when the bird is being handled. Only during FB they are louder & repeated more rapidly (and, consequently somewhat more abbreviated) than during handling.

Coereba, I

March 7, 1960  
Barro Colorado

I just took A out of the nest very briefly today. It is getting quite well feathered now and quite bright and alert.

It did not do any Peeping when I first tapped on the nest or later when I actually pulled it out of the nest.

It did a lot of SS, however, whenever I handled it.

It also did a little FB Peeping, just as before, when I fed it.

Coereba, I

March 8, 1960  
Barro Colorado

Just David and then I took little A out of the nest today and then played with it. But no recording.

When I pulled A out of the nest it uttered "pure distress" Peeping, more or less as before. Head (probably) with bill closed. It was so very noticeable today that the "pure distress" Peeping was very buzzy.



almost rasping. Sounding quite a little like the "Kree kree kree kree kree..." type of adult song.

When David took A out of the nest, it uttered notes which may have been identical with the "Kree kree kree kree..." adult song. At least, David was very much struck by the resemblance of these notes to adult notes and their difference from the Peeping he heard before. David says that the notes he heard were accompanied by opening & closing of the bill with each note.

No matter how distinctive these notes may have been, however, I am fairly sure that they have been derived from Peeping at least.

When I first tapped on A's nest, it began FB Peeping - just as before. Neck stretched up, bill wide open throughout. The notes themselves were high-pitched, "pumping" and bell-like.

These high-pitched bell-like FB Peeps are probably high intensity FB. When I took A out of the nest, and laid it on my hand, and tapped its bill gently, it stretched up its neck and opened its bill as in typical FB, but only very briefly, and uttered brief series of "Peeps" which were quite buzzy and relatively low-pitched. These sounded exactly like the "Peeps" it uttered before, when it was struggling with me as I pulled it out of the nest. They must have been either low intensity or "inhibited" FB. Probably the former ??? In any case, this performance would suggest that the FB and "hostile" Peeping patterns are not completely differentiated yet - although they do seem to be becoming separated.

A also did a lot of SC when it was just slightly uncomfortable in my hand.

When it uttered the low-pitched buzzy "Peeps" in my hand, when it seemed to be performing low intensity and/or "inhibited" FB, it twitched its wings, very slightly but quite regularly, every few seconds. This is presu-

Coereba, Mar 8, 1960, III

(17)

mably related to the  $\mathcal{Q}$  of adults, but it is certainly much less in time than the  $\mathcal{Q}$  of any adults I have ever watched (or the  $\mathcal{Q}$  of the bird described in page 1, which may have been juvenile for all I know). I presume that the great reduction of wing movements in the chicks of this species is correlated with the closed nest. (I might add that I have never noticed the slightest wing movements when A has been FB-ing in the nest. Some wing movements may occur, but they must be (at least) very slight.)

Coereba, I.

March 23, 1961

Barro Colorado

A couple of months ago, I watched a single Bananaquit feeding on long tubular flowers in almost exactly the same way as a Diglossa. Cutting through the base. (When I examined the flowers afterward, they all had neat little incisions at their bases. Straight.)

This morning I watched a Bananaquit feeding in hibiscus flowers. Again probing at the base. But the petals of hibiscus flowers are separated down to the base, and I could find no incisions in them when I inspected them later. So this bird this morning was presumably probing between the petals.

It seems quite likely that the habit of "flower-piercing" developed from the habit of probing between petals.

I have several times, during the last few days, watched single Bananaquits perched near the tops of tall trees singing for minutes on end. One bird I watched this morning uttered a song which I would transcribe as "Zee zee zee zee zee zee . . ." while perched in what looked like a completely unattracted posture.

One of the most striking characteristics of this species is the fact

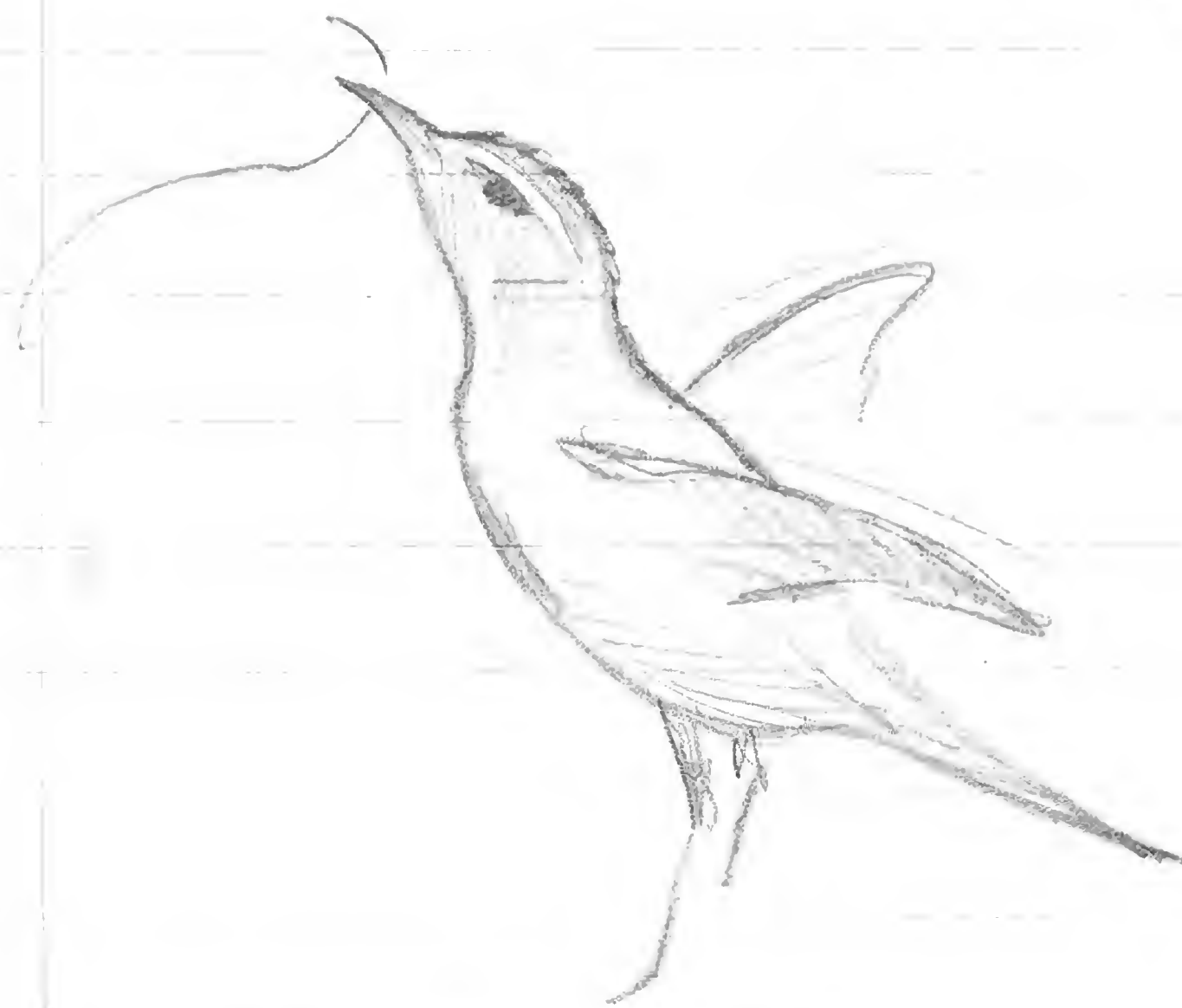
that the birds are almost always single. Males and females do not usually go around together. In this respect, the species is reminiscent of *Diglossa* rather than *Coccyzus* *frascii*.

Coereba, I

July 24, 1961  
Port of Spain

In the zoo here, there is a small cage, containing several Bananaquits (presumably the local subspecies) and lots of tanagers, juncos, etc.

About 2:00 p.m. this afternoon, I saw an interesting performance by 2 of the Bananaquits. On the ground, hopping about excitedly near one another. In posture more or less comme ça



Very erect.  
Legs stretched  
Probably CR?  
Wings raised & Q'd.  
One wing probably raised more than the other

I shall call this posture "St". Somewhat reminiscent of the St patterns of the Doves. The two birds hopped around one another in St. for quite a long time. I think the Q was more or less continuous throughout. The hopping etc. was more or less irregular (certainly not ritualized circling). When the birds first began this performance, they were not carrying anything in their bills. Then one bird bent down and picked up a long strand of m.m., and

Coereba, July 24, 1961, II

(17)

immediately resumed hopping in H & Q as before. A second or so later, the second bird did the same thing. Then they both continued hopping in H & Q, with the same form, for a minute or so more. Then one of the birds flew away a couple of feet, and both relaxed and stopped displaying.

I think that all or most of these hopping performances were accompanied by some sort of "trilling" song, by one or both birds. (I don't know if this was the "ordinary" song of this subspecies or not. It is my impression that the ordinary song of this subspecies may be different from that of the Panama birds.)

I don't know what the significance of this performance was.

Coereba, I.

July 26, 1961  
Suva

This morning, by the Cab, I watched a single Banavaquit singing. Right after dawn. The song seemed to be composed of slightly warbling phrases. More or less comme ça:

"Ja a zee tuh zali zhi zhuh"

Repeated frequently. Evidently from an ordinary unritualized sitting posture.

This afternoon, ca 4:00 p.m., in the savanna country at the old American air base, I saw one Banavaquit do very regular side-to-side pivoting ("Pvt") in more or less ordinary sitting posture, head rather low (head, neck and back almost in line). Pivoting very long, continued, mechanical looking. Involving body, but not feet (no hopping on perch).

This was accompanied by a long series of loud, hard "Tik" or "Tut" notes (CN's ??? or aggressive ???). Notes well spaced, on low down, to low

drop into a rattle or trill.

I think this bird was directing its whole performance toward another bird hidden in the leaves of a nearby tree. The performing bird eventually flew away, uttering more "Tik"s or "Tut"s as it did so. I think that it flew away in pursuit of the other bird.

Two different Bauanaquits caught in nets by C. Collins were quite silent when handled!!!

One of these trapped birds uttered a lot of "Tik" notes, in flight, immediately upon being released.

Coereba, I

July 30, 1961  
Faula

I have now heard quite a lot more songs by Bauanaquits, in various parts of northern Trinidad, and they have all been more or less similar to the song described above on the preceding page.

Coereba, I

Sometime in Spring  
of 1962 (April or May?)  
Rio Piedras

Ca. 3:00 pm. Came across a single Bauanaquit.  
Uttering distinctive song phrases:

"Tuh-tuh tuh-tuh sreeeeeeeeeeee zeeeee"  
-----

Sometimes with one or more extra "zeeeee"s at the end. This bird may have been disturbed by my presence.

Coereba, ?, 1962, II

(21)

These phrases were somewhat reminiscent of some song phrases of Diglossa barrowiana atenuata near Quito. It is beginning to look as if this species may be able to utter the equivalents of all types of Diglossa song!

Coereba, I

September 10, 1962  
Florida

↳ Rather to my surprise, the Bananaquit is one of the common species in the gardens and woods around the town here

Saw my first BQ here at 4:30 p.m. yesterday single. Singing on high exposed perch. Songs most distinctive. Composed of phrases of two or three "trill"s each. Each "trill" more or less comme ça:

" sreeeeeeeeenthrzuh "  
mrrrrrr

(Last syllable, marked in red, loudest and most emphasized. Middle syllable hardly distinguishable, sometimes "slurred over" almost completely. The bird was sitting with BF, slight but definite fluffing of rump (yellow of rump visible above wings, which were kept at the sides, without being drooped), and a slight trace of CR (at least at times)

This bird sang for several minutes, without provoking any obvious response, and then flew away and shut up.

↳ Later in the afternoon I saw the same and/or several other BQ's around the hotel garden, in trees and in thickets. ↳ All silent. All single. One bird was seen moving about in ex

Laemba, Sept 12, 1953, I

↳ exactly the same thickset that I had seen a ♀ or juv. Diglossa (of the greenish-yellow, streaked type — see notes on Diglossa and inter-specific relations) in an hour or so before.

This morning, at 6:05 a.m., I heard and saw what was almost certainly the same BG singing in the same place as yesterday afternoon. Both in bushes, and high exposed in trees. Song phrases same as yesterday. Postures more or less as before, except that the rump was not fluffed.

This afternoon I went to a small area of trees and bushes near the park "Las Chorreras de Milla". At 5:27 p.m. I heard a BG begin to sing in a tree about 30 feet away from a tree in which I had seen C. cinereum (and probably a Diglossa) somewhat earlier. Began to sing 12 minutes after a cinereum had sung. Gave a few phrases (like those of the other birds around here) and then shut up.

↳ This species seems to be the dominant honeycreeper around Minda itself.

The local birds resemble the BCF birds of the same species in singing near the middle of the day, relatively frequently (this may be characteristic of the Diglossini as a whole).

Although my observations have been much too brief to prove anything yet, it looks as if the BG may have "mutual inhibition" relations with other species of Diglossini here that are essentially similar to the mutual inhibition relations between the species of Diglossini near Quito.

I wonder if the songs of the local BG's are so distinctive because they facilitate isolation from cinereum ????

Certhia, I

May 25, 1960  
Cerro Piedra &  
Ca. de Itiquito

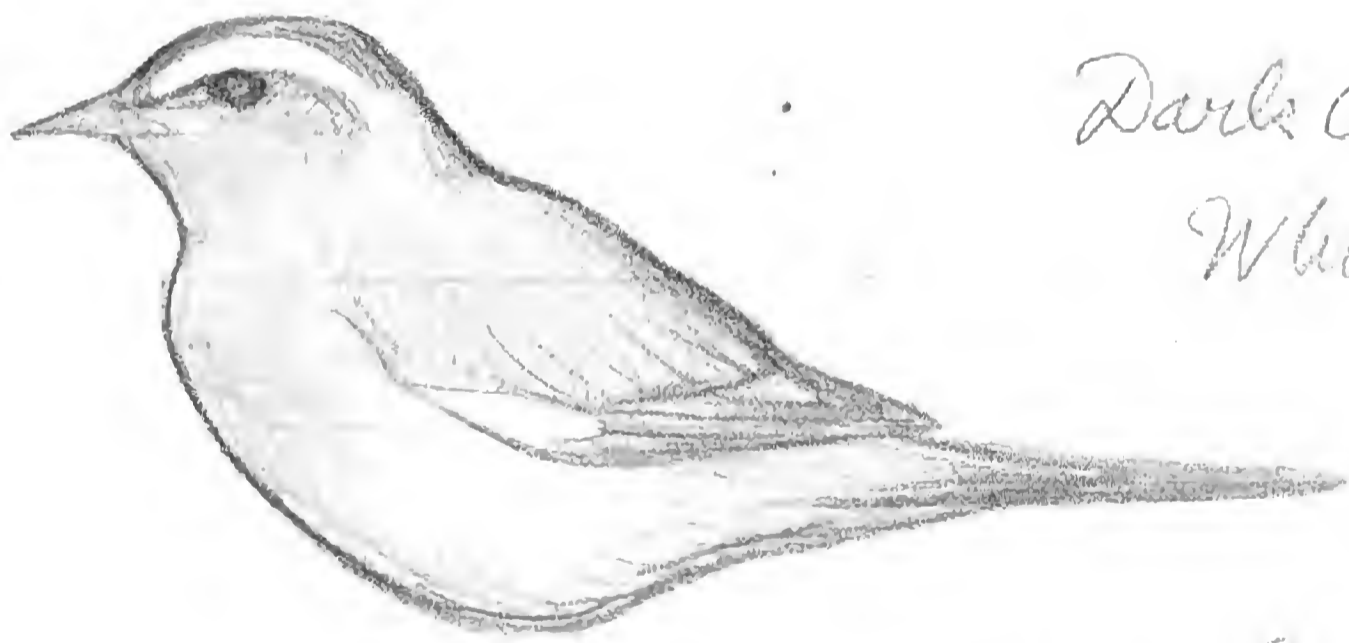
We have seen quite a few Certhia birds, of one species, today.  
(This species was eventually found to be fraseri. See notes of  
July 23, 1960, below fraseri - ~~XXXXXX~~)

The birds we watched this morning, on Piedra, were moving about in hedges, in the same general area where we have watched many other species. Very active, nervous, and rapid. Impossible to watch for more than a few seconds at a time.

The birds we watched this afternoon, near Itiquito, were moving about along the edge of an Eucalyptus plantation, usually in quite low bushes.

This is certainly a thick-billed species.

When apparently quite relaxed, the species looks like this.



Dark crown. Grayish back.

White supercilium & wing-patch

Caramel colored chin & breast

Quite reminiscent of the Banawaquet in general effect.

All the birds we have watched have uttered lots of CV's when moving. Sometimes single. More often in more or less long series. The longest series given during long flights. A single CV might be translated by anything from "Tut" to "Zee".



Couirostrum, May 23, 1960, II

(3)

The TF's of this species are not very extreme. They are usually or always V-D. WF's seem to be rarer than TF's, but they do occur.

Couirostrum, I

May 26, 1960

Cerro Atacaso

We watched more Couiro-bills here, in the same area where I have watched many other species (much higher than Iniquito, or anywhere we have worked on Pichincha). At first, I thought these birds might belong to a second species (they seemed to have less caramel color below than the birds we have watched at Iniquito and on Pichincha), but they were eventually found to be pareri also (see notes of July 23, 1960).

These Atacaso birds uttered CN's in the same situations, with much the same frequencies, as the birds at Iniquito & Pichincha, but their CN's did appear to be louder and harsher-sounding. A single one of their CN's might be transcribed by something like "Dzhit".

We also heard a number of songs this morning.

One bird, feeding near its mate, uttered brief "Ja ta twee"s. These may have been abbreviated song phrases. They may have been provoked by our approach.

Somewhat later, one bird (perhaps the same individual), apparently feeding some distance from its mate, uttered several longer song phrases. Each of these phrases might be transcribed by something like "Ja Ja Tasweeyoo". These phrases were uttered from apparently quite unritualized feeding postures.

Still later, one bird flew to join another bird, apparently its mate (either one of these birds might have been the bird's) which saw

either one or both of the songs described above.) At the moment of joining, either one or both birds uttered some song as "greeting". I couldn't analyze this "greeting" song very well. It may have consisted of nothing more than a few "Ja Ja <sup>muu</sup> Jasweeyoo" phrases. It is also possible, however, that it consisted of "Ja Ja <sup>muu</sup> Jasweeyoo" phrases plus a few additional "Zee" or "Tree" notes.

The longer song phrases of this species, especially when repeated, give the effect of an "amblers twitter". Quite reminiscent of the songs of Diglossa atermia.

In general, these Atacaso Coubells seem to have much the same habits as the Magnito & Piedra de los Indios birds. Usually or always in pairs. Mates seldom separated very widely for any great lengths of time. Very active & restless. seem to prefer moderately low shrubbery.

NOTE. John Smith observed a pair of this species, at almost exactly the same place on Atacaso, last year on August 17. He noted a number of reactions.

He observed CN's like those described above. (He transcribes a single CN as "Zee")

Then he observed "One (bird) flew to the top of a bush ca. 15' in front of me and gave the following 'song':

'Za zwee-ee zuli, za zwee-ee zuli' etc.

Fast, more emphatic, harsher, and a bit harder than the (CN). "

Couesstrum, I.

May 27, 1960  
Ca. de Maqueto

Watched more Couebills, in the same area as on May 25th.  
Behaving in much the same way as before.

An aerial chase, involving 3 birds, almost certainly strongly hostile, was accompanied by fast, buzzy, relatively harsh "zee zee zee zee ..." notes (David would transcribe these as "zee wee zee wee zee wee ...")

We managed to observe a lot more singing. The songs of these birds seemed to be even more twittering than those of the Atacaso birds we watched yesterday, but perhaps more uniform (i.e. with few or changes of pitch). Probably also longer. Each song phrase usually contained more notes, on the average, and the phrases were usually repeated more frequently repeated (in other words, the songs of these Maqueto Couebills were more like those of Diglossa Lafresnayeri, while the songs of the Atacaso Couebills were more like those of D. aeternum).

We heard one song, apparently uttered as "greeting" when one mate joined the other, which might be transcribed as "zee zee zee zee zee zee ..." or (perhaps better) "zee-uh zee-uh zee-uh zee-uh ...". Very fast and twittering. The notes were less harsh and buzzy than the "zee" notes during the aerial chase mentioned above.

The most common form of song seemed to be slightly different. It seemed to consist of approximately 6-note phrases, usually repeated once or twice without interruption:

----- / ----- / ----- / etc.  
Or ~~~~~ etc. It might best be trans-

Cowrostrum, May 27, 1960, II.

(5)

described as "Duh duh duh duh duh dah duh duh duh duh duh duh dah  
....." (The notes are so fast that it is almost impossible to represent them by letters. The "duh"s and "dah"s indicated above are the best I can do. The notes are somewhat buzzy, however. They might almost be said to have a "333 undertone".

As far as we could tell, today, almost all the typical songs were uttered as "greetings" when one mate joined the other. The few songs which were uttered by birds apparently separated from their mates may have been reactions to us.

This would certainly suggest that such songs are largely or completely hostile — like the songs of Diglossa.

Cowrostrum, I.

May 29, 1960

Cerro Pichincha

I watched a pair of birds feeding here this afternoon. One of them sang repeatedly. (It seemed to be separated from its mate. But I couldn't be sure of the stimuli releasing the songs. There were quite a lot of other birds in the vicinity — as well as me.) These songs sounded very much like the songs of Diglossa atermina — but thinner, harder, and more metallic. I.E. like those of the Cowbills on Citacaso described above on May 26.

Cowrostrum, I.

June 2, 1960

Cerro Pichincha

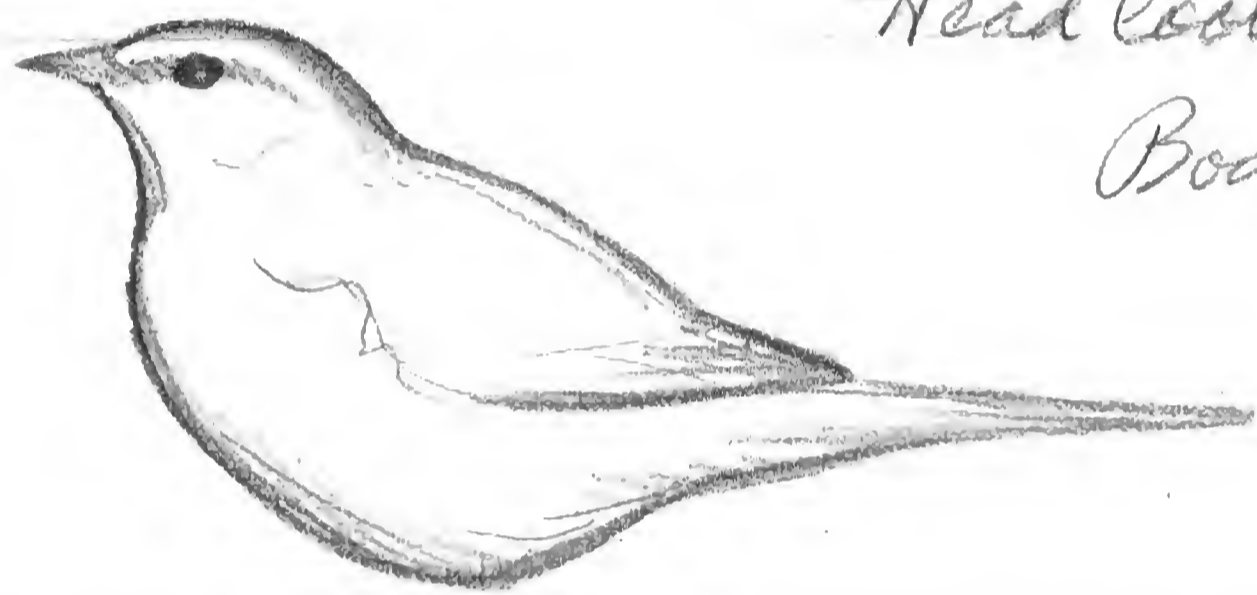
Working near Hono again today. I watched a pair of Cowbills

Couirostrum, June 2, 1960, I.

(6)

who seemed to be feeding at the bases of the white trumpet-shaped flowers which are so common here. These flowers are great favorites of both the Diglossas and Diglossops here, and it certainly looked as if these Conebills were feeding in exactly the same manner as Diglossa and Diglossops!!

I watched one bird singing. A "Tut-tsee-weeyoo" type of song. In posture comme ça:



Head looking particularly flat.  
Body looking large.

I also watched a couple of apparently hostile aerial chases - involving 2 birds. One or both birds certainly uttered "Zree Zree Zree Zree Zree ..." notes during one chase. I think that one bird uttered "Zreeeeeeee Zaza" during the other chase. Just like the R-Zaza of Diglossa atermia.

Couirostrum, I

July 23, 1960  
Washington

After looking at the skins in the collection here, I am now certain that all the Conebills we saw in Ecuador were fraseri.

So the 2 types of songs we heard uttered by the Conebills must be qualitatively different. I think that the more uniform type songs, the "Zee Zee Zee Zee ..." and "Duh duh duh duh duh dah ..." songs, must have been largely or completely hostile; while the less uniform

Cowbird, July 23, 1960, II.

(7)

songs, the "Ja Ja Jasweeyoo" and "Tit-tseweeyoo" songs, may have been partly or completely due to some thwarting of some pairing and/or sexual drive.

Cowbird, I

May 22, 1961

La de Maqueto

This morning I worked in the field here, where I observed pairs last year. There are at least several pairs of the birds here - still as difficult to study as last year.

This is certainly a species which travels in pairs. The members of such pairs, presumably mates, tend to stick together nearly constantly. Quite unlike Coccyzinae & Dryocopus.

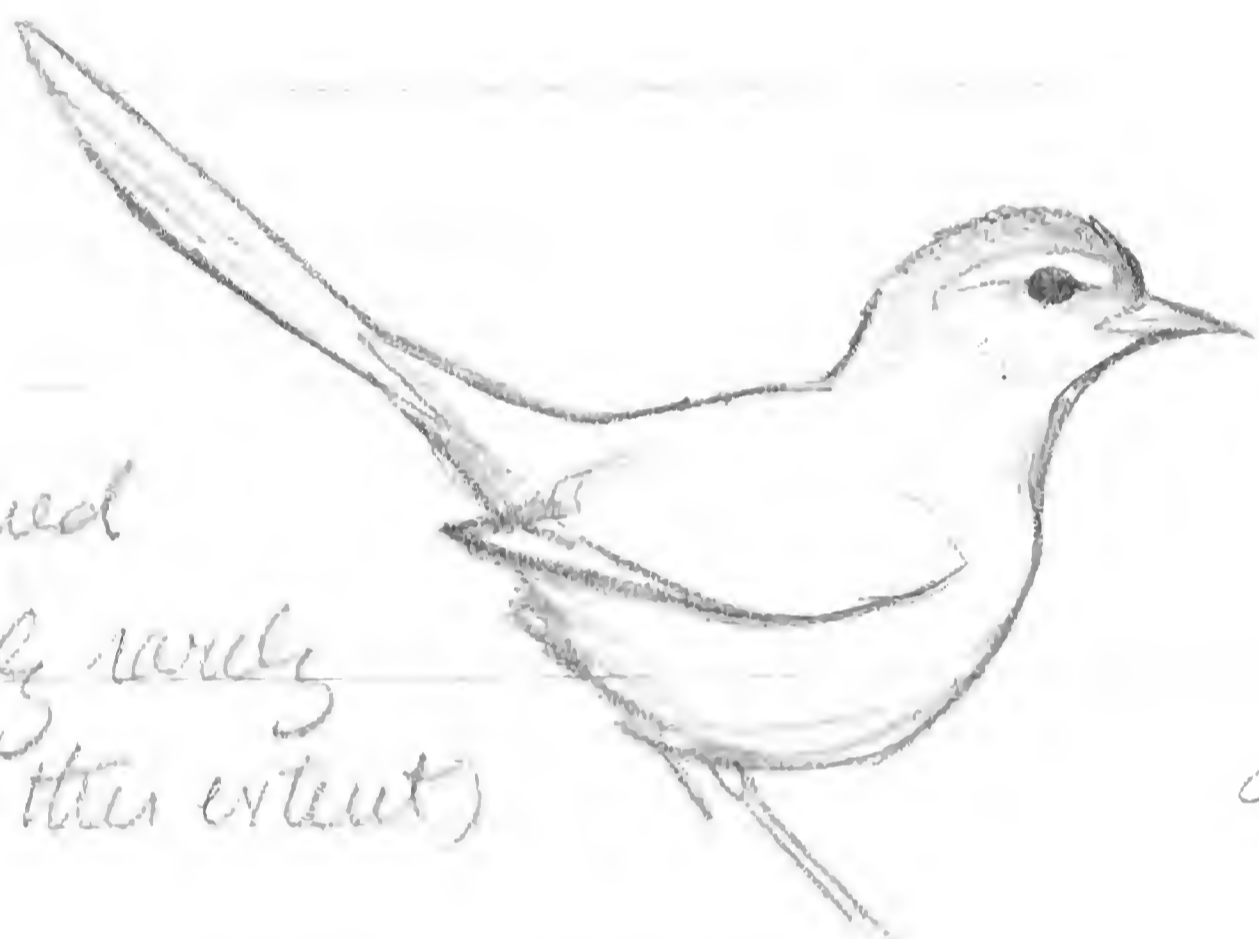
Early late this morning, I disturbed a pair which flew into a couple of bushes very near me. Did a lot of hopping & flitting about in these bushes. Lots of short flights. Also occasional periods of sitting me and/or feeding. All very rapid.

The birds uttered "Tit" CN's almost constantly as long as they remained near me. Usually essentially single, although repeated very frequently. But definitely accelerating to form real CN's in flight.

While the birds were perched and hopping about near me they did lots of extreme but irregular pivoting movements. Also a few extreme but irregular bowing movements. (I couldn't tell if the pivoting & bowing movements were ritualized or not.) Accompanied by lots of extreme TF movements, and less extreme WF's (see below). Tail always slightly fanned (these birds may keep the tail slightly fanned at all times). Wings sometimes, but not always, slightly drooped.

ped. Tail occasionally slightly cocked. Head usually looking rather rounded (CR?). Sometimes, but by no means always, a slight trace of belly-fluffing.

One of the postures assumed by the birds when they were most excited was common for



Tail fanned  
(it was only rarely  
cocked to this extent)

Alert or Alarm Posture  
(probably just pre-flight)

with CR and belly-fluffing

Wings slightly drooped

This was about the most extreme posture adopted. But the birds always looked large-headed, small-bodied, and long-tailed, as long as they remained near me.

The birds usually or always remained in the same postures, and continued to perform the same movements, both when they were silent and when they were uttering CN's.

All this pivoting and bowing (+ CR + belly-fluffing) was really quite remarkably reminiscent of some bush-finchies.

During this incident, I had many opportunities to watch the flicking movements of the species. TF's extremely lateral. Little or no vertical component. When it was a vertical component, it was usually or always D-V. WF's much less extreme. Ordinarily, usually synchronized with TF's. (Once I saw a bird perched on

Couviortrum, May 27, 1961, III

(9)

in a place that it could not do TF's. It then did WF's in the same rhythm as if it had been TF-wig.)

Interestingly enough, the 2 birds which I disturbed this morning never uttered a trace of song. Presumably because they were always close to one another and/or very friendly to one another.

This afternoon I returned to the same area.

I came across 3 or 4 parus flitting about close together.

One landed close beside another, and uttered a very thin high pitched R (very much like the R of the small black Diglossa), followed immediately by song, as it did so. This song was very rapid, including many notes, and rather trilling or rattling in quality. It did not seem to include very distinct "zee zee..." notes. Nor anything very like a distinct "Titsweeyoo".

Immediately afterwards, in the same group, I saw several more cases of a bird landing beside another, and uttering rapid trilling songs as it did so.

I think that these rapid trilling songs must be largely or completely hostile. They may (conceivably) have been the same as the song diagrammed on the bottom of p 4 (May 27, 1960). It is possible that songs of this type are lower intensity than the songs which include more distinct "zee zee..." notes.

Couviortrum, I

May 26, 1961  
Cerro Otacaso

I saw several parus here, in the same areas where I saw them here last year.

One pair feeding more or less together. Then one bird flew away.



and started to feed about 10 feet away from the other. A few seconds later, the bird which had flown away uttered a single song phrase. More or less "Tut-tut ta-tut ta-swee-yoo". This must, I think, have been the result of thwarted pairing motivation. A few seconds later, the bird which had been left behind flew over to join its mate. As it landed, both birds uttered "greeting" songs. Both of these "greeting" songs seemed to be much the same as the song by the isolated bird described immediately above, but slightly louder.

Later in the morning, I observed another isolated bird singing. His song phrases were somewhat: "Tut-tut ta-tut ta-swee-wee-wee-wee-you". Very rapid!

Still later, I saw still a third bird singing repeatedly while isolated.

All the birds I saw feeding today were probing inside clumps of young leaves "going in" from above. No piercing. Probably getting insects.

I think that this species may tend to perform more inter-specific following reactions than most other species here. This morning, I saw a single bird or a pair which seemed to be following a single male Diglossa atenuata. A couple of days ago, I saw a pair which seemed to be following a mixed flock of finches (including Catantopus analis and goldfinches) in the field near Maquite.

Coccyzoides, I

July 27, 1961  
Sunka

This afternoon we went to the Coccyzoides marsh, and I saw some cow-bills there. Gray Cow-bill's - ~~border~~ - ~~border~~

Couvrostrum, July 27, 1961, I.

(11)

These cone-bills were quite abundant along the edge of the mangrove forest, by a canal (possibly brooklets). I saw one isolated individual, at least 1 pair, and one group of 4 individuals (presumably a family group).

They were all very active and restless. Apparently purely insectivorous, peering and picking all along the branches of the mangroves.

They were comparatively very silent. Always silent when undisturbed by me or not engaged in other forms of hostility (see below).

This silence was a remarkable difference from the behavior of the fraseri birds near Gueto. Possibly correlated with the fact that this species is not insectivorous ???

Several times, when I came close to the birds, they uttered single "Tsect" notes. With a faint but distinct rattling undertone. Emitted by both flying and perched birds. Not accompanied by special postures or movements. Sometimes repeated, but never accelerated into a trill.

I also caught one brief glimpse of a very rapid, twisting, aerial chase, involving 3 or 4 birds. This was also accompanied by "Tsect" notes.

So it seems likely that the "Tsect" notes are hostile.

Couvrostrum, I

May 17, 1962  
Pichincha

Working near Hono today, both morning and afternoon. I saw several little groups of at least four fraseri, more or less associated with one another (see today's notes on mixed flocks). Once in the morning, once in the afternoon. Don't know if it was the same

Couirosternum, I, 1962, II,

(19)

Σ group both times or not.

This afternoon I was close enough to the group to hear some of their notes. Hearing lots of CN's. Usually "Tut"s. Once a bird uttered a long "seeeeeeet" as it flew in to join its companions.

PN?

Couirosternum, I

May 20, 1962

Atacaso

Σ place. Caught a few glimpses of a pair of conebills here. In usual

As usual, the birds here looked relatively dull underneath. One of the birds uttered a few song phrases. Usual type for here. Very rapid and warbling or twittering. I am not sure that I can distinguish between such songs and some songs of D. atenuata.

Σ in various areas around Quito ???

Couirosternum, I

May 22, 1962

Pichincha

Working slightly above floor this morning. Caught a pair of Conebills feeding in thickets along a ravine. Often become separated from one another. Then, whenever they rejoin one another, one or both burst(s) into "greeting song". Usually an absolutely formless twitter. Once included a "seeeeeeet" and several "zee-wee zee-wee" doublets. More strongly hostile than usual?



an, may have to cover a large area maybe because they can easily  
 secure the remnants of food left by the other, larger, species.

Interestingly enough, there do not seem to be any Coubells  
 near the C. Digeonopsis. The bill is almost continuous and  
 at this point Coubells seem to be birds of the surface of scrub.  
 seem to prefer areas where the scrub is low, new, & comparatively  
 sparse (e.g. Niaguito) or relatively thin heath with grass or crop  
 land on either side (e.g. Atacaro and the A. Digeonopsis area near  
 Neno).

Ca. de Niaguito

Working in usual field this afternoon

5:45 pm. An apparently single Coubell utters a single  
 brief song-phrase. This seems to bring a stemma over to investigate  
 but I can't see what happens afterwards, if anything. Apparently no  
 fight.

I don't know why but all the Coubells around here have  
 been remarkably quiet since I arrived (4:45 pm.) Almost as quiet as  
 the stemmas (see today's notes on Diglossa)

Comoros, I

May 25, 1962

Atacaro

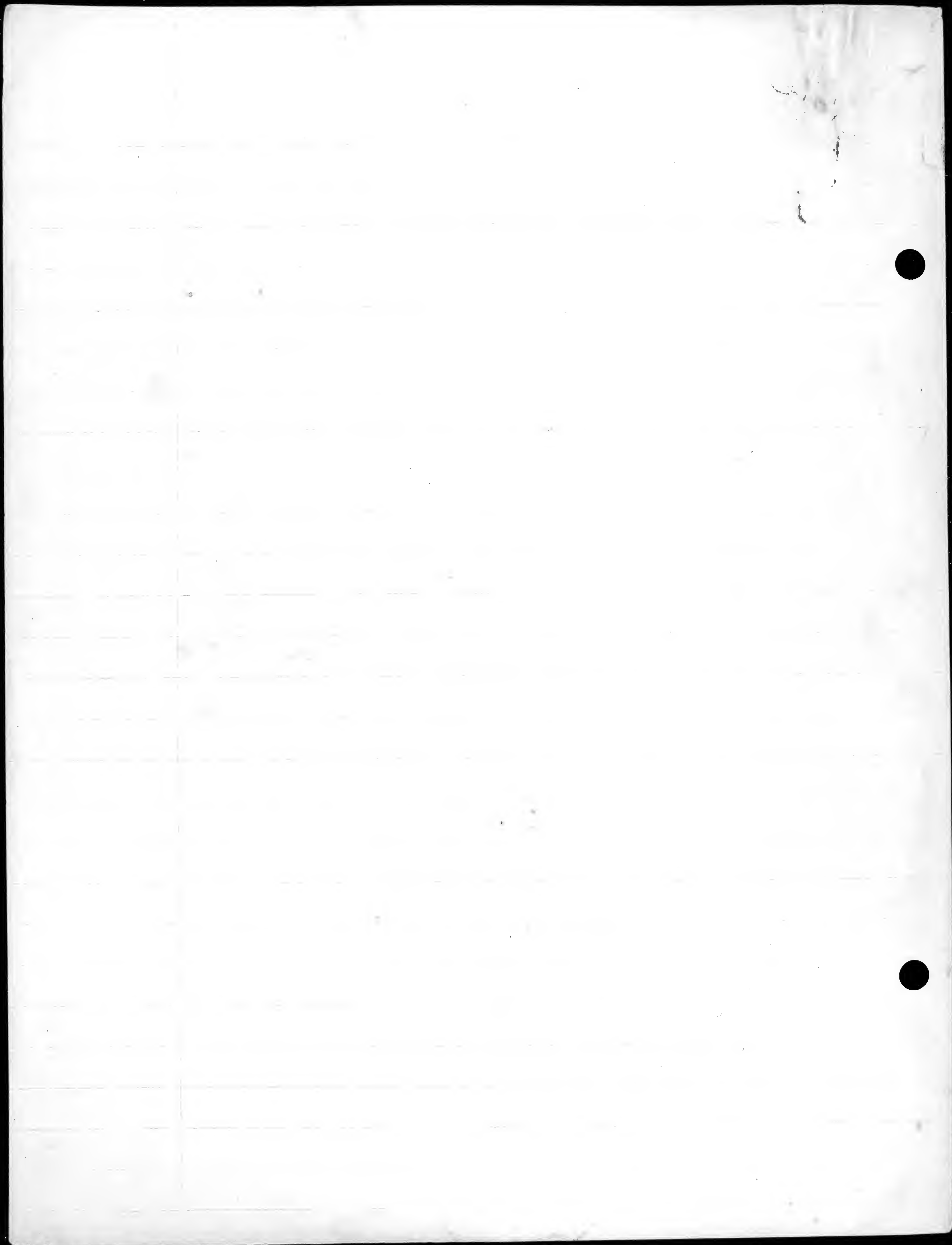
Worked at usual site this morning. All observations of  
 Coubells in this area today incorporated in today's notes on Diglossa.

Coccyzoides, I

September 16, 1962  
Mr. Chorro de Mulas

5:15. A pair of america ("cc"s) here. One feeding while the other sings on high exposed perch in nearby tree. Songs formless twittering warbles. Quite like some songs of Quail to birds, I think.

SEE MIXED DIGLOSSINI NOTES



brunneiventris - Lima

OVERLAPS

I brunneiventris - uncinata Charlapoyas

✓ II brunneiventris - pectoralis Manaynac

III brunneiventris - albilinea Macchu Picchu

IV brunneiventris - glaucinervis

Paracollo

Colombia

C. de la

Cochimansu - Cali -

Apartado del 621 - 11

(Bogota)

William H. Phelps Jr.

1 W. 67th Street

Apartado 2007 Caracas

✓ V glaucinervis - C. s. intermedius

Cordillera de

Almendra

Yacajala



Reference

✓ ZIMMER, J. T. (1929) "Variation & distribution  
in two species of Diglossa" — Auk 46,  
pp 21-37

All "Studies of Peruvian Birds" by Zimmer  
Amer. Mus. Novit. Go at least to 50  
Especially XLIV "Notes on the genera Diglossa and  
Cyanerpes, with addenda to Ochthoeca" Amer. Mus. Novit.  
1203, 1942, p. 1-15.

✓ Also Field Mus. Nat. Hist., Zool Ser. 17, pp 420-  
421, 1930.

(Zimmer's numbers)  
✓ No. 56 "The genera Eutoxeres, Campylopterus,  
Eupetomena, and Florisuga" Amer. Mus. Novit. 1450,  
1950.

Coucrostrum Synoptic - AMNH

I sitticolor

RUFIOUS (1) sitticolor (Colombia, Ecuador & N.W. Peru)  
BELLY

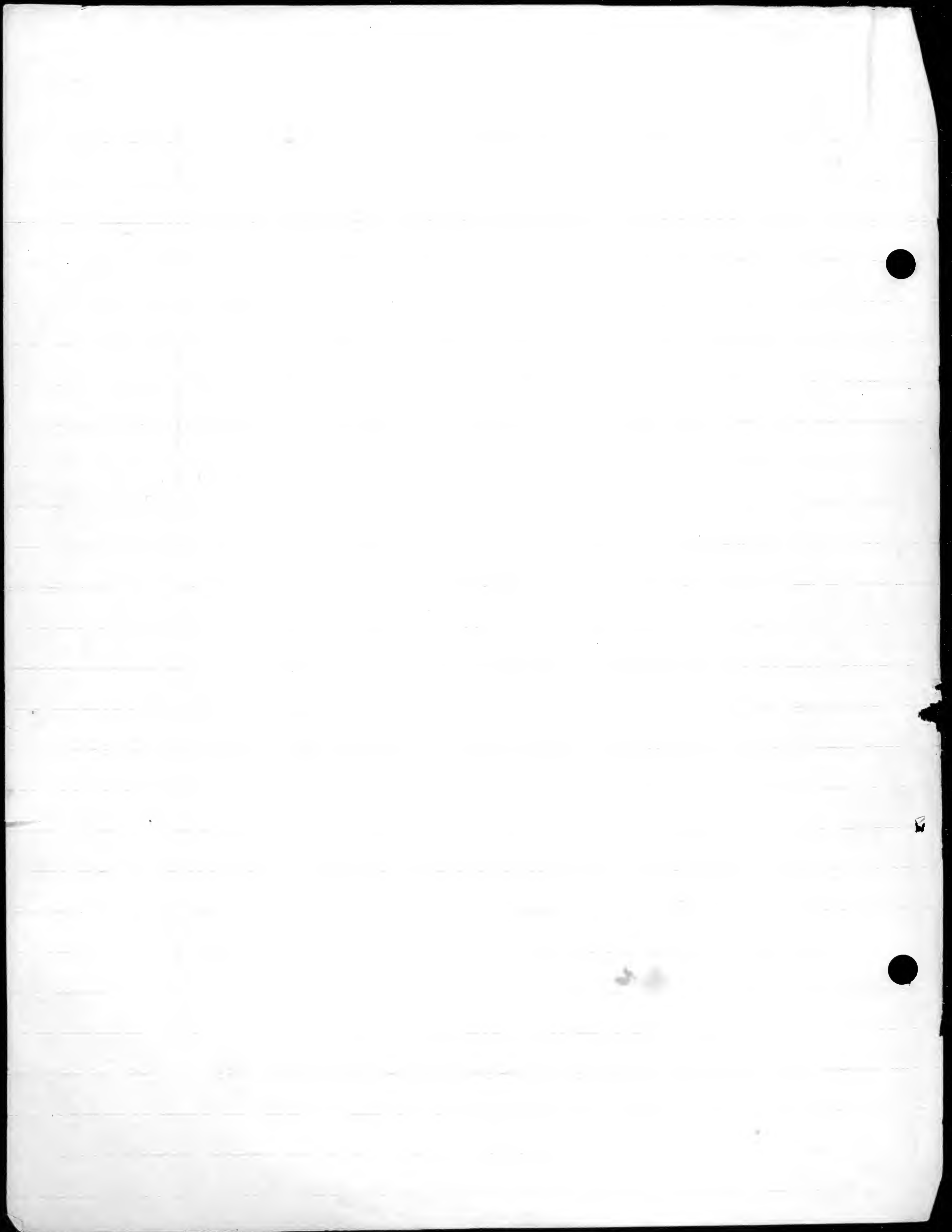
NO MOUSTACHE ♂ & ♀ similar Black head, breast, wings & tail, rufous belly, blue back & scapulars

RUFIOUS (2) intermedium (W. Venezuela, Cordillera of Merida)  
BELLY

NO MOUSTACHE ♂ & ♀ similar. Same as above, but with blue sides to head & part ocular stripes  
EYE-STRIPE

RUFIOUS (4) cyaneum (Peru & W. Bolivia)  
BELLY

NO MOUSTACHE ♂ & ♀ similar. Same as above, but throat bluish  
EYE-STRIPE



(3)

Diglossas      Synoptic - AMNH

II Cafresuayer

BLACK (1) Cafresuayer (Temperate zone extreme western Venezuela, eastern and central Andes Colombia and Ecuador, extreme n.w. Peru)

Both ♂ & ♀ black with pale blue humeral patches.

RUFOUS (2) gloriosissima (Western Andes Colombia, etc BELLY Paramullo)

NO MOUSTACHE

Both ♂ & ♀ black above, chestnut belly & under, blue humeral patches

RUFOUS (3) unicincta (Central cordillera northern Peru) UTC

MOUSTACHE

Both ♂ & ♀ black, with white malar stripes, chestnut pectoral band and under tail coverts

RUFOUS (4) pectoralis (Central Peru)

UTC

MOUSTACHE

Both ♂'s and ♀'s black, with white malar stripes, chestnut under tail coverts, chestnut and white pectoral bands

RUFIOUS

(5) albiventer (S.E. Peru)

UTC

Both sexes black, white malar stripes

MOUSTACHE

es, rufous under-tail coverts

RUFIOUS

(6) myrtacalis (W. Bolivia)

UTC

Both sexes (presumably) black, with

MOUSTACHE

rufous malar stripes and under tail-coverts,  
blue humeral patches

Diglossas

Synoptic - AMNH

I. carbonaria

BLACK (1) nocticolor (Santa Marta Colombia)  
both ♂ and ♀ glossy blue-black all over

BLACK (2) humeralis (Eastern Andes Colombia and extreme  
western Venezuela)  
both ♂ and ♀ glossy black with light gray  
humeral patches

BLACK (3) aterrima (Central Andes Colombia, Andes Ecuador,  
northwestern Peru)  
♂ glossy black. ♀ generally slatey gray

RUFOUS (4) burneiventris (Temperate zone most of Peru, only  
BELLY accent districts of n.w. Bolivia. Isolated  
Moustache colony in northern end of western  
Andes in Antioquia Colombia)  
♂ black, with rufous underparts and  
malar stripe, gray sides, bend of wing,  
scapulars, and rump  
♀ similar

BLACK (5) carbonaria (Temperate zone Bolivia)  
PECULIAR ♂ & ♀ Black, gray belly & sides, a humer

al patch, rufous under tail coverts

RUFOUS (6) glauosa

BELLY

NO MOUSTACHE

EYE-STRIPE

(Temperate zone of western Venezuela)  
♂ & ♀ black, with gray humeral  
patch & supra-alary streak, chestnut  
breast & abdomen Gray rump

Drymona

Synoptic - AMNH

III ALL BLUE BIRDS - SOME BLACK ON FACE  
indigotica - glauca - coerulescens - cyanea

(1) indigotica (Subtropical zone western Ecuador  
& western Andes Colombia)

♂ bright blue (almost violet in old skin)  
♀ duller blue. Both short-tailed. Both with  
black between eye and bill, but not black  
forehead

(2) glauca (Tropical & sub-tropical zones south  
ern Peru & adjacent Bolivia)

♂ & ♀ dull blue, black foreheads

(3) g. tyriantenna (Tropical & sub-tropical zones  
eastern Ecuador)

♂ & ♀ identical, as above, but duller

(4) coerulescens (Sub-tropical zone coast ranges  
of Venezuela)

♂ & ♀ identical Dull blue, black fore  
heads. Large - lighter than glauca ssp

(5) c. saturata (Sub-tropical and temperate zones  
Colombia - except Santa Marta -



and W. Venezuela)  
♂ + ♀ identical. As above.

(6) c. pallida (sub-tropical + temperate zones Peru)  
♂ + ♀ identical. As above  
Museum also has skins 2 other sp. from Peru intermedia + mentalis. Also 1 other sp. from Venezuela (Cumbre cerro Pezochavina, Perija - Julia): ginesi

(7) cyanea (sub-tropical + temperate zones western Venezuela, i.e. Merida, Colombia - except Santa-Marta - Ecuador. Possibly also N.W. Peru)  
♂ + ♀ identical. Black marks. Most of body darkish blue - as dark as glauca, lighter than caeruleus

(8) c. melanopsis (sub-tropical + temperate zones Peru and western Bolivia)  
As above  
also another sp. dispar (Peru)

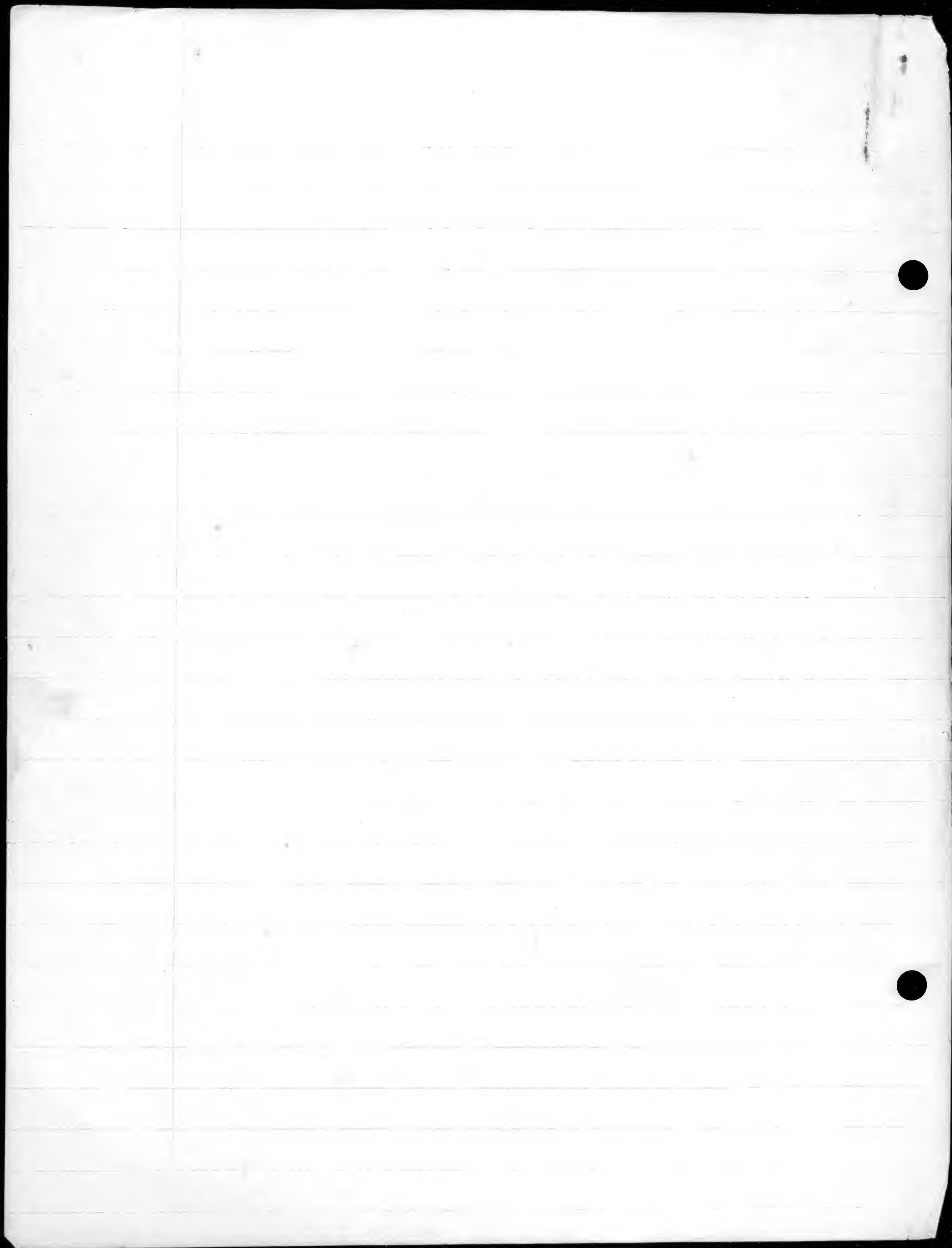
COLOMBIA

USN

I. brunneiventris      Altitude (in ft):  
    Antioquia      8500  
    Hada Zuluaga

Series E      July 26, ✓  
                 " " ✓      Antioquia  
                 " "      Hada Zuluaga      8500 ft  
1950      July 21  
                 July 26  
                 Aug 21, 1951      Parama Frontino  
                 Aug 25, 1951      " " "

Immature      Aug 23, 1951      Parama Frontino      11,850 ft  
                 " " "      " " "      " "  
                 Aug 29, 1951      " " "      " "



M.G. Carruther Jr.

I atenuata

TE

~~Aug 20, 1947~~

~~Hacienda San Vegas  
Santander 6000 ft~~

Mar. 17, 1946

Rio Quatapere  
8,000 - 9,500 ft

July 29, 1947

Argentina, Santander  
10,000 - 11,000 ft

Feb. 7, 1952

Purace, Cauca,  
11,300 ft

Feb. 11, 1952

" " 11,000 ft

Feb. 2, 1952

" " 10,500 ft

Juv

July 29, 1947

Argentina, Santander  
10,000 - 11,000 ft

O.E

Feb. 13, 1952

Purace, Cauca, 12,000

Areas to Check

I. Munchique. Possibly gloriosissima and atrorufa come in contact here.

II Northern part of the Central Andes, Colombia. Possibly crummeventris and cafresuayeri (s.s) come in contact here.

July 13, 1907  
Garden

Worked in my little ridge bed  
Went to the garden, between the  
narrow lanes to the house, and  
found a small patch of  
the same as I found in the  
long strip along the  
side of the house.

6.40 found a small patch of  
the same as I found in the

side of the house.

7.00 found a small patch of  
the same as I found in the

side of the house.

7.15 found a small patch of  
the same as I found in the

side of the house.

7.30 found a small patch of  
the same as I found in the

side of the house.

7.45 found a small patch of  
the same as I found in the

All we notice, sitting about the canyon, looking down on  
bank of Polylepis. Group quite highly integrated. No staff after  
a few minutes. Can't see who is in back

COMMENT: I should imagine that there is only one flock  
in this whole area (2 patches of woods - see below)

See South through above

8:25 In canyon area approach to where flock seen earlier.  
This individual is either now on perhaps on outposts flock. Quiet  
of many leaves as well as feeding on bark

Almost all the birds here are very shy  
as is here largely grey. Washed apart from mafone VTC

Flush more boisterous as if they are  
step observations here as I do so

Note: The pattern of Polylepis here are small, scrubby,  
not very tall, perhaps 30ft long, 5ft wide, very close to houses  
In this particular area there are 3 patches of Polylepis. One is quite dead  
at the distant landscape, I would assume that patches are usually more  
scattered

The notes above should be 3700-4000 m according to the  
Land Department in Huancayo. According to the altitude of  
Cruz Pinos, we are at 12,400ft. This seems to be way up into  
the zone Polylepis occurs much higher than any other native trees of  
the Andes

July 5, 1974  
C. Fisher

Openings near (lower) highway  
about 2000 ft above a 8800 ft 6:07 am. Cloudy

Rather warm

Whitstart (s) 7. Singing 11:20 AM

6:45. Large mixed flock present in mixed scrub. Mixed  
type. Including whitestarts, Blue & Orange tanagers, PL's, Basileuterus nigrocrustatus etc etc. Noisy and cohesive. I do not bother  
to count or follow.



July 16, 1974  
Quirigua

Same place as day before yesterday. Polylepis. Occourances  
Fog quit lifting 7:55 a.m.

And in depressions, through flycatchers where flocks used  
to be. But flock apparently not here now.

CORRECTION: Some or all of the birds that I called boninensis  
in the day before yesterday are really the common highland Gray  
and Yellow Finches (grayi ???) Species is common here

9:15 a.m. Drive along road to look at other small patches  
of Polylepis.

Little boys with slingshots.

10:05. "Wedge" large Polylepis edge town. Single cc feeding  
6-8 ft up. Very tit - or nuthatch-like. Probing in bark. Sometimes  
upside down. Active. Uttering CV's. Apparently essentially alone, al-  
though there certainly are a variety of finches and perhaps flycatchers  
not far away in same hedge.

Down = Ayapita

cc flies away. Apparently by itself.

Then back. Gleaning leaves as well as probing bark.

Hear what sounds like freezing Twitter. Are there 2 inds.  
here??

Then cc(s) disappear(s) again.

Back to Quirigua 1:00

Stop 11:20 a.m.

NOTE: Altimeter reads 13,730 along road back to town

August 21, 1974  
Parícutambo

Arrive town 7:15 a.m. Cloudy. Cool. Altitude ca. 8000 ft.

7:40. Garden outskirts town. See pair cc's low in scrub in garden. Quiet and alone. Fly away

A few minutes later, see single Brown feeding on Eucalypt. Visiting (white) flowers, 20 ft up. Silent. Alone. Fly away over area where cc's were earlier. Brown back to same Eucalypt flowers a few minutes later. Still alone

There is a medium sized ♀ hummingbird feeding on other flowers same Eucalypt. 30 ft away. She and the Brown seem to ignore one another.

7:55. Suddenly there is a fight between the Brown and the ♀ hummingbird. Both fly off in opposite directions

NOTE: There is cactus and mesquite here. Area cannot be entered, burned

8:05. Still watching same tree. Same presumed ♀ hummingbird feeding Eucalypt flowers. Brown flies in from far away to attack hummingbird directly. Defeated, very aggressive. Hummingbird flies away. Brown stays behind. Priests

NOTE: It is just possible that this hummingbird is a Colibri.

There is also a brownish hummingbird in this tree from time to time

Walk further along path. Grow of Eucalypt

Lower lots of human figures around I am sure that some are  
Colombians. My guess would be the Assumus. I can't see people  
on billie. This morning was very cloudy so the light is bad. But  
I have also heard brief snatches of what sounds like 2-note  
song in distance. (NODUNA?)

8:35 Back to first tree. Now hear what sounds  
like Lea song! Brief NODUNA  
Stopping observations here 8:40 a.m.

August 28, 1974  
Above San Juan  
Atacama.

Awoke 6:02 a.m. Quite light. Clear. Cold. Birds rather quiet.

Do recording until 8:00 a.m. No time to take notes. But I did see one interesting series of incidents. A single Laf repeatedly attacked by a single hummingbird XXIII. The Laf is feeding busily and moving around 2-5 ft up in AS. Attacks take form of "pokes" (apparently not pinned home to actual contact). Laf just ignores the whole thing. (The hummingbird is somewhat smaller than the honeycreeper.)

September 4, 1974  
Purace

Working in usual (fruit) areas below panama early this morning. Clear, cold, and very windy. Lots of songs by Lays. NODWAH. Nothing else of interest.

Go down to "Canada" ca 8:30. Still lots of Kniplophora in garden. Also lots of Curms. Plus two or three (possibly more) Aters. Lots of "panses" at Aters by Curms. Seldom or never pressed home. These panses do not usually bother the Aters in any visible way. (I am sure that many panses must induce an Ater to move on sooner than it would otherwise. But this is the sort of thing that is very difficult to prove.)

Also a few attacks by Aters upon Curms. These appear to be very determined. Mostly silent. At least one with R. Aters appear to be more solid than Curms, less easily irritated, but more impressive or "imponente" when aroused. They are both larger and heavier.

Two of the Aters (both apparently adult) were associating closely. Perhaps paired. But apparently no mutual display.

September 5, 1974  
Purace

Working at "Canada" this morning. Doing some recording - without very conspicuous success. I did hear

even, note the following points:

① The pair of Asters was still very much in evidence. Two inds. going about together, usually very close together. Lots of "Greeting" R-Zazas (and perhaps a few accelerated Switters) but very, very little "Song".

② There was at least one Cy in the neighborhood. Apparently no Song at all.

③ There were also other hummingbirds in addition to many Cunnis. At least one ♂ and one ♀ VB. And several inds. of several other species. But no Colibri.

④ The Asters and the Cunnis fed frequently and extensively on Ximiphora. But none of the other nectarivores would touch this plant. All the birds, however, including Cunnis and Asters fed on some other (native?) kinds of flowers. Including a yellow (pseudo) composite-like type (actually a relative of Pomsettia?) and small cream colored trumpet-shaped blossoms.

⑤ The Asters fed almost continually. More steadily than any other species. I was surprised by this behavior, in the apparent presence of a superabundance of food.

⑥ There was a lot of highland Whitestart Song in neighborhood. This species apparently in reproductive condition.

September 7, 1974  
Guadalupe  
(Bogotá).

Did some recording here early in morning.  
Large mixed flock in flowering eucalypt. Lots of  
Hummers, probably several Cys, many hummingbirds  
(Empidonax, probably Teslra, certainly a few Scans).  
Quite a lot of songs and other vocalizations. Scans, at  
least, certainly breeding

## Photographic Schedule Central Peru

First series Poly lepus Quisha.

Second series Carpush 3x Roll 1

- ① USTF nr tunnel 1, 2, 3
- ② USTF - AS to pass area still 4
- ③ USTF nr tunnel 5
- ④ USTF - AS to highest part of old highway, from distance 6, 7
- ⑤ ca 6500-6000 ft. Shot of white cecropia in distance 8.



August 19, 1974  
Macabu Pichu

Photographic Schedule

Pan  
Chromo  
A

Ruin side

① Halfway to fort and pan 8, 9, 10, 11

Pan  
Chromo  
B

Edge ruin & non-ruin sides by fort 12

C Forest just over pan 3-X 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

D Aug. 20 Zenithrome - View-habitat adjacent  
hills. Also 4.

August 27, 1974  
Rd to Santo  
Domingo

### Photographic schedule

- ① General view AS and VSTF on Atacaso.  
Panchromatic 6, 7
- ② Bend where I have done a lot of work second growth  
12.
- ③ My tree Ford. 1.
- ④ Paniflora flowers 2, 3
- ⑤ Shots along irrigation ditch.