Smithsonian Institution Archives

Diglossa (Flower piercers) (1 of 4)

This document is provided by the Smithsonian Institution Archives. We welcome you to use it for personal and educational uses. For commercial uses, please contact osiaref@si.edu.

Please cite as –

Short citation:

Smithsonian Institution Archives, Accesssion 01-096, SIA_01-096_B02_F04

Long citation:

Smithsonian Institution Archives, Accesssion 01-096, Moynihan, Martin H., "Diglossa (Flower piercers) (1 of 4)", SIA_01-096_B02_F04, http://siarchives.si.edu/collections/fbr_item_modsi2500

When citing our collections online, please link to the Smithsonian Institution Archives http://siarchives.si.edu.

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:

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

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

Paramo 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 tat this information will be of use. Kindly write tome 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 GLAUCA. It is not a Venezuelan bird.

DIGLOSSA CYANEA CYANEA. 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 ocurred 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

localities and altitudes

DIGLOSSA LAFRESNAYII LAFRESNAYII

Paramo Misisi, Trujillo	2000m
" Acarigua	3000m
" Zumbador, Tachira	2600m
" Tamá, Tachira	3000-3275m
Rio Chiquito, Tachira	2300-2200m
Teleferico, Merida	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~~ Merida	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 Pejochaima, 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

CARACAS (FTA.) DTO. FEDERAL 8 AM NOV 19 1961

MR. WILLIAM H. PHELPS
APARTADO 2009
CARACAS, VENEZUELA

OS

THE AMERICAN MUSEUM OF NATURAL HISTORY

CENTRAL PARK WEST AT 79TH STREET, NEW YORK 24, NEW YORK

DEPARTMENT OF ORNITHOLOGY

Dean Amadon, Ph.D., Sc.D., Lamont Curator of Birds, Chairman

E. Thomas Gilliard, Sc.D.
Associate Curator

Wesley E. Lanyon, Ph.D.
Assistant Curator

Charles E. O'Brien
Assistant Curator

Charles Vaurie, D.D.S.
Assistant Curator

William George, Ph.D.
Chapman Fellow

Paul Slud, Ph.D.
Research Fellow

Robert Cushman Murphy, Sc.D.
Dr. Hon. Causa, Lamont Curator Emeritus of Oceanic Birds

James P. Chapin, Ph.D.
Associate Curator Emeritus of African Birds

Jean Delacour, Lic. Sci.
Research Associate

Eugene Eisenmann, LL.B.
Research Associate

Crawford H. Greenewalt, Sc.D.
Research Associate

Ernst Mayr, Ph.D.
Research Associate in Old World Birds

Charles K. Nichols
Research Associate and Honorary Librarian

John Kieran, Sc.D.
Field Associate

G. Stuart Keith, M.A. (Oxon)
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 raods 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, flys into there on Wednesdays and Saturadays, 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

seem to be much better preserved).

Macchu Picchu. The Sierra of Souhtern 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 ~~xxxxxxx~~ turmoil; the army is there in force. Local Communists daily roll rocks down upon the railroad ~~from~~ 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 Tempe rate and Humid Temp. of this place are ~~xxxxxxxxx~~ famous (it is East of Tarma in Junin) and it is the place I most wish to return ~~xxxxx~~ 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 ~~xxx~~ 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

D. Carbonera

* Paramo Tama (Numerales) 3000 M. 2 ejemplares
2700-3100-3300 M. 5 ejemplares
Mucuchies, Merida
* Lumbalon 2500 M. 1 "
Paramo Cude 2700-3290 M. 18 ejemplares
Trujillo
* " Arieagua (Mucuta) 3000 M. 1 "
2550-2700 M. 7 "
Merida (noticolor)
C. Tetare 2900 M. 12
Zulia
Cumb. Avisfa (noticolor) 2700 M. 2 "
Zulia
Pic Cero (Noct.) 2350 M. 7 "
Zulia
P. Tallegra 3050-3300 M. 16 "
Merida
* Teleferico (La Aguada) 3000-3300 M. 2 "
" (Loma Redonda) 3900 M. 1 "

D. Sofiesnagé

P. Misisé 2000 M. 1 ejemplares
* Lumbalon 2600 M. 1 "
* P. Tama 3000-3275 M. 8 "
* Arieagua 3000 M. 2 "
Pico Aguila 2200-2300 M. 4 "
* Teleferico (La Aguada) 3500 M. 1
Was obsat.

Aldine
Publishing
Company

64 East
Van Buren
Street,
Chicago,
Illinois
60605

COMPREHENSIVE SURVEYS
IN THREE EXPERIMENTAL AREAS

IMPRINTING AND EARLY LEARNING,
by Wladyslaw Sluckin

CONDITIONING AND PSYCHIATRY,
by Thomas A. Ban

THE RAT, A Study In Behavior,
by S. A. Barnett

30 CHICAGO ILL.

DR WILLIAM H PHELPS
APARTADO 2009
CARACAS, VENEZUELA

10-

PRINTED MATTER

April 1, 1972
Purace'

Went out with Olga, 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 of few songs by Hummers and Whitestarts
3. Heard odid saw mixed flocks just below the paramó on the Purace' side and in VSTF on Moscopán side.
4. Aglaeactis seems to have moved "uphill". Lots of inds. foraging (and probably singing) just below paramo on Purace' side

Diglossini

April 17, 1972
Cerro Punta

11:30 a.m. Road to Las Nubes. Looking for Diglossa "plumbea" ("Plumb")

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

Hear Whitestart song. No other birds singing.

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

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

See Whitestart in tree in pasture. Slate-throat. Sings a few phrases NODWA. Then sings more phrases in scrub. NODWA

Further on, more Slate-throats. Singing NODWA. But some apparent overlap with Zonotrichia.

Stopping 12:55 p.m.

April 18, 1972
Cerro Punta

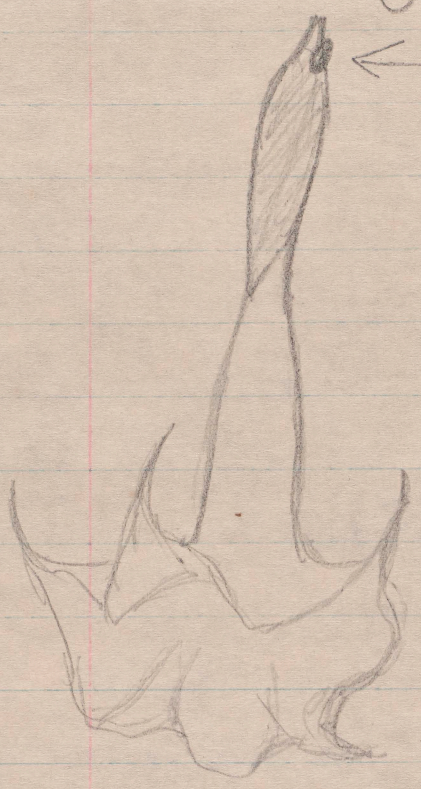
Going to work in and around town today. Arrive 6:35 a.m. Mixed sun and light drizzle.

6:42 a.m. See single ♀ Plumb. Flitting about in rather isolated trees and bushes edge small pastures,

Diglossini, Apr. 18, 1972 II

B

crop fields, near houses.
Feeding on white "Daturas"



← Incisions made here.

5 points

♀ Plumb-obvious, quite alone. Utters occasional "Tsit"s. Moving very rapidly over wide area. Diameter at least several hundred yards. Then disappears from sight. Reappears 6:53 a.m. Flowering trees now. A little more sedately 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 VENDEN FLORES signs at 4 or more houses). But I don't see a single Diglossa OR hummingbird (altho I hear what may be hummingbird song or dispute sounds in distance).

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

Finally see hummingbird 7:32. In commercial flower garden. Rather large. Long straight bill. Undistinct

rushed tail. Generally dark green. Purple on forehead. Bluer 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 pink small Gladiolus. Also same type of yellow cup shaped flowers taken by hummingbird. But definitely cutting in from side. Presumably not same ♀ seen earlier.

7:55 a.m. Annie back at first area. First ♀ Plumb feeding on datura flowers as before.

Stop observations here 8:20 a.m. Quite dense drizzle, bajareque, 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 individuals as well as (or even more than) species.

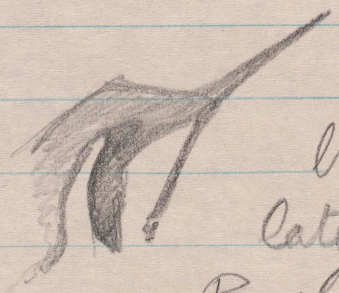
9:30 a.m. Going to work around the Dahlin's house. This area is comparatively low. Probably only a few hundred feet above the El Hato Brva plain (although several miles along road. The Dahlin's claim that one or more Diglossas do (does) feed at fuchsias at this lower level. Certainly there are holes in corollas. The Dahlin'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 Diglossa and

Diglossa, Apr. 18, 1972, IV D.

a "blue" hummingbird (Wood Nymphs). Hummingbird the aggressor.

9:42. Single small greenish hummer shows up. Feeds briefly on Fuchsias. Goings from front, not side. Flies away.

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



Feeds on Fuchsias as before. Flies off. Back again a few minutes later. Flies off again. Definitely alone both times. Back again 10:03. Off again. 10:11 back again. Off again. Back 10:25. Off again. Back again off again.

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

10:50 Same hummingbird (I shall it "X") back. Alone and feeding as usual. A single ♂ Icarus lands in Fuchsia plant a few inches away. X continues feeding; then perches and preens same plant. Another Icarus (imm. ♂) lands on grown a few feet away. Joined by first ♂ Icarus. Both Icarus feed on ground. X continues preening, then starts

to feed as usual again. Then a Plumb-flies straight into Fuchsia bush. Lands 6"-1' away from X. Starts to feed in usual Diglossa fashion. X also continues feeding. But the feeding is interspersed with obvious hostile behavior. X makes at least 12 "passes" at Plumb. Most of these are so mild or "inhibited" that they are hardly interpretable. But one is vicious, and another may produce actual body contact. In both the latter cases, the Plumb hops off a few inches, utters a few harsh sounds, but then resumes feeding, apparently undisturbed. On another occasion, the Plumb (accidentally?) supplants the X. Finally, Plumb flies off, apparently of her own volition. X flies after her in hot "pursuit".

X back immediately. The 2 pairs have been joined by 2 or 3 other inds. (immatures, perhaps with adult ♀) of their own species. Perching in small shrubs beside Fuchsia. X makes what may be one inhibited pass at them. Then flies away. Pairs 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 center) of X's territory. It is obviously willing to defend the area, even in some cases against inds. of other species. But the interspecific 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 ♂ Plumb flies in. (So ♂ & ♀ Plumbs do overlap, even though — ♂ when — the

Dcglossini, Apr. 18, 1972, VI F

inds. do not associate with one another). X swoops at it immediately. No effect. ♂ Plumb. starts to feed. Occas. utters a weak, wheezy trills. X does some feeding, interspersed with half-hearted passes, periods of perching (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 perches in Fuchsia. ♂ Plumb. shows up a minute or so later. Feeds in typical manner. X makes several passes X ignores them. X perches. Plumb. eventually flies away into tree 20 ft away. X follows in pursuit. ♂ Plumb. hops from branch to branch. 10-15 ft up. Preening? (there are no visible flowers in this tree). Eventually lost to sight. X perches 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 Tiarus (1 ad. ♂, 1 ♀ or immature) appear in ground below Fuchsia. Hop up into branches. Plumb. pays no attention. ♀ or imm. Tiarus poises at Fuchsia flower. (Could these birds be interested in nectar???) Then Tiarus fly off. Then a tiny hummingbird of another species appears. (♀ or young ♂? Dull brownish green above. Largely buffy whitish below. Light of underparts extending some distance up side of neck.

Bill straight and not very long.) Feeds on Fuchsia flowers a few inches to a foot away from Plumb. Neither ind. pays an obvious attention to the other. I think that the tiny hummingbird is feeding from straight in front. Then tiny flies away. Plumb 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 ♂ Plumb disappeared. Back again. Off again. Back again. Off again. Back and off again 4:52. Back and off again. Then ♂ Plumb shows up. Feeds. X comes back. Immediately attacks. Forces Plumb to move a foot or so, further into Fuchsia. But Plumb relaxes immediately. Goes back to feeding. X starts to feed too. Interrupts feeding to make pass from time to time. All very half hearted now. Plumb ignores the fuss. Then Plumb flies 2 ft away, perches in rose bush (no flowers now). X seems to relax, even though Plumb is still perfectly in view. I.E. it probably is only defending Fuchsia, not antagonistic to Plumb in general. Then Plumb 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.

Lwall Taphormis delattrei

Taphormis calolaema
(cartanoventris)

Thalassenies

see also annual generic accounts

ECOLOGY & INTER-SPECIFIC RELATIONS NEAR MÉRIDA
DIGLOSSINI

Sept. 15, 1962

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

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

Sept. 16

Albi Inter ??? One ♂ albilatera and (probably) one intermedium associated with mixed flock near first stop of Teleferico. 10:40 a.m. Other members of flock included at least 1 Basileuterus (same species as at Nono), 1 Thraupis cyanocephala, 2 Attapetes (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 albilatera 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.

glor A single adult glorosa seen in scrub above first station of Teleférico at 11:00 a.m. Quite alone. Not feeding.

A single ♂ or juv. Diglossa seen in area slightly above glorosa. Grayish. Obviously barbitula or albilatera. Looked ruffy 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

albi

cc ??? Pair of cinereum 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.

BG A single BG 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.

gen None of the Diglossini here showed any definite reaction to any of the common finches (Yellow-bellied Seedeaters, Andean Sparrows, Dark-backed Goldfinches), tanagers (BT's, a single ♂ White-cine

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). May compete with the Diglossini for food.

Sept. 17

Barri A single ♂ varietula seen in outskirts of town of Mucuruba. In trees above a small abandoned backyard. Altitude 7550 (uncorrected). 17:15 a.m.

Feeding on flowers of eucalyptus. (Not the same species of eucalypt as at Quito. 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 Mulla.) Also gulped at bases of small cones of some conifer or conifer-like tree. Presumably extracting insects. Usually 10 – 30 ft above ground.

Barri 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.

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

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

SEE ALSO MIXED DIGLOSSINI NOTES

♂ 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 ♂ Diglona with the usual mixed flock of Wilson's Warbler, Slaty-throated Redstart, Bush-tanagers, Yellow-thighed Finches, Brown-capped Vireo, etc. But again the Diglona 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.

Diglona, I — March 3, 1959, Cerro Punta

There is a ♂ around the Pension here, who flits through the garden from time to time. (Have also seen ♀ from time to time, but usually only out times from the ♂)

♀ is also here always at differ.

Early this morning the ♂ delivered a lot of "muzzy" 1, 2, 3, or 4 "Treee" Notes. The 4-note series sometimes organized "Treee-treee treee-treee." (I am

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 upright sitting posture. Sometimes he did it in the intervals of intensive preening - then the song was given from the very ruffled posture shown on the preceding page.

Otherwise his behavior (i.e. flicking of CV'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 "Tsree-tsree tsree-tsree." But this is probably only moderately high intensity. 5-note songs are not uncommon. "Tsree-tsree tsree-tsree tsree." Sometimes the place of the fifth note is taken by a very brief, gurgles, 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 "teh teh teh."

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-

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 unpreening 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 variable shape & area.

August 4, 1959
Mt. Atacazo

Lots & lots of a new species of Diglena here
Cafresnayi = [illegible] = (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 sumbby brush extends along the water courses. And the flower pieces stuck to the brush)

A most distinctive looking species. Females just slatey blue-gray. Eventually uniform all over. (W.J. Smith says that the female is darkest between the eyes and the bill, and possibly the crown - ?) The ♂ is eventually black all over. Possibly really just dark slatey blue black all over, with a slight bluish glow. 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 flushing her from a nest or young, and she then skulked 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

ered singe "Sit" notes as they flew off. Presumably either ordinary CN's or relatively weak dlCN'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 Dusky-backed Goldfinch in Panama; although the notes are actually much less varied. And if one listens to the song of this Flowerpiercer very carefully, one can see that it is actually composed of a long series of eventually similar "Tsree" notes. Sometimes eventually uniform "Tsree" notes uttered one right after the other. More often a little more varied. Perhaps the majority of the "Tsree" notes are really organized into doublets "Tsrub-ub tsreee" 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-piercers at Chirripó.

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 unmistakable 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 give (communally?) loud & prolonged singing just before, and in the intervals between, a prolonged and apparently emotional 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 tops of bushes or small trees.

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

what appeared to be territorial boundary disputes. Most of these chases 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 this 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-piercers at Chiriqui.

Diglossa, I — August 5, 1959, Cerro Pichincha

? 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 "Zmeeeeeee" as he did so. Nothing happened after this, as the rain suddenly came down in buckets.

Diglossa, I. — August 7, 1959, Cerro Atacazo

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 couldn't see well, was uttering constant hoarse notes, very much like the scolding notes of wrens, although somewhat less abrupt sounding, and perhaps uttered somewhat more slowly. Might be transcribed as "Waa-aah Waa-aah Waa-aah ..." or even "Waa-aash Waa-aash Waa-aash" (The "sh" sound at the end of these notes was

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-aah...." 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 ♀-like movements, but this may also have been balancing). The head was held low, in a rather semi-hunched manner, throughout all or most of this performance, which I shall call "BV".

Note: head shape!
Wings very broad and rounded

♂I hopped around and ♂II followed + WHAC, only a few of this, ♂I flew off, and disappeared from the area for several minutes from perch to perch in the new bush, then every where, continuing to do BV wishes away from ♂I. After a few seconds

♂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 "Brrrrrrrp" 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. Interestingly 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-aash" type; and it was my impression that the "sh" 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 spun

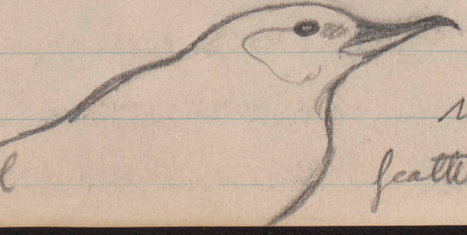
d much more widely when each WHAC is uttered (and partly closed again, just as suddenly, after a note). This time, ♂ II repeatedly attacked ♂ I again & again. Actually jumping on I and pecking him vigorously. This was done right after vigorous WHAC & BV, and vigorous WHAC & BV was resumed right after the attack. It is possible, in fact, that the WHAC & BV were even continued during the actual pecking!!!! The whole WHAC & BV 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 & BV (or even WHAC alone — I imagine that WHAC alone is probably just lower intensity than WHAC & BV.)

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 raspy, during the very few seconds just before he delivered an actual attack.

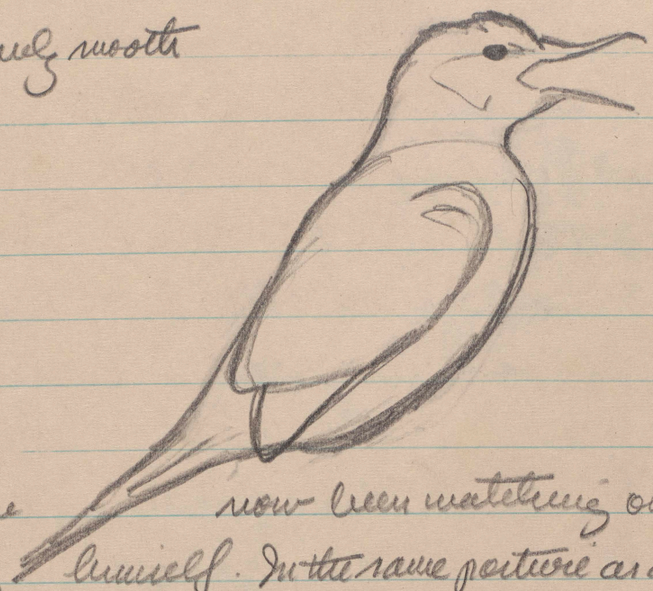
When a ♂ is alarmed by my presence, he keeps his head feathers smoothed down very flat.



When ♂ II sang after the fight, I noticed that he had his head feathers quite ruffled, but the re

Diglona, aug. 7, 1959, I

st of his plumage fairly 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 looking 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 II was doing intense BV + WHAC, he could hold the body & head at any angle (with the neck almost always short, except during actual pecking). Not always inclined diagonally upward as in my drawing on p. 9.

Diglona, I

August 8, 1959
Lena Pickwicka

?

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

?

the upper edge of the humid temperate zone, I saw a Diglona 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 Chiriqui form) attacked by a hummingbird. The Diglona 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). Comme ca:

Neck more or less straight

(The Diglona 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).

Note August 9th

I went back this morning to the same place where I watched the Diglonas 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 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

? Ceno Ataiaso, 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 Ataiaso (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 Pichincha uttering either WHAC or song phrases.

March 20, 1960
Ceno Punta

We saw at least 3 ♀'s and 1 ♂ Slaty Flowerpiercer today quite high above Ceno 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 postures, sometimes pointing bill obliquely 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 BV of alternans.

Diglona, I. March 24, 1960
Cano Punta

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

Diglona, I May 19, 1960
Cano Ataraso

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 "Tzaa-a Tza"

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

It is my impression that the higher pitched "Tcccc" or "Trccccc" 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.

Diglena, I

May 20, 1960
Cerro Pichincha

We went back to the same place here where I was greatly puzzled by the identity of the Diglenas last year (see pp. 13 & 14). There were still a lot of Diglenas around — and all the ones we saw and heard were probably members of a species distinct from the lafresnayei 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 slatey blue more or less uniform all over. The ♂'s appeared to be definitely smaller than the ♂'s of lafresnayei. All or most of the ♀'s also appeared to be relatively small.

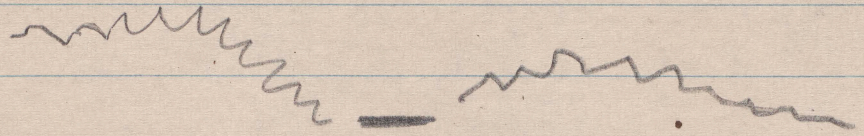
All my notes on the behavior of ♂'s below definitely refer to the ♂'s of this small black species. All my notes on the behavior of ♀'s, below, and above pp. 13 and 14, probably also refer to the ♀'s of this small species (although I cannot absolutely discount the possibility that some of the ♀'s I observed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

All the notes which probably refer to this small species are marked ××××××× (= alterina ± see notes of July 29, 1960)

The ♂'s uttered "fut" CN's of the usual Diglena 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

of the songs of Lafresnayei ♂'s, but still quite easily distinguishable a moderately long formulaic 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 composed of two eventually 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 repetitious of song were rather reminiscent of the singing behavior of Bananaquits.

All these songs were given from quite unvariable postures. A singing ♂ would just 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 conspicuous.)

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

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 or escape. One, for instance, we heard an obvious fight in the bushes (without being able to catch more than the briefest & most obscure glimpse of the birds) which was accompanied by singing and bits of WHAC Notes (see below). This song was apparently higher-pitched than the ordinary "pairing" song, and sounded very intense. Similarly we watched a ♂ chase another bird (probably another ♂). Then 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 passerine 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 Lafresnaye (see comments p. 14)

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

uttered by a ♂ flying very rapidly after another bird, probably attacking. 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 ♀ Aterrima 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 somewhat as: — — — — — — — — — —

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 in tone 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 ACN ———) The higher intensity ACN's, most of the doublets, were noticeably higher pitched than the lower intensity ACN'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 ACN'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 picking 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 *lafresnayei*.

This species would seem to be more closely related to *lafresnayei* 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 interjected 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: "Ssreeeeeeeeee Ja-ta"

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

Cerro Ataccazo

This afternoon we went up Ataccazo looking for Diglossas. At one point, a couple of thousand feet below where aterrima 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 lafresnayei and the small black species must meet or overlap, as the rain & fog came down.)

Diglona, I

May 25, 1960
Cerro Pelmidia

We watched the same little black Diglonas 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 was by comparison 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 Diglonas). 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-V, 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! She did not follow. This incident is another indication that the songs of Diglona are (at least) not strongly sexual.

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

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

owned 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 Viaquito

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. Time and again we have seen them chase all sorts of hummingbirds. They also get involved in disputes with Andean Flamecrests 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

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

Diglona, I. May 26, 1960
Cerro Atacazo

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. Feigning. Perhaps significantly, this ♂ had selected a territory which received sunshine 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 "aimless 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 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

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

In case 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 mutually 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 [illegible]. It might be indigotica (see notes of July 29, 1960.)

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

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

Cerro Pichincha

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

Diglona, May 26, 1960, III.

I noticed this afternoon that ♂'s tended to sing in response to any squealing 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!

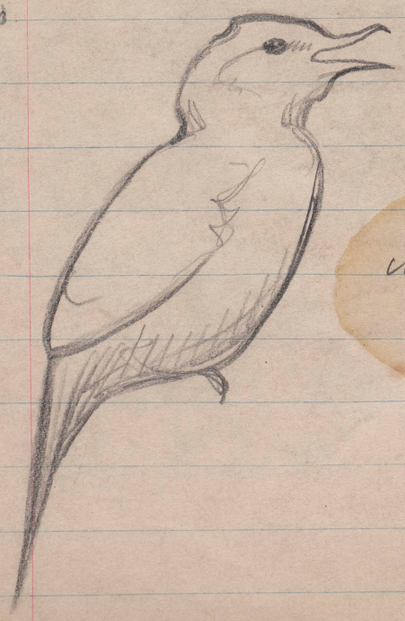
In any case, this singing reaction of the ♂'s is still another indication that the song of this species is hostile

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

One miss 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 shape. This sort of "semi-crested" shape is quite common, although by no means always present.

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

Diglossopis, I

May 27, 1960
Cerro Pelvicha

~~xxxxx~~ = coerulescens

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

They looked like this:

Alert
Posture

Bill quite different from Diglossa.
Black mask.
Rest of plumage dull cobalt blue
(perhaps slightly iridescent)

Looks smaller-headed and longer tailed than Diglossa.

Both birds were in identical plumage. Presumably ♂'s

Very, very active. Flying from bush to bush with great speed. Nearly constant call notes and/or song.

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

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

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

single song phrase as "Tsit Tsit Tsewee Tseweeyoo".

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

"Tsit Tsit Tsewee Tsweeeeeeeeeeeeyoo".

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 "Tsit" CN-like notes, which appear to be integral parts of the song. (The songs of the small black Diglossa may be preceded by CN'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 Diglossopis 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 Diglossopis, 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 Diglossopis were delivered from completely unritualized perching and feeding postures.

David caught a glimpse of one 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-U types. They also did WF'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.

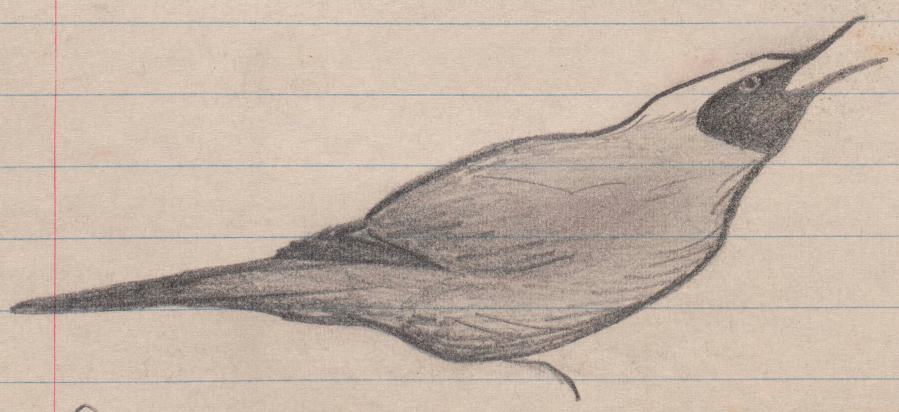
Diglossopis I

May 31, 1960
Cerro Pelenichia

We finally found where the Blue Diglossopis is fairly common — and where the birds we saw on May 27 almost certainly came from. About 500 to 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 Pelenchia.) 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 Diglossopis 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 "Treeeeeeeee"s, but I did not hear any independent R's. As far as I could tell, there were no actual pulses 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 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 "Wit dewee dewee dewee". (I would probably transcribe this as "Tsit Tsewee Tsewee Tsewee".) Another song may be the same ♂ was essentially similar, but included more "Dewee" or "Tsewee" notes.

Diglossopis, I

June 1, 1960
Cerro Pelancha

Watching the birds near Nono 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 Diglossas.

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 Diglossop is (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-swee Ja-swee-yoo"

All the songs of both ♂'s which sang by themselves were delivered from apparently unvirtualized singing postures. Comparatively low, but not quite as low as the posture shown 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 peri

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) singing madly, bowed chasing back & forth, but not too much. Most of the time, the ♂'s just hopped 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 BV.

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 singing and fiddling 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 flirting 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 distinctively 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 ty

pc 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 ♀ Diglossopis.

Diglossopis, I

June 2, 1960
Ceno Pichincha

Working near Nono 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.

Diglossopis, I

May 20, 1961
Ceno Pichincha

Watching the birds near Nono again. They do not seem to be very active or exciting 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 CV's or EN-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

ort "conventional" songs. Apparently no other bird of the same species is nearby. Once the bird landed on a new perch, began to sing, just as a Redstart tried to land on the same perch. The Diglonopis 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 Diglonopis perched, quietly, without moving, utterings rather peculiar songs. Each song consisted of nothing more than 6 or 7 rapid "Zeewaa" notes. Similar to other songs in tonal quality. Uttered 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 aterrima, but I shall have to check this.

Diglonopis, I. May 24, 1961
Cerro Pichincha

Watched the birds near Hono again this evening.

I have only seen one Diglonopis here at any given time this year. Probably always the same bird. Always in the same area. Probably 2 or 3 songs quite a lot.

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

ii). After the alternia stopped attacking, the Diglonopis uttered one song phrase. "Tit-sweeeee-yoo."

Diglonopis, I May 19, 1962
Pichincha

Working near Nono both morning & afternoon today. Diglonopis scarce & inconspicuous, like last year. This morning I heard one Diglonopis song phrase at dawn (appx. 6:00 a.m.). Not repeated. Possibly provoked by my approach. This afternoon, ca. 4:45 p.m., I watched 1 Diglonopis utter several song phrases. All with "Sreeeeeee" components. Not introduced by "Tit" or "Tit" notes. Uttered from various rigid postures.

Diglonopis, I May 22, 1962
Pichincha

Working near Nono this afternoon.

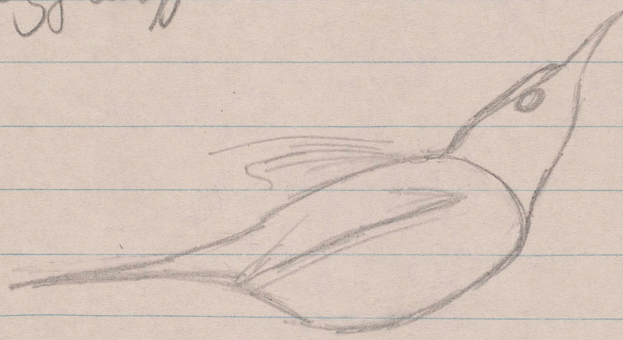
4:10 p.m. See a male Diglonopis singing in tree. Song phrases with introductory "Tit" or "Tit" notes. Then singing bird flies to attack another bird in tree 30 ft away. Attacker utters song phrase during attack. Then attacker retreats. Both attacker and attacked sang after attack. I did not notice any trills 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 Diglos as I have studied. Very frequent 20, 30, or more feet up in Eucalyptus.

Good heavens! There seem to be Diglossopides 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" introductory notes. They are probably still a minority though.

Watching a single Diglossopis feeding, 5:05 pm. Apparently not a bird of its own species anywhere around. Suddenly the bird assumes [illegible], spreads both wings horizontally, and [illegible]'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 thin, high-pitched, plaintive "seeeet", and then some ordinary CN's as it goes. This last note presumably a PN! (This may conceivably have been the same bird that "solunted" a few minutes earlier.)

Diglossopis, I May 23, 1962
Pichincha

Working near Nono this morning.

Arrive area where "solunting" bird was yesterday at 5:40 a.m. As far as I can tell, there are no Diglossopis singing here ~~at~~

t know which) utters 1 "Leeet" in flight. Then one or both birds utter (s) loud hard song phrase(s) as "greeting" when they land together. This "greeting" does not include "Treeeeee" components. (Probably does not include introductory notes either.) Then both birds continue feeding as before. Then both go down into scrub, to feed on insects. Quite silent there except for occasional "Tit"s. Then one bird disappears. The other continues feeding in scrub for a few minutes. Then flies up into tree. Utters a few song phrases. Then flies away. Disappears to.

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 Diglossopis was at Hoa, 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.)

Back at Nowo 3:00 p.m. Cloudy Occasional rain

Wings slightly drooped.
White tongue sometimes visible

Fluffing may be due to moult plumage.

Probably ♂

Find two birds feeding in cloudy adjacent trees. Definitely not pair watched this morning. (I shall call these birds "C"). Apparently peaceful. One bird sings from time to time. Then one bird disappears. The other remains

perched in tree. Sings repeatedly 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. Fairly intermediate between Diglossa and Conirostrum.

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

A ♂ atricapilla sings ♦ sings ♦ sings, ca. 3:25, in area where the C Diglossopis had been. Doesn't induce any Diglossopis to sing in return.

Back to C area 4:05. Find both birds hopping about in same eucalyptus trees as before. Possibly feeding. Both sing when separated from one another. When one flies over to a thicket and begins to feed. Followed by second. Then both move thru thicket, feeding on nectar. First bird always in lead. One or both birds may utter brief "seet"s 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 p.m. The C pair still feeding as before

Interesting coincidence or reaction between Diglossopis and atricapilla. 2 atricapilla ♂'s singing vigorously. Approximately synchronized. Then shut up. Then, about 30 seconds later, one or both of the Diglossopis sing a few phrases. Then shut up. Almost immediately one of the atri

this time.

Hear what may be Swit Diglossopis song 5:46 a.m. Each phrase preceded by "Tit tit." Some or all phrases include "sreeeeee" component.

This Swit burst song quite over within a couple of minutes

See what is probably the bird that "solicited" 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 w/ 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 "feeeet" notes in flight. Then land in tree. 2 disappear. 1 remains behind. Sings. Flies to another tree. Utters more (single) "feeeet" notes in flight. These notes may be FCN's.

This remaining bird then flies from tree to tree feeding. Definite probing eucalyptus flowers. Sings occasionally. All songs with introductory notes. All or most with "sreeeeee" 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 Diglossopis song for some time now. (Sun has not reached this area yet.)

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

Watching his flushing. TF's very common. All very lateral all or most V-D. WF's rare or absent. Tail quivers visibly during song

Most of his song phrases now are very long and warbling or twitter

ing. Without introductory notes.

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

. A flows 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 sits and sings. All song phrases with one or two introductory notes. More or less "Tit tit tsewee-ceyoo". Sometimes the "tsewee-ceyoo" becomes "tsewee-ee-c-c-c-e-e-yoo" sort of thing. this "wee-ee-c-c-c-c-c-c" bit is probably more or less the same thing as the vocal pattern I have also transcribed as "sreeeeeee"

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

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

Then songs of Diglonopis may be somewhat shriller than those of atemnia and "thinner".

8:30 a.m. See 2 Diglonopis feeding in same tree. A and mate? Quite peaceful. Flying about more or less together. One or both utters occasional song phrase, but only, I think, when the 2 birds are fairly far apart. Otherwise only utter single "Tit" notes. Then one bird flies to another tree. The second follows. One of the birds (I don't

cmas sings 1 or 2 more phrases. So it is possible that the sound of the songs of one species inhibits bursts 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 p.m. C(s) singing as usual. Then shut up. Then ♂ alemnia starts to sing. Then 1 of the C's starts to sing antiphonally with alemnia. 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. Far apart 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 6 or 7 loud "faeet"s in flight (I am now beginning to return to the idea that there are PN's.) Two C's continue to sing. More or less antiphonally. Some overlap. pres. ♀ apparently following (in the sense of beginning to sing) after the pres. ♂. Then ♂ flies back to ♀. Does not utter "faeet"s as he does so. Lands right beside ♀. A loud "greeting" song as he lands. All or most of the "greeting" by the ♂. Then both fly off. Silently.

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

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

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

As far as I know I have never seen any of the "Diglossini"

Diglonopis, May 23, 1962, VII (Fe)

Flycatching

Go for a walk and come back to Carea 5:10 p.m. C's silent & invisible. The ♂ atemina 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 5:15. Apparently alone. Sings. All phrases with "Freeeeeeee" component. Then the bird flies away.

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

5:23 ♂ atemina sings in one of the trees in which both C's sang earlier. C's silent and invisible at the time.

Diglonopis, I

May 24, 1962
Pacheedia

Working in Mono again this morning.

Arrive area C birds 5:35 a.m. C birds apparently not singing — altho neighboring atemnas are in full voice

Hear what seem to be first Diglonopis songs 6:01. With introductory notes. Much thinner and more wiry than songs of atemina at this time of morning. Phrase after phrase. Almost continuous.

Catch glimpse of singing bird a few minutes later. Definitely Di

glonopis. Exposed in scrub. Then flies to trees. Utters some "fecect"s in flight. Sings in tree. Flies to another tree. Feeds & sings. Flies to another tree Feeds and sings. Apparently alone all the time. Then disappears

Wi songs were not invally overlapped by those of the ♂ alemmas during this behavior.

Both ♀'s back, together, 6:15 a.m. Feeding in eucalypts. Both uncles of flowers. Not invally close together. Fly from tree to tree. Pres. of ♂ utters lots of song phrases. All with introductory notes. All or most with a trace of "freeeeeee" component. (It may be that introductory notes and "fiiiiiiii" components are characteristic of all high intensity songs of at least the ♂'s of this species.) No "fecect" notes. Occasional "Jit"s. (Meg 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 ♀'s and a ♂ alemma over one particular flower. Silent. Can't see who wins. But the ♀ flies away a few seconds later.

All the local ♂ alemmas were silent most of the time the Diglonopis were singing 6:15–6:23 appx. Only once in a while did one ♂ alemma utter a few phrases. Then occurred between the phrases of the Diglonopides.

Both ♀'s gone now 6:33 a.m.

Back 6:37. Feeding & singing in eucalypts as before. Twice one

or both birds utter(s) series of "Jit"s accelerated into a "CHILL" 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 Diglossopis itself). Don't know which species. Yellow below, olive above, with a very broad yellow or white superciliary stripe or patch. This warbler apparently also feeding on insects in tree. The Diglossopis 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 "feeeet"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 "feeeet"s. ("feeeet"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 alternina of A's. Usually one silent while the other(s) utter burst of song phrases. Less frequently (but not actually infrequently) phrases of the 2 species alternate. I have seen both incidents as when a C seemed to be responding to the song phrases of an alternina and incidents in which the reverse seemed to be the case. ∴ E. sometimes a C will utter a phrase immediately after an alternina, and sometimes an alternina will utter a phrase immediately after a C.

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

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

(This is almost certainly the same bird that omitted introductory notes in its songs the first day I arrived this year). Then the bird flies to several trees. Sings in each. Does not utter "seeee" s in flight. Then disappears.

8:25 a.m. Come upon same "A" as before. Apparently alone. Singing repeatedly on top of bush. Songs without introductory notes or "seeeeeee" components (which I shall call "SR" from now on). Then flies up into adjacent eucalypt. Continues singing. Then a alternina about 75 feet away begins to sing to. These are undoubtedly 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 alternina began a phrase a second after the "A". Sometimes the "A" began a phrase a second after the alternina. Eventually the 2 birds shut up. I think the alternina 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 territorial than phrases without such elements.

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

Come back to C area 8:55. Find a single C singing, in tree and in bushes. All songs with introductory notes & SR. Occasionally utters

"feeeet" Note in flight.

Again a single ♂ atemnus uttered a few long phrases during the intervals in which the C was not ringing. This time, however, the Diglonopis had the last word.

The territorial inter-specific relationships of these Diglonopides are not yet clear, in all respects. The territory of C pair obviously overlaps the territories of at least 2 (probably 3) ♂ atemnus. But the territory (or home range) of A (or the A's) overlaps the territory of only one ♂ atemnus (of that) and the single Conebill. It is obvious, in any case, that the home ranges and territories of Diglonopis are much larger than those of ♂ atemnus (or ♂ Capsanaya). This may be another resemblance to the Conebill.

The home ranges or territories of Diglonopis are, of course, difficult to compare with those of Diglossa spp. simply because they are so much higher (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.

May 23, 1902
Pichincha

Diglonopis, I

Working near Hono again this afternoon

Reach C area 3:10 p.m. C pair feeding quietly with Tits and Conebirds. Only once does one of the birds utter a long phrase when separated from its mate. All other times Diglonopis silent

BG

November 14, 1962
Barro Colorado

Enemann saw BG's copulating this morning. 8:00 a.m. In bushes in front of Old Lab. Introduced by ♀ begging. BVTV 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 their cop. attempts. Some other notes, which Enemann cannot describe. Presumably some sort of begging call.

This copulation behaviour is not particularly reminiscent of Dryeora!

November 15, 1962
Barro Colorado

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

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

Then one of the birds flies away. Apparently sings in near by tree. Songs are determinate series of monosyllabic notes. I should transcribe them as "Zeee zeee zeee...." (Not "Tsee tsee tsee.... as in some of my earlier notes) 4 to 8 notes per series.

BG's seem to ignore hummingbirds (and a single Bay

breasted Warbler) feeding in same bushes

Song continues off & on for the next half hour. Once a bird sings 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 "Tseet" 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 BG's in it. Chasing one another. This chasing accompanied by bursts 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 "Zhee-huh zhee-huh zhee-huh zhuh". No special

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 "Tit"s and "Tseeet"s. Then the "Tseeet"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, "Zeee zeee zeee ..." 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. Fluffing 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

ediately 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 "zeezeezee..." notes, apparently as "greeting"!!! Then both feed, close together, uttering occasional single ordinary "Tit"s. Then one bird flies away. Almost certainly same bird which had been reacting to II. Flies into near by tree. Apparently sings MS phrases

(S)

BQ

November 18, 1962
Barro Colorado

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

BQ apparently arrives 6:10. Usual bunch. Can't see bird, but it is uttering lots of "Tsect"s. Some quite long, e.g. "Tsecccct". Quite regular in rhythm. Almost DC.

See bird a few seconds later. Feeding. Utters occas. "Tsect" in intervals between feeding.

I shall call these "Tsect" – "Tsecccct" type notes "PN"s. The ordinary "Tsit"s I will call CN's. And the particularly loud hard "Tsit"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 bunch. Long MS type. Under 4 sing. A few seconds later another bird flies into bunch. 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 bunch. Uttering CN's, nothing more. Then one flies away. Remaining bird utters one brief MS song, then apparently flies away too.

Then pair #1 appears in bunch. Utter CN's. One bird also utters brief series (CN-SHN) notes. Might be transcribed as "Ta-zee-zee-zee". Then birds are almost certainly both II's. A

BQ, Nov. 18, 1967, 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 signs hostility. Mates?

Then, 6:45, regular songs 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 Encounter saw what was probably a border dispute between an A and a B bird. Lots of "Tsit"s, presumably SHN's. Lots of wing "jerking" (WF's?) and raising of the tail (TF's?). Some pivoting. 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.

BG

November 19, 1962
Barro Colorado

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

November 20, 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.

Nothing doing. Leaving 7:00 a.m.

November 26, 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. Nothing 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 7:05

Diglona, I — May 29, 1960
Cerro Pichincha

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 "Da Da." Notes so frequently uttered immediately after the "real" R, the "freeeeee" are an "intention movement" of song. This may be so — but the "Za Za" or "Da Da" 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 Diglonas I have noticed.

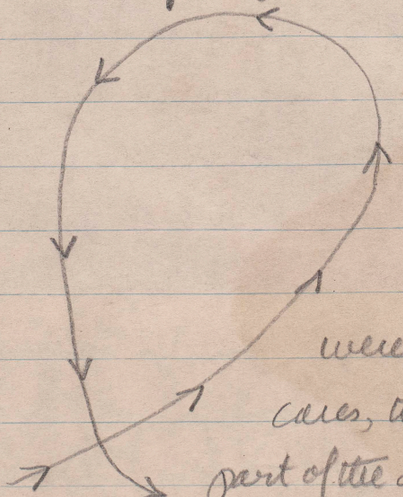
We didn't hear any WHAC Notes this morning — and I haven't heard any Sundays. Why? I am beginning to think that in this species the WHAC's are only uttered by ♀'s. We may have heard a few WHAC Notes earlier this trip because some of the ♀'s were not yet incubating them. WHAC's may be absent now because 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 flicking movements. Lots of "Tit" CN's The ♀ was less active. Performed less extreme flicking movements She also uttered CN's. These were quite like the CN's of the ♂, but slightly lower in pitch. Perhaps more like "Tsut" or "Soot".

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

Diglona, I May 30, 1960
Cerro Pichincha

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



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 songs 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.

Diglena, I

May 31, 1960
Cerro Pichincha

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

In spite of the presence of Diglossopis coeruleascens in this area, the small black Diglena is still very common — much more common than the Diglonopis infant.

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 can do is perform attacks (including chases), with or without R — "Zig Zag" 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 ♂ Diglonopis 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

Diglossa, May 31, 1960, II

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

Every time I look at these Diglossas 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 Diglossas (and the Conebills and the Blue Diglossopis).

Diglossa, I

June 2, 1960
Cerro Pichincha

For the last 2 days, we have been working only near Nono. 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 morning, I heard a ♂ utter R — buzz warble 3 times in rapid succession. Couldn't see him at the time. The buzz 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 buzz "intention movement" of song.

Diglossa, I

July 29, 1960
Washington

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

that the small black species is alterminia and that the blue-spotted species is cafesnayei. The bright blue species is probably vidigotia.

Diglossa, I. October 8, 1960
Cerro Punta

I was watching a mixed flock just below the upper pasture today, when I saw a solitary ♂ Slaty 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 unmutualized, but he did WF and TF, sometimes repeatedly, between each song phrase. The first 5 or 6 song phrases he uttered were "Zeee zeee zeee" (once "Zeee Zeee Zeee Zeee"). These were not divided into very obvious doublets. Then he uttered about 4 song phrases which included both "Zee" notes and buzz fowlers warbles. Commonest: "Zeee Zeee Zeee ~~" At least two of these latter phrases, the fowlers warble ended with 3 very buzzy descending notes. More or less commonest: "Zeee Zeee Zeee ~~---" These last 3 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
Ceno 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 (one 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 atrimina and lafresnayei.

Diglossa, I.

May 21, 1961
Ceno Pichincha

Yesterday, both morning and afternoon, I worked near Hona, and this morning I worked along the path above Hona. Atrimas are 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 skulking the birds of this species are. Singing males are almost the only birds that expose themselves for more than a very few seconds & ♀'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

They 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 ♀ atterima (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 ordinary songs of ♂ atterimas 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 shrubbery along the path above Nona and near Nona itself. These were probably uttered by ♀ atterimas, 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 Piñaquito

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, I May 24, 1961
Cerro Atacazo

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

There were a lot of lafresnayei around — in exactly or almost exactly the same places as on previous years. Possibly the same birds. There were also quite a number of aterrima around. In the same area I saw them last year. There are some lafresnayei in the area where aterrima occur (the 2 species may be approximately equally common in this area); but aterrima are apparently lacking in some of the areas where lafresnayei 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 aterrima here may be sunlight. The area in which aterrima occurs, here, receives the morning sunlight much earlier than the areas where aterrima are absent.

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

Rather surprisingly, the ventrices of ♂'s of the 2 species may overlap with little or no friction. I saw one ♂ *Lafresnayei* and 1 ♂ *aterrima* 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 ½ hour after dawn, and continued, in full swing, until about ½ hour after the sun reached the area(s).

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 ♂ *Lafresnayei* in detail. The most common songs were more or less consecutive: "Zrää Zrää ti-ti Zrää-Zrää ....." Essentially a series of "Zrää" notes, interrupted at irregular 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 ♂ *Lafresnayei* would sing this type of song endlessly. Not divided into distinctly separate phrases. The whole performance was quite reminiscent of the "dawn song" of Yellow Grosbeaks. The songs of the *Lafresnayei* actually sounded like the songs of the Yellow Grosbeaks — delivered by a tiny dwarf grosbeak.

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

These songs by the ♂ *Lafresnayei* were much "slower" than

n the songs of ♂ atterima. Longer notes, separated by longer pause
es.

I don't know why the ordinary lafresnayei songs I heard this
s morning seemed to include fewer distinct doublets than the co
responding 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
lafresnayei ♂'s utter similar songs.

The ordinary lafresnayei songs this morning were also si
milar to the songs of Yellow-Goorbeaks insofar as they occasionally in
cluded 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 isolat
ed and exposed ♂'s. Much more rapid than the ordinary songs of ♂
lafresnayei and divided into distinct phrases. All the phrases essenti
ally similar to one another. A typical phrase might be transcribed
by something like:

" tuh-tuh-tuh tuh-tuh-tuh-wheeyooa "
tuh-tuh-tuh

This looks very different from the diagram of aterrima song
drawn on May 20, 1960, II. It is possible, however, that the latter
diagram represents two phrases "run together." The emphatic note
in the center might be a "wheeyoo".

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

In one case, I saw a ♂ aterrima 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, gurgling, twittering song.

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

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

ol by any special movements or postures.

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

Just at dawn, I saw one of lafresnayei 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 birds 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 lafresnayei. And I think these calls were associated with aerial chases.

All this would suggest that lafresnayei has a hostile "Zee zee zee zee ...." pattern more or less like that of Conirostrum frasers.

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 verging upon typical WHAC

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

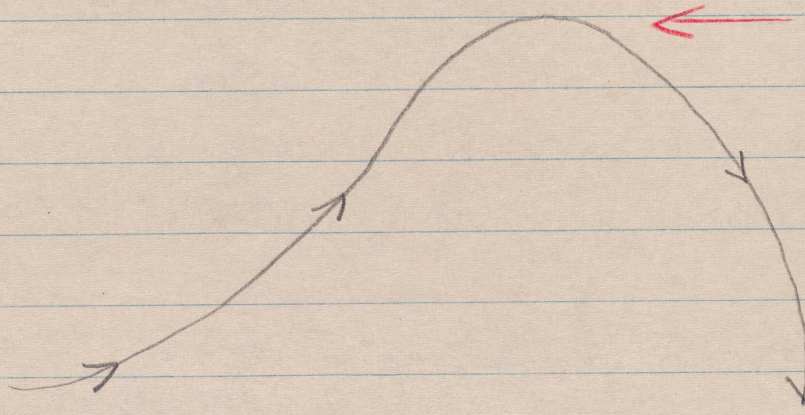
It is obvious that the songs of atemina here, at the present time, are slightly different from the songs of atemina on Atauro. The songs of the Hono birds are even more rapid and fowsler. Probably also include more notes. As far as I can tell, the songs of all the atemina at Hono are essentially similar. They might be transcribed more or less commo ce:

"Zeeva zeeva zeeva zeeva zeeva zeeva zeeva zeeva zeeya ooooo"

(All very rapid).

It is possible that the songs of the Nono-birds are characteristic of a later phase of the breeding cycle than are the songs of the Ataeaso-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 ♂ aterrima repeatedly supplanted a (♂) Diglossopis 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.

aterrima ♂'s seem to have two types of "call" "Zit"s and "Zeet"s. I don't know what the difference between them is - yet "Zit"s more hostile? Or more aggressive?

Diglossa, I

May 24, 1961
Cerro Atacazo

Watching both aterrima and lafresnayei here, in the usual places, this morning.

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

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

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

This morning, the aterrima began singing frequently some minutes before the lafresnayei. 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 "Whaah" notes on May 24th (see description bottom p. 37). I was able to establish that these two birds definitely are aterrima. One an adult ♂? One apparently juvenile in gray plumage with very short tail! The juvenile uttered many more "Waah" 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 shrubbery. It seldom came up to feed and sat 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

minutes.

The rhythm of the "begging" notes was fairly distinctive: "Waah waah waah-waah waah waah waah ...."

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

A few of the "begging" notes were much harsher 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 appreciably) and slightly spread. No trace of ♀. 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-"Zaza" 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" I heard on the path above Nono on Aug. 9, 1959, (p. 14), were really begging notes. The birds which uttered the "WHAC"s near Nono on Aug. 9, 1959, were remarkably "skulking" and difficult to see, just like the juvenile on Atacazo today. The "♀" observed uttering "WHAC"s near Miaquito on May 25, 1960, (p. 23) may also have been uttering "begging" notes.

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

29, 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 atemnia ♂'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 wooly Pluvialus (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 long 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 "Tit" and "Seet" CN's of atemnia are nothing

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

Diglossa, I

May 27, 1961
Cerro Atarazo

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

Began by watching the 2 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 HAC 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 Atlapetes, 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 2 birds. The X ♂ only approached the ♀ occasionally.

Most of the time, the X ♀ hopped and fed, quite peacefully, in a restricted area of bush. 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.

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 "Tit" CN's as they continued feeding (probably no more "Tit"s 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 ♂, in other words, was too afraid of the ♀, or the ♀ was not sufficiently afraid of the ♂, to enable charms to develop.

Every 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 2 charm performances, were usually or always uttered by the ♀'s of the pairs.

The reactions of ♂ alerting to ♀ alerting are certainly reminiscent of the "pouncing" of Emberizines!

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 here. 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. "Whaash whaash whaash whaash ....." Very buzzy. Moderately loud. Every time

the ♂ came particularly close, the ♀'s HAC notes became noticeably louder and 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 hopping & 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 repell 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, 5 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 alerting are feeding hungrily the

vi TF's are usually V-D.

Diglossa, I May 20, 1962.
Atalaso

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

Hear what appears to be first song of blue-spotted Diglossa 5:45. Composed of distinct notes (not a formless twitter), but without any very conspicuous doublet structure. "Zree zraa zee zraa zee zraa zeee-zeee-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. "Zree-zraa zree-zraa zree-zraa".

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

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

6:15 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:
"Zree zree zree zree zraa zree-zree zraa".
Frequently more abbreviated than this, but seldom or never any longer. (Yes! This is definitely a blue-spot). Letting in perfectly normal unvitalized, rather erect, posture while singing. Looks from side to side between phrases. Occasionally interrupts singing to go feed.

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

accelerated for the species. No other display.

7:00 a.m. Watching a ♂ *atterrima* singing. Apparently all by himself, but many of his songs have rattle or trill component. Ending "sreeeeeeeeeya"
mmm

In the same area where I thought I saw pre-cops behaviour 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 ♂ *atterrima* 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 a.m. I have now heard a lot of ♂ Blue-spots singing on their stations (quite apart from obvious hostility). Most songs composed of distinct notes, with only an occasional "zee-zee" or "zree-zree" doublet, usually toward the end of a phrase. (I am using "doublet" to include only 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 songs 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 notes of slightly higher and slightly lower pitch (i.e. "zee"s and "zaa"s).

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

One of the ♂ *atterrimas* here seems to have a large white spot on its

Diglossa, May 20, 1962, 11

Schen!

Diglossa, I

May 21, 1962
Pichincha

Working near Lloa this morning.
6:50. See a ♂ alticola attack and chase a Chincol. With "Zuuuuu-za-za" so perhaps this species does show a lot of inter-specific aggressiveness, like hummingbirds. It may not attack the Blue-spots on Atacazo simply because the latter species is larger.

Diglossa, I

May 22, 1962
Pichincha

Working near Lloa this afternoon.
3:50 p.m. See an alticola ♂ attack & drive away a humming bird.

Diglossa, I

May 23, 1962
Pichincha

Arrive Lloa 5:30 a.m.
As I walk along path immediately afterward, I hear lots and lots and lots of alticola song!!! It is still night at this time, but the moon is full and very bright
Hear a presumed ♂ alticola singing phrase after phrase.
5:30 a.m. All phrases almost formless warbles, but each one seems to

begin with a "zee-zee." This may be a resemblance to Diglossopis

Last burst of Diglena songs quite finished by 6:00 a.m.

Songs beginning again 6:16 a.m.

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

8:05 a.m. Walking & single ♂ alterminia singing repeatedly. All phrases "zewazewazewazewazewazewa" type. Quite like those of the Cowbird (see today's notes on Cowbirds). I simply can not tell some of the song phrases of these 2 species apart.

SEE ALSO TODAY'S NOTES ON DIGLOSSOPIS

Back to Nono again in afternoon. Cloudy and occasional rain

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

Diglena, I May 24, 1962
Pichincha

Arrive Nono 5:28 a.m. Still dark. Alterminias already singing. At least several birds. Working in area of C Diglossopis. There are at least 3 alterminias singing in this area. Notice that the song phrases of these 3 birds do not usually overlap (altho there are, of course, exceptions)

First burst of song over by 5:50 (if not a few minutes earlier).

Starts again 5:55. Again phrases of different birds do not usually overlap.

These birds do not seem to pay any attention to songs of unrelated

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

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

Ataco & Iñaquito

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

Both lafresnayei and atenuma 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.

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

Diglossa, I

May 25, 1962
Ataco

Working in usual place. Arrive 9:28 a.m. Very misty and cloudy

C
First a~~temma~~ (or Cowbell) songs heard 5:38 a.m.
C C Several birds involved. Then fall silent

C
First Blue-spot songs 5:45 a.m. when the ~~a~~temmas
are silent. First Blue-spot starts by alternating song phrases
with Atlapetes rufinucha!!! Then continues song then rufinucha
phrases (apparently ignoring latter) 5:47.

C
Then hear some Blue-spot and ~~a~~temma (or Cowbell) phr
ases alternating. Then overlapping.

3 times C overlaps A

1 A overlaps C

C
5:57. Two ~~a~~temmas carefully alternating phrases and
C bursts of phrases. All early phrases seem to be "Zeewee zeewee zeewee
C zeewee..." or "Zeewee a zeewee a zeewee a zeewee a" Then become more
C warbling a few minutes later.

C
All the Blue-spots near me silent while the ~~a~~temmas are
singing.

C
C 6:02 a.m. All local ~~a~~temma type songs now back to
C "Zeewee a zeewee a....."

C
6:04 a.m. Two "~~a~~temmas" repeatedly uttering phrases almost
C synchronously. Then alternated. Then synchronously again

NOTE: I have not been able to see any of the birds delivering
these songs; but I am almost certain that they are really ~~a~~temmas. Notes
relatively loud & melodious. I think Conirostrum notes would be thinner

All birds silent 6:09 a.m.

C
Oh oh!!! Now there is a single Cowbell singing in area where
C the "~~a~~temmas" were a few minutes ago. See the bird. Song phrases relatively
short "Zee wee a wee a" Quite thin. When bird begins to sing these phrases
C it provokes a neighbor to sing also. Two birds alternate phrases. I think

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 alemina & Blue-spots both occur. Blue-spot singing when I arrive. Shuts up. Then Cowbell sings. Then Blue-spot starts again. Then Cowbell. Then Blue-spot. Then silence. Then Blue-spot again. Then silence.

S The only alemina ♂ 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 alemina ♂ starts. (This time I can see bird). Sings alternates phrases with Blue-spot. Then twice overlaps Blue-spot. Then Blue-spot shuts up. Alemina sings many phrases. Then alemina stops and Blue-spot starts again. Then alemina starts again. Twice Blue-spot overlaps alemina. Then alemina stops. Blue-spot continues then stops.

All these alemina phrases were quite different from the "Cowbell" songs heard earlier. Beginning "Zee-zee-zee ..." accelerating into a formless twitter, ending with an "ee-ee-yoo".

The alemina quite ignored a hummingbird or flycatcher singing at more or less the same time. Sometimes overlapped, sometimes not.

The alemina and the Blue-spot were singing from stations at least 30 ft apart, but I have since seen them feeding in the same areas (altho not at the same time).

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

6:40. Blue-spot alone singing now. Seems to ignore Atlapetes albiventris singing day song. Then shuts up, while albiventris continues. Then starts again while albiventris 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 6:30. Only an occasional Blue-spot singing. Then two birds singing simultaneously. These Blue-spots would actually appear to be more scrupulous about impinging on the song of the other species than upon one another's.

All absolutely quiet 7:00 a.m. Going back to Coubill 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 Coubill area is definitely lower, possibly sparser than in the areas where atrimina occurs or Blue-spots occur alone.

When I arrive at the Cowbell area, a Blue-spot is singing. Shuts up. Then a Cowbell 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 Cowbell 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 Cowbell sings. Shuts up. Then sings again. Shuts up. Another Cowbell sings. Shuts up. Then another Blue-spot sings. Shuts up. Then a third Blue-spot sings! Then shuts up. Then first Cowbell sings again. Shuts up. Then a (fourth?) Blue-spot sings. Shuts up. Then another Blue-spot sings. Then first Cowbell. Then a Blue-spot !!!

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

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

Then Blue-spot sings. Then Cowbell sings again.

I think the 2 Cowbells here may be rival ♂'s. I have seen several chases 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.

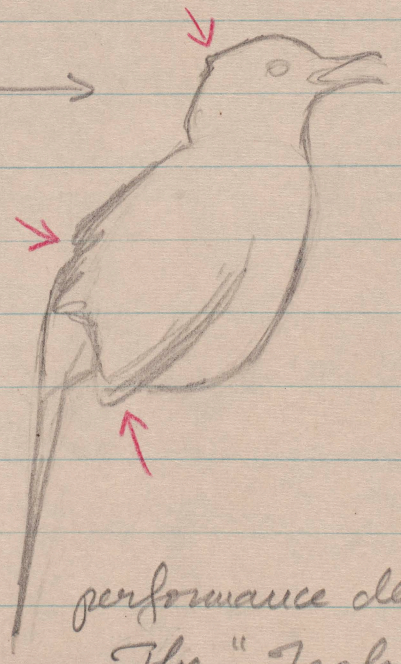
song of the first bird would be the releasing mechanism for the song of the second.

8:58 a.m. A song by a Blue-spot seems to be provoked by a song of an alemma.

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. Setting on exposed perch. Repeatedly utters "Took took", followed immediately by a sort of "ss." Bill OLB (very widely) 2, 3, or 4 times, while the bird remains silent, or, possibly, utters something like a very soft "see-hee-wee." 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 possibly 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 marked 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 ALCN's. The subsequent muffled notes may have been the "real" inhibited song.

Back to alemina area 7:43. Blue-spot singing. alemina starts. Partly overlaps Blue-spot. Blue-spot stops. Alemina stops. Blue-spot starts again. Alemina starts again, partly overlapping Blue-spot again. Both shut up. Blue-spot starts again. Shuts up.

7:50 a.m. See parts of a long dispute between 2 Blue-spots. One chasing the other in air. Long hunting & 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 BW's 2 or 3 times. Then aerial chase resumes. Again with "secret" notes. Then birds apparently separate. Sing from perches appx. 50 ft apart. First synchronously, then alternately. 8:00 a.m.

Arrive back Cowbell area 8:12 a.m. A Blue-spot sings briefly. Then another. Then various Blue-spots sing from time to time. Not very prolonged. No overlapping.

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

8:30. See a pair of Cowbells feeding. Definitely probing at base of tubular flowers. Then one bird flies over to its mate, and apparently feeds it!! No display.

One of these Cowbells 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 adjacent Blue-spot to sing. Then Blue-spot shut up. There was a pause. Then the Cowbell 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, VIII (57)

NOTE: It is obvious that I got the D. atterrima and Conebill songs mixed up this morning. I have indicated corrections by "C" Other references to Conebills are indicated by /.

Richmidea

Working in Nono this afternoon. Cloudy & rainy

3.25. Watching a ♂ atterrima sing. Long phrases like those of atterrimas on Atacazo this morning.

3:28. Hear another ♂ atterrima sing. Phrases more or less "Zee weewee weewee 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" Diglossopis

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

It is amazing how much less all the birds here do on bad days (climate-wise) than on good days

Diglossa, I

September 16, 1962
Teleferico #1
La Montaña

= carbonaria glossosa
= albilatera
= local form of baritula

11:00 a.m. Come across a single ♂ glossosa in thicket.

Diglena, Sept. 14, 1962, II

Obviously nervous about me. Lots of flying int. moves. Uttered lots of loud "Tsit"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 "Tsit"s. But not very rapidly repeated

Diglena, I

September 17, 1962
Tucuruba

7:15 a.m. ♂ varitula feeding & singing.

Singing moderately high and exposed. Long counting of "Tazeezeezee" phrases. Quite reminiscent of chivirí Jour. Bird sitting in erect unmotivated posture. Sings about 20 phrases and then disappears.

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.

Coereba, I.

November 11, 1957
Barro 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 & rapid series of whiney notes. Then stood for a few minutes in posture comme ça:

Looking unbelievably round & fluffed.

Yellow rump particularly conspicuous

Coereba, I.

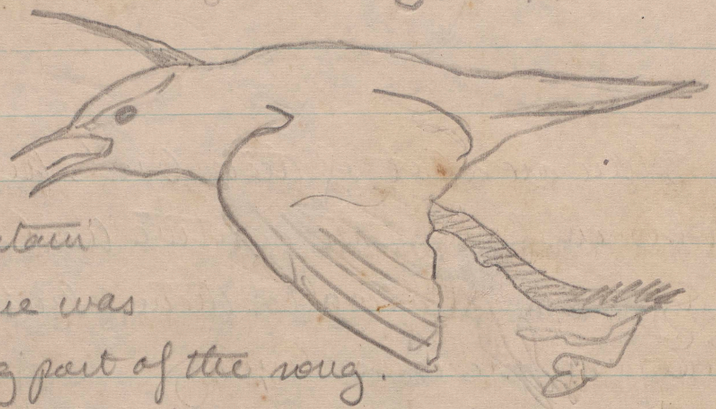
November 13, 1957
Barro Colorado

Another glimpse of some of the same display as above.

A single bird, apparently alone in a tree, uttering repeated calls: "I see tsee tsee tsee tuh" again & again. In posture comme ça (see next page), with fluttering wings, but little or no fluffing or ruffling. Just went on with this until another bird appeared. Then shut up and stopped flut-

Coeeba, Nov. 13, 1957, II.

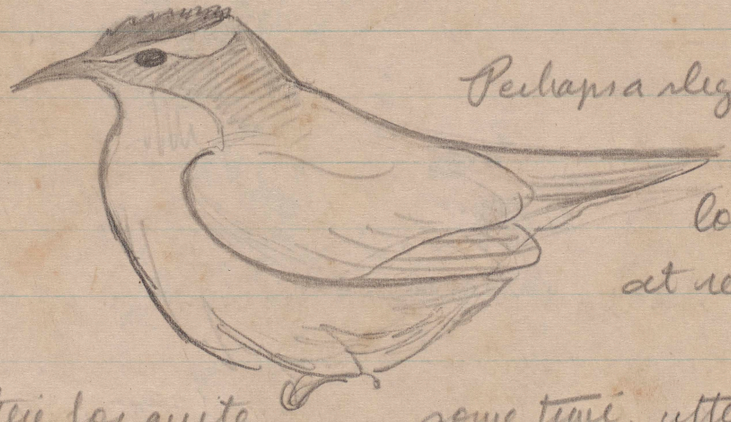
terning. Then both birds flew away, in opposite directions.



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 sitting in a posture somewhat like:
looking quite remarkably 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-fleck which gradually grew less extreme 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 unnaturalized posture, during the intervals of song.)

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 did 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. (I hesitate certainly right about their persistence). The usual song is a phrase of 5 or 6 notes; harsh, loud, shrill, "Kreee 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. The remiges 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.E. the bird would

Coereba, Dec. 2, 1957, II

sung the 3 or 4 note song several times, then sung a few songs of 3 notes, and then switch back for a few more of the first type. The notes of the 3-note type were rather distinctive: "Kreeooo kreeeooo kreeooo". I couldn't see the performing bird 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.

Coereba, I.

December 15, 1957
Barro Colorado

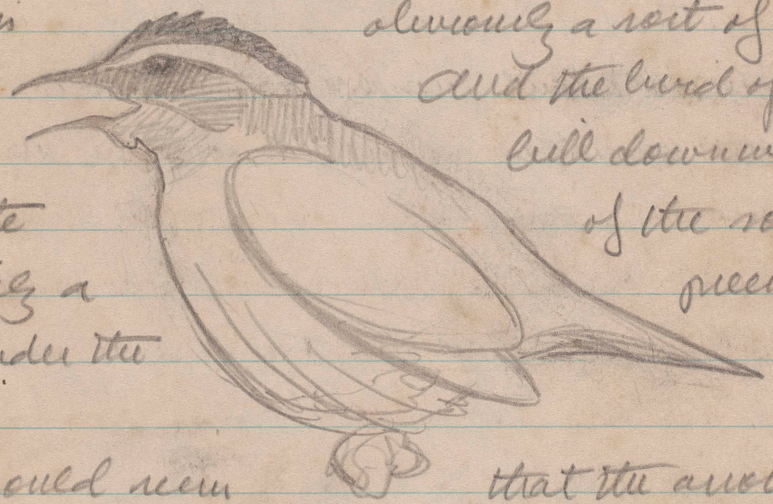
Apparently the same bird back — at least a bird singing in the same place. Sometimes singing the 3-note "Kreeeooo kreeeooo kreeeooo" type song, then changing to a slightly modified "Keeooo kreeeoooo kreeeeoooo keeuh" type. Repeated again. From posture more or less comparable. This was intermingled with a few single "Kreee" notes when the bird began to preen.

Breast, belly & yellow rump feathers slightly fluffed

Flew off eventually without having got any response of any sort from anyone.

December 20, 1957
Barro Colorado

One bird appeared from time to time today, and gave bursts of the "Klee bree bree bree bree" "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 somewhat as:



This is obviously a sort of pre-preening posture. And the bird often pointed its head & bill downward during the last note of the song; in what was obviously a preening (the breast feathers or under the wing) wing.

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.

Coereba, I. December 26, 1957
Barro Colorado

Coeeba, Dec. 26, 1957, I

A bird singing at the same old stand this morning, the "Kreeooo kreeooo kreeooo" 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 was given 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. (Sometimes, for instance, the wings were kept crowed 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.

Coeeba, 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 "Kreeooo" type

Coeuba, Jan. 5, 1958, I

, sang 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".

Coeuba, I — February 3, 1958, Bano 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 "Kreeeooo" 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).

Coeuba, I — March 7, 1958, Bano 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 Bananaquit 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 pulled 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 movements. All types of begging were absolutely silent at all times!

By this afternoon, its behavior had changed considerably. Still absolutely 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 pulled it up rather roughly. Uttered nearly constant, single, "Peeps" when being handled. Again with bill quite closed. Still showed tendency to rest in head-down posture.

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

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 S, but it is still very slight and incomplete.

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 twice 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" — as below). This looked very much like a "silent 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 one to a single opening & closing of the bill. This did not seem to be produced by the mandibles hitting

one another. I think probably produced by something in the throat like the hyoid 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 breathing. 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 approximately as slow.

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

I think that SG must be a relatively low-intensity clutters pattern. C may be an even lower intensity clutters 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 stylized posture or movement. They were always uttered when the little thing was being mishandled, 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 eventually pure FB reaction.

It was difficult to judge the significance of these Peeps simply because A did not do any Begging today like it did Feb. 25. Never stretched its neck up or opened its bill widely and kept it open for several seconds. Possibly it is already frightened of its parent(s). But it did perform one reaction w

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 roughhandled, especially when its bill was being tapped, it would point the head & bill upward (almost vertically) without stretching the neck upward at all (or only bending the upper part of the neck upward a little bit), and then vibrate the whole head & 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 defense reaction. 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 any V, and also much slower than any V. The whole performance was quite reminiscent of some of the "snake" displays which are known to be performed by the young of some hole-nesting birds. I shall call it "SS".

Coereba 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 frantic 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 obturately 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 SG 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 no 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

Coeneba, I

March 2, 1960
Barro Colorado

Fed 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 circ

umstances, 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 lab to record, however, there seemed to be an appreciable difference between the FB "Peeps" and "pure duetters Peeps" in actual sound. It only FB'd into the microphone, once. This was accompanied by the loud and high "Peeping" I heard while it was in the nest (During the recording, we realized that the individual FB "Peeps" are almost beyllabic.)

During the recording session, A also uttered a lot of "Peeps" which seemed to be provoked by "pure duetters", 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 beyllabic). It is possible that the difference between FB and pure duetters "Peeps", in sound, at the present time, is still purely one of intensity.

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

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

It is interesting that the bill movements which are now combined

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

A may still be doing a little C cut it is now at least very faint and irregular. Difficult to distinguish from miscellaneous background 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. Sexed and recorded it. It is much better developed now. Eyes open. Yellow feathers out of sheaths 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 disturbed by handling. It also still utters a lot of "pure dutters" Peeping when handled. Some of the "pure dutters" 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 dutters" 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 dutters" 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 uttered

wrwg 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 eventually 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 cruffly 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 SG, 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

First 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. Most (probably) with bill closed. It was very noticeable today that the "pure distress" Peeping was very buzzy

almost raspy. Sounding quite a little bit 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 instructive 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. Were rounded 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 had a lot of SG 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

mably related to the ♀ of adults, but it is certainly much less extreme than the ♀ of any adults I have ever watched (or the ♀ 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 duets of this species is correlated with the stunted bill. (I might add that I have never noticed the slight 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 "Zeea zeea zeea zeea zeea ....." while perched in what looked like a completely unnatural 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 Conirostrum sitteoides.

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, finches, icterids, 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 common:

Very erect.
Legs stretched
Possibly CR?
Wings raised & S'd.
One rump probably raised more than the other

I shall call this posture "St." somewhat reminiscent of the St patterns of the Darwini. The two birds hopped around one another in St. for quite a long time. I think the S was more or less continuous throughout. The hopping in S 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 pulled up a long strand of m.m., and

immediately resumed hopping in ft & Qs as before. A second or so later, the second bird did the same thing. Then they both continued hopping in ft of Qs, with the d.m., 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 20, 1961
Zumla

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

"Ta a zeee tuh zah zh zhuh"

Repeated frequently. Delivered from an ordinary unritualized sitting posture.

This afternoon, ca 4:00 p.m., in the savannah country at the old American car barn, I saw one Bananaquit do very regular side-to-side Pivoting ("Pvt") in more or less ordinary sitting posture, head rather low (head, neck and body 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 "Tit" Notes (CN's ??? or aggressive ???). Notes well spaced, no tendency to de-

Coereba, July 26, 1961, II (RO)

clop 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 "Tit"s as it did so. I think that it flew away in pursuit of the other bird.

Two different Bananaquits 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
Trinidad

I have now heard quite a lot more songs by Bananaquits, 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 p.m. Came across a single Bananaquit. Uttering distinctive song phrases:

"Tuh-tuh tuh-tuh sreeeeeeeeeeee zeeee"
– – – – ~~~~~~~~~~ ——

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

Coereba, ?, 1962, II.

These phrases were somewhat reminiscent of some song phrases of Diglossa carbonaria 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 16, 1962, Mérida

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 commence as:

"freeeeeeeeeeeeuhzuh"

(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

Coeneba, Sept. 16, 1962, II.

Lastly the same thicket 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 chorros 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 Mérida itself.

The local birds resemble the BCI 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 ????

Conirostrum, I

May 25, 1960
Cerro Pichincha
Ca. de Iñaquito

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

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

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

This is certainly a thicket-loving species.

When apparently quite relaxed, the species looks like this:

Dark crown. Grayish back.
White superciliary & wing-patch

Caramel colored chin & breast

Quite reminiscent of the Bananaquit 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 transcribed by anything from "Tsit" to "Zee"

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.

Conirostrum, I

May 26, 1960
Cerro Ataraso

We watched more Cove-birds here, in the same area where I have watched many other species (much higher than Iñaquito, 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 Iñaquito and on Pichincha), but they were eventually found to be fraseri also (see notes of July 23, 1960).

These Ataraso birds uttered CN's in the same situations, with much the same frequencies, as the birds at Iñaquito & 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 "Dzlit."

We also heard a number of songs this morning.

One bird, feeding near its mate, uttered brief "Ja ta twee"s. There 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 Jaseeyoo" These phrases were uttered from apparently quite unrestricted 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 sang

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 "Da Da Daswceyoo" phrases. It is also possible, however, that it consisted of "Da Da Daswceyoo" phrases plus a few additional "Zee" or "Tree" notes.

The longer song phrases of this species, especially when repeated, give the effect of an "aimless twitter." Quite reminiscent of the songs of Digcona atrimina.

In general, these Ataeso Cowbirds seem to have much the same habits as the Tinguito & Pitiriciba 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 Ataeso, 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 zuh, za zwee-ee zuh' etc.

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

Courcelbum, I. May 27, 1960
Ca. de Zuaquito

Watched more Conebills, 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 atacasoo 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 Zuaquito Conebills were more like those of Diglossa lafresnayei, while the songs of the Atacaso Conebills were more like those of D. aterrima).

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-

cubed as "Duh duh duh duh duh dah 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

Conirostrum, 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.) Their songs sounded very much like the songs of Diglossa atterrima — but thinner, harder, and more metallic. I.E. like those of the Conebills on Atacazo described above on May 26.

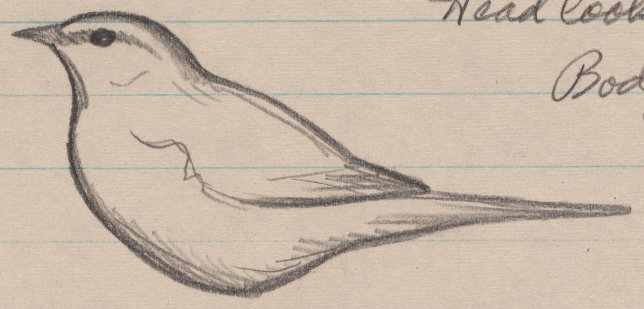
Conirostrum, I June 2, 1960
Cerro Pichincha

Working near Nono again today. I watched a pair of Conebills

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 Diglossopsis here, and it certainly looked as if these Conebills were feeding in exactly the same manner as Diglossa and Diglossopsis!!

I watched one bird singing a "Tit-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 "Zeee Zeee Zeee Zeee Zeee ...." notes during one chase. I think that one bird uttered "Zeeeeeeeee Zaza" during the other chase. Just like the R-Zaza of Diglossa aterrima.

Conirostrum, 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 duh dah ...." songs, must have been largely or completely hostile; while the less uniform

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

Conirostrum, I May 22, 1961
Ca. de Inaquito

This morning I worked in the field here, where I observed fraseri 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 Coereba & Diglossa.

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

The birds uttered "Jit" CA's almost constantly as long as they remained near me. Usually eventually single, although repeated very frequently. But definitely accelerating to form real CA-Fill'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 (as below). Tail always slightly fanned (these birds may keep the tail slightly fanned at all times). Wings sometimes, but not always, slightly droo-

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 commune ca 5:

Alert or Alarm Posture
(probably just pre-fledglet)

with CR and belly-fluffing

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

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 all out and when they were uttering CN's.

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

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 there was a vertical component, it was usually or always D-V. WF's much less extreme. Ordinary. Usually synchronized with TF's. (Once I saw a bird perched in

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

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 *fraseri* 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 hortatic. 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.

Courcouronnes, I — May 24, 1961
Cerro Atacazo

I saw several *fraseri* 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 others. A few seconds later, the bird which had flown away uttered a single song phrase. More or less "Tit tit ta-tit 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. Its song phrases were commença: "Tit tit ta-tit ta swee-wee-wee-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 Diglena atenuata. A couple of days ago, I saw a pair which seemed to be following a mixed flock of finches (including Catamenia analis and goldfinches) in the field near Yaguito.

Conurotrum, I

July 27, 1961
Simla

This afternoon we went to the Cerro's marsh, and I saw some cone-bills there. Gray Cone-bill's = bicolor =

Conwostrum, July 27, 1961, I.

These cone-bills were quite abundant along the edge of the mangrove forest, by a canal (possibly brackish). 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 poking 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 (as below).

This silence was a remarkable difference from the behavior of the Geospiza birds near Quito. Possibly correlated with the fact that this species is not nectarivorous ???

Several times, when I came close to the birds, they uttered single "Tseet" notes. With a faint but distinct rattling undertone. Uttered 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 "Tseet" notes.

for it seems likely that the "Tseet" notes are hostile

Conwostrum, I

May 19, 1962
Pichincha

Working near Nono today, both morning and afternoon. Twice saw little groups of at least four Geospiza, 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

group both times or not.

This afternoon I was close enough to the group to hear some of their notes. Uttering lots of cN's. Usually "Tit"s. Once a bird uttered a long "Seeeeet" as it flew in to join its companions.
PN?

Conirostrum, I May 20, 1962
Otavalo

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

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. atterimina.

Could I possibly be seeing 2 sibling species of conebills in various areas around Quito ???

Conirostrum, I May 22, 1962
Pichincha

Working slightly above Flon this morning.
Come across 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 "sreeeeeee" and several "zee-wee zee-wee..." doublets. More strongly hostile than usual?
nnnnn

Comirostrum, May 22, 1962, II.

These birds looked moderately bright underneath.
One of the birds frequently perched in bush near me. Obviously nervous. Silent. Lots of irregular bowing. Neck not stretched at all. No CR. Lots of TF's. All primarily lateral. Vertical component, when present, D-V. WF's rare or at least inconspicuous concealed with TF's.

Working near Nono this afternoon.
5:35 pm. See a single Coucbill feeding in a tree. The first time I have ever seen a single bird of this species. Quite silent except for 2 "Jit" CN's.

Comirostrum, I. May 23, 1962
Pichincha

Working near Nono this morning.
7:58 a.m. The same single Coucbill I watched yesterday afternoon has been around in same area all morning. Has sung from time to time, but not (9 times) very frequently. All the songs I have paid attention to have been very fast, twittering, and long. Might be transcribed by something like "Zewazewazewazewazewazewazewa."

Comirostrum, I. May 24, 1962

I have been thinking about the territorial behavior (or home range) of the local species. All or most of the pairs of the local species seem to have larger territories or home ranges than the Diglossa spp. There may be a resemblance to Diglossopis. The Coucbills, in particul

ar, may have to cover a large area simply because they can only secure the remnants of food left by the other, larger, species.

Interestingly enough, there do not seem to be any Conebills near the C Diglonopis. The hellmaie is almost continuous scrub at this point. Conebills seem to be birds of the margin of scrub. Seem to prefer areas where the scrub is low, new, & comparatively sparse (e.g. Niaguito) or relatively thin hedges with grass or crop land on either side (e.g. Atacazo and the A Diglonopis area near Nono).

Ca. de Niaguito

Working in usual field this afternoon

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

I don't know why but all the Conebills around here have been remarkably quiet since I arrived (4:45 p.m.). Almost as quiet as the Ateumas (see today's notes on Diglona)

Conirostrum, I May 25, 1962
Atacazo

Worked at usual rate this morning. All observations of Conebills in this area today incorporated in today's notes on Diglona.

Conirostrum, I

September 16, 1962
Mr. Chorro de Millas

5:15. A pair of cinereum ("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 Sui to birds, I think.

SEE MIXED DIGLOSSINI NOTES

brunneiventris – Lima

OVERLAPS

I brunneiventris – micrura Chachapoyas

✓ II brunneiventris – pectoralis Marañon

III brunneiventris – albilinea Machu Picchu

IV brunneiventris – gloriosissima Paraguillo
Colombia
Pacific Frontier

c/o de
Carl Lehmann — Cali –
Apartado Nal. 680 (1)
(D. cyanea)

William H. Phelps Jr.

1 W 67th Street

Apartado 2009 Caracas.

✓ V gloriosa – C. s. intermedium Cordillera de
Merida
Venezuela

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 Entomeces, Campylopterus, Empetornena, and Florisuga" Amer. Mus. Novit. 1450, 1950.

Conirostrum Synoptic - AMNH

I sitticolor

RUFOUS BELLY
NO MOUSTACHE

(1) sitticolor (Colombia, Ecuador & N.W. Peru.)
♂ & ♀ similar. Black head, breast, wings & tail, rufous belly, blue back & scapulars

RUFOUS BELLY
NO MOUSTACHE
EYE-STRIPE

(2) intermedium (W. Venezuela, Cordillera of Merida)
♂ & ♀ similar. Same as above, but with blue sides to head & post-ocular stripes.

RUFOUS BELLY
NO MOUSTACHE
EYE-STRIPE

(4). cyaneum (Peru & W. Bolivia)
♂ & ♀ similar. Same as above, but throat blends.

Diglossas Synoptic - AMNH

II lafresnayei

BLACK (1) lafresnayi (Temperate zone extreme western Venezuela, eastern and central Andes Colombia and Ecuador, extreme n.w. Peru.)
Both ♂ & ♀ black with pale blue humeral patches.

RUFOUS BELLY NO MOUSTACHE (2) gloriosissima (Western Andes Colombia, ex Paramillo)
Both ♂ & ♀ black above, chestnut belly & under, blue humeral patch

RUFOUS UTC MOUSTACHE (3) unicincta (Central cordillera northern Peru)
Both ♂ & ♀ black, with white malar stripes, chestnut pectoral band and under tail coverts

RUFOUS UTC MOUSTACHE (4) pectoralis (Central Peru)
Both ♂'s and ♀'s black, with white malar stripes, chestnut under tail coverts, chestnut and white pectoral bands

RUFOUS MOUSTACHE

(5) albilinea (S.E. Peru)

UTC

Both sexes black, white malar stripes, rufous under-tail coverts

RUFOUS MOUSTACHE

(6) myiotacalus (W. Bolivia)

UTC

Both sexes (presumably) black, with rufous malar stripes and under tail-coverts, blue humeral patches

Diglonas 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 ♂ & ♀ glossy black with light gray humeral patches

BLACK (3) aterrima (Central Andes Colombia, Andes Ecuador, northwestern Peru)
♂ glossy black. ♀ generally slaty gray

RUFOUS BELLY MOUSTACHE (4) brunneiventris (Temperate zone west of Peru, adjacent districts of n.w. Bolivia. Isolated 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 PECULIAR (5) carbonaria (Temperate zone Bolivia)
♂ & ♀ Black, gray belly & sides, & humer

al patch, rufous under tail coverts

RUFOUS (a) gloriosa (Temperate zone of western Venezuela
BELLY ♂ & ♀ black, with gray humeral
NO MOUSTACHE patch & supra-ciliary streak, chestnut
EYE-STRIPE breast & abdomen Gray rump

Dyloma — Synoptic - AMNH

ALL BLUE BIRDS — SOME BLACK ON FACE

III 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. tyrianthina (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 shuni 2 other ssp. from Peru: intermedia & mentalis. Also 1 other ssp. from Venezuela (Cumbre cerro Pejochaina, Perijá - 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 dorsum blue — as dark as glauca, lighter than coerulescens

(8) c. melanopis (Sub-tropical & temperate zones Peru and western Bolivia)
As above
Also another ssp. dispar (Peru)

COLOMBIA VSN

I. Brunneiventris Altitude (in ft):
Antioquia 8500
Hda Zulaiba

Sectes E	July 26, ✓	Antioquia	
	" " ✓	Hda Zulaiba	8500 ft
1950	July 21		
	July 26		
	Aug 21, 1951	Parama Frontino	
	Aug 23, 1951	" " "	
Immaturo	Aug. 23, 1951	Parama Frontino	11,850 ft
	" " "	" "	" "
	Aug. 29, 1951	" "	" "

M.A. Carriker Jr.

I alemania

TE	~~Aug. 20, 1949~~	~~Hacienda Las Vegas Santander 6000 ft.~~
	Mar. 17, 1946	Rio Quatapuri 8,000 – 9,500 ft
	July 29, 1947	Angostura, Santander 10,000 – 11,000 ft
	Feb. 7, 1952	Puracé, Cauca, 11,300 ft
	Feb. 11, 1952	" " 11,000 ft
	Feb. 2, 1952	" " 10,500 ft
Juv	July 29, 1947	Angostura, Santander 10,000 – 11,000 ft
O.E	Feb. 13, 1952	Puracé, Cauca, 12,000

Areas to Check

I. Manchuque. Possibly gloriosissima and ateronna come in contact here

II Northern part of the Central Andes, Colombia. Possibly brunneiventris and lapesmayei (s.s.) come in contact here.

July 13, 1974
Gloucha

Working near this little village (west of road from Huánuco to La Unión, between Huallaga and Marañón drainages). Arrive 6:10 a.m. Cloudy. Very cold.
Looking at small patch. Poly tepis. For Oreomanes
Hear Andean Sparrows. Appear briefly WIDOWS
Catamenias and goldfinches around
Songs stop almost immediately. (Note: this is middle of dry season, at least around Huánuco.)
6:40. See what may be single cyanocephala! Flies away immediately. Alone
Hear single big Sooty Thrush. Alone
Hear what sounds like Diglossine Twitter in distance. Brief "greeting"?
7:20. See Thraupis (again). Definitely bonariensis. Quiet and alone
Ca 7:35. Area young Polylepis. Quite a lot of small birds low in scrub. Diffuse flock? Including Phrygilus and unicolor ??? Very difficult to see. Disappear
More bonariensis alone.
7:55. Somewhat further on. Another patch of wood. Find definite mixed flock. Birds flitting about edge wood & pasture. 4-10 ft up in rather old trees. Group definitely includes at least one cinereum, one Oreomanes (definite), one pale gray Agriornis type another birds (mostly small dull flycatchers and finches. Difficult

All very active, flitting about. The cinereum definitely probing in bark of Polylepis. Group quite highly integrated. Moves off after a few minutes. Can't see who is in lead.

COMMENT: I should imagine that there is only one flock in this whole area (2 patches of woods — see below).

See Sooty Shrike alone

8:28. See cinereum approximately where flock seen earlier. This individual is either alone or perhaps on outskirts flock. Quiet. Gleaning leaves as well as feeding on bark.

Almost all the birds here are very shy.

CC (S) here largely gray below apart from rufous UTC.

Flush more bonariensis, difficult alone.

Stop observations here ca. 9:00 a.m.

NOTE: The patches of Polylepis here are small, roughly rectangular, perhaps 300 ft long, 50 ft wide, very close to houses. In this particular area there are 3 patches quite close together. Looking at the distant landscape, it would seem that patches are usually more scattered.

The altitude here should be 3900 - 4000 m. according to the forestry department in Huancayo. According to the altimeter of Craig Morris, we are at 12,700 ft. In any case we are way up into the puna. Polylepis occurs much higher than any other native tree of the Andes.

July 14, 1974
Codyish

Going along new (lower) highway
Double entrance tunnel ca 8800 ft 6:07 a.m. Cloudy
Rather warm.
Whitestart(s) ? singing NODWAH
6:45. Large mixed flock present in mixed scrub. Usual type. Including whitestart(s), Blue & Orange tanagers, PL's, Basi leuterus migrocristatus etc etc. Noisy and cohesive. I do not bother to count or follow;

July 16, 1974
Quisha

Same place as day before yesterday. Polylepis. Orconames
Fog just lifting 7:55 a.m.
Andean sparrows, thrush, flycatchers where flock used to be. But flock apparently not here now.
CORRECTION: Some or all of the birds that I called bonariensis in the day before yesterday are really the common highland gray and yellow finches (gayi ???) 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 cc's. Apparently essentially alone, although there certainly are a variety of finches and perhaps flycatcher not far away in some hedge.
Down = Ayapita
cc flies away. Apparently by itself.
Then back. Gleaning leaves as well as probing bark.
Hear what sounds like Greeting Sparrow. Are there 2 cc's here??
Then cc(s) disappear(s) again.
Back to Quisha 11:00 a.m.
Stop 11:20 a.m.
NOTE: Altimeter reads 13,730 along road back to town

August 21, 1974
Padcaya-Tambo

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 Brun feeding in Eucalypt. Visiting (white) flowers. 20 ft up. Silent. Alone. Flies away over area where cc's were earlier. Brun backs 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 Brun seem to ignore one another.

7:55. Suddenly there is a fight between the Brun and the ♀ hummingbird. Both fly off in opposite directions

NOTE: There is cactus and maguey here. Area cannot be extremely humid.

8:05. Still watching same tree. Same presumed ♀ hummingbird feeding Eucalypt flowers. Brun flies in from far away to attack hummingbird directly. Definitely very aggressive. Hummingbird flies away. Brun stays behind. Preens.

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. Grove of Eucalypts. Some in

flower. Lots of hummingbirds around. I am sure that some are Colibri. (My guess would be thalassinus. I can't see purple on belly. This may not mean very much, as the light is bad. But I have also heard brief snatches of what sounds like 2-note song in distance. NODWAH.)

8:35. Back to first tree. Now hear what sounds like 3 can song! Brief NODWAH.

Stopping observations here 8:40 a.m.

August 28, 1974
Above San Juan
Atacama

Arrive 4:02 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 LaS repeatedly attacked by a single hummingbird XXIII The LaS is feeding busily and moving around 2-5 ft up in AS. Attacks take form of "passes" (apparently not pressed home to actual contact). LaS just ignores the whole thing. (The hummingbird is somewhat smaller than the honeycreeper.)

September 4, 1974
Puracé

Working in usual (Guit) areas below páramo early this morning. Clear, cold, and very windy. Lots of songs by Tafs. NODWAH. Nothing else of interest.

Go down to "Canaan" ca 8:30. Still lots of Kniphophora in garden. Also lots of Ciims. Plus two or three (possibly more) Ateris. Lots of "pases" at Ateris by Ciims. Seldom or never pressed home. These pases do not usually bother the Ateris in any visible way. (I am sure that many pases must induce an Ateri 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 Ateris upon Ciims. These appear to be very determined. Mostly silent. At least one with R. Ateris appear to be more stolid than Ciims, less easily irritated, but more impressive or "imponente" when aroused. They are both larger and heavier.

Two of the Ateris (both apparently adult) were associating closely. Perhaps paired. But apparently no mutual display.

September 5, 1974
Puracé

Working at "Canaan" this morning. Doing some recording — without very conspicuous success. I did, how-

ever, note the following points:

(1) The pair of Aters was still very much in evidence. Two mds. going about together, usually very close together. Lots of "Greeting" R-Zazas (and perhaps a few accelerated Twitters) 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 Anna's. At least one ♂ and one ♀ VB. And several mds. of several other species. But no Colibri.

(4) The Aters and the Annas fed frequently and extensively on Kniphophera. But none of the other Nectarivores would touch this plant. All the birds, however, including Annas and Aters fed on some other (native?) kinds of flowers. Including a yellow (pseudo) composite-like type (actually a relative of Poinsettia?) and small cream colored trumpet-shaped blossoms.

(5) The Aters fed almost constantly. 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
Guadelupe
(Bogotá).

Did some recording here early in morning.
Large mixed flock in flowering eucalypt. Lots of Hummers, probably several Cys, many hummingbirds (Eriocnemis, probably Leshia, certainly a few Scans). Quite a lot of Songs and other vocalizations. Scans, at least, certainly breeding

Photographic Schedule Central Peru

First series Polylepis Quisha.

Second series Carpish. 3x Roll 1

① VSTF nr tunnel. 1, 2, 3
② VSTF - AS to pass area itself 4
③ VSTF nr tunnel 5
④ VSTF - 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
Machu Picchu

Photographic Schedule

Pan Chrome
A Ruin side
① Halfway to fort and pans 8, 9, 10, 11

Pan Chrome
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. Verichrome. 3 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 Band where I have done a lot of work Second growth
12.

③ Monstera Ilford. 1.

④ Passiflora flowers 2, 3

⑤ Shots along irrigation ditch.