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Diglossa (Flower piercers) (2 of 4)

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"Quinual"

"QUEÑUA"

Queñua

Polylepis

4,300 m. CHECAYANI in AZANGARO (PUNO)
QUEÑUANI

Volcán CHACHANI - (Arequipa.) ✓ YURA

Valle de CHIQUIÁN - (Ancash) RAURA (Pacllón)
5,100 m.
XLLANGANUCO - por Yungay
Huaraz

PHOTOGRAPHY SCHEDULE — ANDES

I Puracé' — March 29, 1972

A. Twist ravine above town of Puracé'. (As I remember, the site of Ater-Sean interactions but very little else.) 7 shots, end of Roll A. Black and white & also some color

B. General area where Twist worked intensively. AS bordering on pasture. Roll B, Black and White; 4 shots telescopic. Roll C, Black and White; wide angle, 3 shots All AS so far. Roll C, B+W, miscellaneous, tree with epiphytes, second growth and ferns. Roll B telescopic, B+W, 2 shots tree, epiphytes, and Bromeliads. Roll C, wide angle, B+W (shots), 1 shot. 1 shot Blue + Red jar.

CORRECTION: A little ahead of myself. Real area is 1/4 m. further on (KM 160). Looks much the same Roll B, B+W, telescopic, 7-10 AS - Scrub. Also 11 & 12 telescopic

C. A little further on. Patch alpine forest and bamboo thicket. Roll B, telescopic, B&W; 13-15 Roll C, wide angle, B+W; 7-10.

D. Considerably further on. Interdigitation low-dense forest and paramo. Roll C, wide angle, B+W, 11-13 Roll B, telescopic, B&W, 16

E. General area "Weltmore's Lanager". Roll C, life size, B+W., thicket, 14-16. 17-Aglaeactis. Roll B, telescopic B&W, Aglaeactis, 17. Roll C, life size, B&W, thicket, 18+19. Roll D, life size, B+W, thicket detail, 1-2.

F. Muscopan-mixed flock area. Roll D, life size, B&W, alpine forest. 3+4. Also some shots birds mixed flock (Hemispingus, Whitestart) (Probably Roll B-telescopic). Then Roll D, telescopic. Inside scrub+bamboo 6+7+8

II. Puracé — March 31, 1972

A. Upper alpine scrub, just before Paraaco. Shots of birds. Red Woodpecker Roll D, telescopic. 11, 12. Selti. Dark red malartone. Aglaeactis. Kumer. Urothraupis

B. Lower down, general area just worked intensively Montane Passeriformes

Munchique Mr. Popayan / 6 hrs

Mares 2000 m.

Farallones Station = 1700 m
3500 m. end of forest

Mr. Nicolás (Nick) Ponomareff
Hacienda Barbascal
San Martín (Meta)
Colombia

Lagothrix (Chuyo)
Cebus (Micos maicero)
Callicebus (Zocay)
Aotus (Tutamono - douroucoli)
Ateles (Marimba)
Saimiri (Titi) (Canisucio)

ALTITUDES — SIERRA DE MÉRIDA

Hotel 5350 (Unconnected)
Road nr. Chonos de Mulla 5610
Joint stop – Teleferico Station itself 7750
(slightly above station 7850

Second stop – Teleferico
(well below station 10,500

Mucuruba 7500 – 7550

Rivers near Caunte 6550

Páramo La Negra 8475 – 9400 (edge of páramo)

Road to La Azulita 7600 – 7500

COLOMBIA

Boquerón (Nr. Medellín) 7500 - 7800 ft.

Laj area above Guasca 7700 - 9800 ft

Mixed flock area above Guasca 9500 ft

Humer area below Guasca 8600 ft.

Tuts above Bogotá 8900 - 9100 ft.

Hotel Bogotá 8150 ft.

I. Inaquito 9050 ✓ 9100

II Colocallao 8450 ✓ 8475

III S. Antonio 7550 (and below) ✓ 7525

IV Dos pallas above Inca 9450 ✓ 9525

V Inca (carpark) 8950 ✓ 9000

VI Atacazo 10850 ✓ 10750 ✓ 11,000

VII Lloa (town) 9500 ✓ 9575
Lloa (pallas above town) 9955 10,055

1000	− 100
2	− 100
3	− 100
4	− 100
5	− 100
6	− 100
7	− 50
8	0
9	+50
10000	+100
11	+200
12	+250
13	+350
14	+350
15	+450

F. C. LEHMANN V.
Apartado Nal. No. 680
Cali - Colombia - S. Am.
Cables: CARLEHMANN

Cali. Dec. 7th. 1962

Dr. Martin H. Moynihan
Resident Naturalist
Smithsonian Institution
Drawer C
Balboa, Canal Zone

Dear Dr. Moynihan:

Excuse me for not answering your two interesting letters earlier, but I have been away in Bogotá for sometime attending National Congress on Agriculture, and talking to the President and other government officials, and lecturing at Universidad Tadeo Lozano, and to some private groups. Now I am back in Cali.

Your description of the Chlorospingus seen at Mares last day coincides with that of C. ophthalmicus, the race nigriceps has been collected on e E. slope of the W. Andes at their northern end, but also in the Central Andes on both slopes as far south as La Candela. Another Chlorospingus that is similarly colored and is found in that area is C. canigularis conspicillatus, this one has throat and middle of belly pure grayish-white; under wing-coverts white. If it would be C. o. nigriceps, it would be a quite interesting extension of its range to the south, in the W. Andes.

The other bird seems to be Chlorophanes spiza subtropicalis from your description. This one has the lower mandible yellow, the black cap and other detail as you describe it.*

I hope this may be of help to you. If there is some else in which you think I may be of help to you, you are welcome to call on me.

The interesting papers which you sent arrived safely yesterday. Please accept my most sincere thanks for them, these will be very helpful for my own work. Wish I had more time now to devote to bird ecology, behavior and biology.

I wish also to thank you very much for the information given, and hope you have had not much trouble in getting it for me. Dr. Kokernot brought a viewer-editor from the Sates for me, so I don't need to troble you with that now. May be I will be able to order the titler from the States later on. Thank you for sending the Screen, which I hope will arrive someday here. Did you sent it via air mail or regular mail ? . To this moment I have had no news from the air mail on this matter.

Hope you can make your next trip to Cali as planned, please keep me informed. I am sending under separate cover and in your care, a letter for Mr. E. Eisenmann, who is now in Panamá -his home-town, but as I don't have his address, I hope you can help in getting that letter to him. Excuse me for bothering you so much.

With kindest personal regards and Greetings for Chrismas and the New Year, Your friend, Carlos.

F. C. Lehmann V.

* Another bird found in that area but with a Chlorophonia mitchelli.

Western Cordillera Colombia

Mixed Regiment. October 29, 1962
Nr Antioquia Boqueron de Tollo
Western Andes

4:30 p.m. 6700 ft. Region of thick, low, dry-looking scrub. Hear many Albi songs. Long. No special terminal or preliminary notes. Also catch one brief glimpse of bird flitting from bushes. Bird usually keeps well hidden while singing.

Albi

Hear another Albi 7300 ft.

October 30, 1962

Arrive same place as yesterday afternoon (6700 ft.) 5:20 a.m. Still fairly dark.

Hear songs that may be by carbonaria 5:30 a.m. Might be transcribed as "Duh duh duh zeeeee yoo". Also an occasional Albi song. Inserted in pause of "carbonaria" songs.

Albi?

If these are really carbonaria, the birds are surprisingly common here.

Also hear several more Albis singing occasionally. Alternate quite well with "carbonarias". Only occasional very slight overlaps.

Some "carbonaria" songs might be transcribed as

Barn

"Zee zee zee zeeeeeeee za-ya"

"carbonarias" about given up 5:45 Just as it is starting to get light!! Albis continuing.

6:00 a.m. I have a nasty feeling that the "carbonaria" songs heard this morning were uttered by an Attapetes. At least, I can hear

lots of typical Attapetes. "Zeeeeee zeeeeee ....." Notes in the same area now. And the "carbonaria" songs have quite stopped.

Yes! I finally see a bird uttering "carbonaria" songs. It is a Barn. Sitting moderately exposed. About 5 ft. above ground. With plumage very fluffed, especially underparts; preening madly between song phrases.

6:15 a.m. I now see that one of the birds uttering Albi-type songs is a Yellow-faced Grosquit!! So I cannot rely on my words of "Albi"'s here which were heard and not seen.

The Barns here are in low, thick, moderately dry looking scrub. Quite like the scrub in which the Albi was seen yesterday, but not exactly in same place. Not covered by trees.

The fact that all the Barn songs here have prominent R components may be correlated with the fact that there are so many other "R-singing" birds in the same environment.

There are certainly 2 types of R's being uttered here. One higher pitched than the other. The former may be by real Albis.

Barns have shut up again 6:25 a.m.

(In connection with "R-singing" birds, I might add that there are also Andean Sparrows here.)

6:30 a.m. See what is almost certainly a ♀ or juv. Albi fly out of a bush in which a Grosquit sang a few minutes earlier.

There are certainly no red or pink tubular flowers around here for the local diglossines to feed on.

(I might also add that yesterday afternoon, ca. 2:30 p.m., I caught a brief glimpse of what was almost certainly a ♂ in the same area where I saw, or thought I saw, a ♂ Albi.)

Going up hill 7:05 a.m.

Albi — Just as I start, finally see a Albi singing. Perched in bush, on exposed branch, about 3 ft. above ground. In unmistakeable more or less diagonal posture. Tail does not rise during songs. Songs perfectly good R's. No special preliminary or terminal notes

Albi — I think I may be sorting out R's now. Gamquits utter both low-pitched and high-pitched R's (or Hl's). High pitched are sometimes (not always) slower than low-pitched. R's of Albis are most like low-pitched Gamquit R's; but probably not so "hard", possibly even softer, and perhaps a little softer. But I still wouldn't care to identify them by sound alone.

Barri Albi — There were several particularly interesting aspects of this morning's Albi-Barri-Gamquit performance. The fact that there were no overlaps between Barri songs and R's of other species means that the Gamquits were also refraining from singing while the Barris sang. There were also few or no overlaps between R's. I don't think Albi R's overlap very frequently. But the Gamquits must also have been refraining from singing while the Albis sang! And of course both Barris and Albis refrained from singing while the Gamquits sang. All in all, the Gamquits here would appear to be integral members of the "digl ossic singing society"!!!

Albi — The Albi seen singing today was in almost exactly the same spot as the Albi glimpsed yesterday.

Fog coming in 7:25 a.m.

Albi — 8:20. See smgle ♀ or juv Albi (definitely identified) fly out of scrub into low wet forest 7175 ft

9:30 a.m. Hear what sounds like Albi in uncovered thicke

to ca 7600 ft.

Arrive same place (road, ca 7700 ft) 3:45 p.m.

Bari — Hear and see 1 Bari singing. Much as this morning, except that R component sometimes less conspicuous (a pure "freeeeee" or a "freeeeeee" with very slight rattle undertone being substituted for the more extreme R). This bird also does a lot of preening between song phrases; over shoulder, to back & rump, also forward to breast & belly. Both back and underparts very fluffed, wings slightly drooped. Bird remains in this position or portion during as well as between song phrases. This is almost certainly not the same bird I observed singing and preening this morning. Bird perched about 2 ft off ground in low, thick, uncovered vegetation.

Carbonaria Bari — The songs of this form are really quite incredibly reminiscent of carbonaria!

Bari — Some of the song phrases of this bird appeared to include more notes than the songs transcribed this morning. Increasing the resemblance to carbonaria.

Hen birds, incidentally, have the throat & chin buffy, as well as the breast & belly.

Pondering over this morning's observations, I should mention that this is by far the most extreme concentration of Baris I have ever seen. But the population seems to be far less crowded than carbonaria and Laf populations at their peaks.

Gen Bari — I have yet to see a ♀ Bari here. Incubating?

Albi — 4:40 p.m. A male ♂ Albi hops thru bushes near me, and then flies across road. White side feathers apparently stretching out horizontally. Display? (I might add that the white side feathers of the bird,

seen singing this morning were conspicuously visible, but not spread.)

Albi — The Albis here seem to be completely non-gregarious, like the birds near Bogotá.

October 31, 1962
Boqueron de Tollo

Arrive usual place 5:30 a.m.

Bari — Baris beginning to sing.

One bird singing "zee zee zee zee zeee wa".

No Albi or Grassquit song yet. Baris usually alternating pretty well. Only occasional overlaps

Bari Albi? — First Albi or Grassquit song heard 5:33. Overlaps with Bari. Then some Bari songs overlapping one another. Then more Grassquit or Albi songs. Overlapping quite frequently at first. Then tending to alternate with Bari songs. Then overlapping Bari songs again. Then alternating again. (I think all the R's being uttered now are by a single Grassquit. Certainly in an area which was Grassquit territory yesterday.) No overlap R's different birds (if more than one bird is uttering R's now).

Bari — Bari songs already decreasing in frequency 5:38.

Now there are certainly several birds uttering R's. Occasional overlaps (but not too frequently). Baris quite stopped.

Bari — Original overlaps Bari songs & R's usually occurred when bird uttered R after Baris had begun to sing. So perhaps Grassquits don't react to Bari songs very strongly after all.

Bari — 5:40. Now only occasional Bari songs and R's. Not overla

9pm.

All songs except those of single Grasquit over by 5:48.

Andean Sparrows here are not singing now (although I have heard their songs lower down). So I can't tell how their songs fit into the Grasquit - Albi - Bari complex.

Albi ?

One Albi singing steadily again 6:00 a.m.

6:05. Now I do hear some Andean songs. 6:05 Alternating nicely with Grasquit songs!

Albi Bari

As far as I can tell, territories (or home ranges) of Grasquits, Albis, and Baris here overlap relatively little. Baris extend down hill from road and 20-40 ft above road. Albis extend above road. Grasquits seem to be concentrated around road.

I have yet to see any boundary disputes within or between species.

Going uphill 6:20 a.m.

Albi

Rather surprisingly, there do not seem to be any Albis in the patch of wet forest, just above the road, through which I have passed every day here. But there are quite a number in the edges.

Albi

6:40. See a ♂ Albi flying from tree to tree along edge. Usually 10 to 20 ft above ground. Singing in each tree. Picking insects off leaves between songs. Apparently ignores hummingbirds in same trees. 6800 ft

7:20. Same bird, same place. Rather silent. Only very occasional song. When a migrant N. American warbler flies into same tree. (This bird almost certainly a Bay-breast in Eclipse plumage.) Hops all through tree, apparently looking for insects. Albi does not approach it. (Albi is hidden in fact); but does utter about 10 songs, more or less one right after the other, with some irregular pauses, until warbler leaves. (Warbler seem

Albi ed to ignore Albi throughout — left of its own accord.) Then Albi became quiet again. Also started to move around and feed. Taking nectar from clusters of tiny green flowers.

Barn I wonder if it is characteristic of Barns (everywhere) that their territories do not overlap those of other diglossines (vide Venezuela?)?

November 3, 1962
Munchique
Western Andes

SEE TODAY'S NOTES ON MIXED FLOCKS.

Cy Albi Aside from a few Aps seen around 8000 ft., I saw and heard nothing of any diglossines today, with the possible exception of a very few R's which may have been Albi songs ca 8400 ft and slightly above.

November 4, 1962
Munchique

SEE TODAY'S NOTES ON MIXED FLOCKS
(WCC's and Tittis.)

July 22-25, 1965

Western Cordillera Colombia

Mixed Diglossini, I
In Cali

March 2, 1965
Farallones
W. Andes

11:35 a.m. Ca. 6200 ft. Region scattered but not too young second growth. Hear what may be Cy singing. Long phrases rather peculiar. Some "Seeee ta-seeee ta-seeee" Most with some Twitter near middle or before end. Eg. "Seeee ta seeeee wzzzr seee" Can't see bird. Everything else around is silent.

11:50 a.m. Definite mixed flock passes near area where presumed Cy heard earlier. Includes 1 ad ♂ Blackburnian W., 1 juv. or adult ♀ Blackburnian, 1 Black and White W., 2 Vireos, and at least one other unidentified warbler. Quiet. Only occasional CN's. Cy does not appear or sing while flock is around.

Merced Diglossini — April 29, 1965
Munchique

Arrive at the Lehmann's finca ca 4:30 p.m. Just as the rain starts to come down. There is a nice small garden behind the house full of fuchsias, roses, etc., with some Abus and Chorr illos. 7800 ft according to my altimeter (which does seem to be working). Just under 2400 m. according to Vern Lee's Altimeter.

There are quite a number of hummingbirds feeding in the garden. Including at least two or three Scans. Fighting among themselves. Feeding on fuchsias and Abus

It is rather surprising, therefore, that I have not yet (5:55 p.m.) seen any Diglossini in the garden. I am sure that there must be some around. But presumably they are discouraged by the rain, and are remaining under cover.

This would suggest that hummingbirds have at least one great advantage over Diglossas. I.E. they can feed (at least on nectar) in weather which inhibits Diglossas

Scan

Dgn

April 30, 1965
Munchique

Starting to get light 5:30 a.m. It rained like hell last night and there is still some drizzle. Working in garden by house.

Dawn songs ca. 5:35. Many Andean Sparrows

Sounds first Scan disputes 5:45 a.m. Still a little too dark to see well.

Scan

Scam

Premixed Scans in Abu 5:47 a.m.

Andean Spinoues and House Wrens singing quite strongly and steadily. They, at least, are presumably in breeding condition.

Everything very dull 6:00 a.m.

The Abu flowers don't seem to have Diglossa holes in them!

I am beginning to think that very humid environments around the 7000-8000 ft level are unsuitable for Diglossas!

6:12 a.m. The Scans are not visiting the Abu here (which is red) nearly as frequently as they did some of the Abus on the University grounds in Bogotá. Is this because the Abu here is not at the right stage??? It certainly has plenty of flowers on it! Or is it because the flowers do not have Diglossa holes in them???

Scam

6:21. See a green hummingbird, which may be a juvenile Scam, feeding on Chorrillos. Visiting bell up tubes. I don't think I ever saw a Scam feeding on Chorrillos in Bogotá.

Scam Gem

This may be one of the very few places where Scams occur without Diglossas (especially carbonaria s.l.)

6:31. See single Sooty Thrush alone in patch of wood along stream adjacent to garden.

Leaving this garden 6:41 a.m.

Then go on up hill.

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS.

Blue

(As the notes on mixed flocks indicate, there is at least 1 Blue Diglossa not far from the Finca. Interesting that it apparently does not come into the garden.)

Scam

On my way up hill, I didn't see any more Scams. This species does seem to be primarily an inhabitant of gardens and a com

mensal of man. Or, at the very least, it needs a lot of open space. Just like carbonaria s.l. and the South American forms of baritula s.l. In any case, it is not surprising, since Scans were absent, that I did not find any Aters up hill.

2:10 p.m. At the Finca. All during the middle of the day, I have been watching the Scans in the garden. It has been raining almost steadily. Moderately hard. But the Scans have been active all most thoroughout. Feeding. Fighting. Even "singing". (Marsh notes or bursts of notes. The "songs" of this species are nothing like real Diglossini songs.)

Scan

According to the caretaker here, in the afternoons, when there are brief sunny periods (even during the rainy season), small bright blue birds come into the garden to feed on Fuchsia flowers, and get engaged in disputes with Scans. There can hardly be anything else except diglossines of some sort.

FURTHER NOTES, 6:00 P.M.

I. It is conceivable that the bright blue birds which the caretaker has seen fighting with Scans are really Tangara vassorii. At least, he called them "Azulitos" and his son called a vassorii by the same name.

II. See this afternoon's notes on mixed flocks. It is quite possible that the "glaux" I saw this morning was really a ♂ WCC.

III. After looking at several patches of forest today, I am still impressed by the general rarity of Diglossini in this region.

Ater

Mixed Diglossini — May 1, 1965
Mundurique

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS.

Albi

(Single Albi. General rarity of Diglossini high up.)

On the way up the hill this morning, I heard a few plerances which were almost certainly Cy songs. Ca. 8000 - 8500 ft. But I didn't have time to stop to look for the birds.

Cy?

Albis may "take the place" of carbonaria s.l. and lafresnayei here, insofar as they may be the characteristic species at the highest elevations (highest elevations available). Possibly Albis are kept out of the highest elevations in some parts of the Andes (or, at least, are kept out most of the time) simply because they cannot compete, socially, with other species ???

Albis gen

This afternoon, ca. 5:20 - 6:00 p.m., I watched the garden of the Finca, in a rather casual manner. It was my impression that Scans visited the garden less frequently today, when the weather was good, than either yesterday or the day before yesterday, when the weather was lousy.

Scan

May 2, 1965
Mundurique

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

Sittis WCC Cy

(Sittis, WCC, and Cy in mixed flocks).

As far as my observations here go, Cys are just as much "obligate" members of mixed flocks as are Sittis or WCC's. This rea

Cy

lly is quite remarkable! I must see if they are equally gregarious in the other parts of the Western Cordillera (and in the Central Cordill era). Does the gregariousness of the Cyp here suggest that they are alm ost exclusively insectivorous (like fitis)? Probably not. The GT's which occur in mixed flocks here usually seem to be eating fruit. So do other tanagers. In any case, it is obvious that whatever the advan tages of joining mixed flocks may be, the advantages of joining a lar ge flock presumably are larger than those of joining a small flock.

What the gregariousness of the local Cyp does suggest is that they are not nectarivorous!

If the Cyp here are obligate commensals, this might explain why the individual seen this morning sang so frequently while with the mixed flock. Having no "territory of its own," it may have to sing while with mixed flocks in order to "warn off" other individuals of the same species who might not be aware that it was in the area.

Some aspects of the territorial arrangements of the local Diglossi nes are becoming clear. The commensal fitis, WCC's, and Cyp probably range over the territories of the local resident, territorial, albos with out coming into significant social contact with them. (This seems to be characteristic of the relations between commensals and territorial res idents everywhere.) "Glauc"s (if they are a distinct species) may be as resident, local, and territorial as albis. And certainly the ranges of the two "species" overlap at lower altitudes here. There is no evid ence, however, that the territories of individuals of the two species overlap. But both species are so rare (apparently) that it would be rash to assume that the territorial separation is due to special beh avior mechanisms (rather than "chance" alone).

Mixed Diglossini

May 3, 1965
Manchique

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS.

The Black Diglossa with humeral patches seen today must have been Brun, Laf, or lafresnayei gloriosissima ("gloriss"). Perhaps most probably the latter (according to the published records).

In any case, it is obvious that the lafresnayei - carbonaria s. l. group of Diglossas does not occupy the highest elevations here. Probably because the highest elevations are too humid, and the vegetation too dense. Carbonaria s. l., and even lafresnayei s. l., to a lesser extent, seem to prefer vegetation from which they can emerge (for whatever reason) rapidly. Either very dense vegetation if it is low (as in the scrub just below paramó in many areas) or relatively open vegetation if it is high. The area where the Black Diglossa was seen today was covered with vegetation which was neither high (with little or nothing above 10 ft) nor very dense (in some places bushes were close together, but their bushes had relatively thin branches and relatively few leaves). Rather remarkable if the Black Diglossa was either Laf or Gloriss. This is about as open vegetation as any I have seen inhabited by lafresnayei s. l.

If the bird seen today was a Gloriss, and if this area was typical of its habitat, I can understand why this form is chestnut underparts. Like the chestnut-bellied forms of carbonaria s. l. and baritula s. l., it must live in much more open areas than the dark bellied forms of the same species or species group.

Probably, I confused "open" with "dry" in many of my earl

y discussions of the evolution of the Deglomini. The species which I thought preferred relatively dry environments probably really prefer relatively open environments, wet or dry.

Jem

Leaving aside Cy, perhaps the habitat preferences of the 3 other presumed Deglomas here can be summarized as follows. Albis ranges from moderate to high elevations. Usually in low second growth scrub or "alpine" scrub; but they don't mind if the scrub is very humid, and they don't mind if there are large "upper sub-tropical forest" type trees close by. (I have no evidence, however, that they occur inside upper sub-tropical forest, away from edges.) "Glaucs" seem to occur in much the same type of habitat as Albis, in the lower part of the Albi range. Glonis's (or whatever they are) occur in more open scrub than Albis, in the medium part of the Albi altitudinal range.

Albi

Glonis?

As far as my observations go, Cys are completely arboreal here.

Cy

Incidentally, the northern end of the Western Cordillera, at least on the eastern slopes, must be drier, on the average, than the southern end. Vide the presence of Bonis near Antioquia. This would explain why Bonis occur in the northern end, and why Glonis's are more common (presumably) there than elsewhere.

Jem Bonis Glonis

1:35 p.m. See a Scam attack and chase a House Wren in a fuchsia bush in the garden. So the Scams here show inter-specific aggression too. Perhaps the presence of the Scams here is what is keeping other hummingbirds out of the garden most of the time? I wonder why I haven't seen Scams fighting with Deglommies outside of Colombia? I would've couldn't have overlooked it if it was at all common.

Scam

Mixed Diglossini

May 4, 1965
Munchique

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

Cg

Cgs certainly are not obligate commensals. But today's observations would confirm the hypothesis that they are purely arboreal here. Also that they are not nectarivorous here.

Albi
Cg

The ecological separation between Albi and Cg here seems to be very wide. Possibly the ♂ Albi seen this morning feed as high in scrub as the lowest scrub visited by Cgs. But usually the two species are in quite different strata of vegetation. This apparent stratification is perhaps remarkable in view of the fact that the altitudinal ranges of the two species overlap broadly here. (I have never seen a Cg at quite such low elevations as Albis; but the Cgs certainly come down to within a couple of hundred feet of the Zwica area — see yesterday's notes. And both certainly range up to the top of the mountain.)

Gen

The separation between Diglossas here, on the whole, may be as great as that between species in Bolivia. Does this affect my general hypothesis (es) in any way? I think it must. But how???

Gen

Is it merely that contacts between species are least frequent where environmental conditions are least favorable? But Bolivia did not seem to be unfavorable. (The populations there were large, as I remember.)

Albi
Cg

(As I remember, I saw a number of contacts between Albis and Cgs in the Sierra de Mérida in 1962. And certainly the Cgs in the Eastern Cordillera come down into low scrub visited by Albis, at least occasionally. So the separation between Albis and Cgs here must

be due to intrinsic behavioral factors — not just the absence of immediate "competing" forms, i.e. carbonaria s.l.)

albi cy

Perhaps the explanation of the peculiar situation here is simply that there is "room" for only one typical, common, Diglossa here. Thus "room" or niche is filled by albi. Cys may survive here because they do not occupy the usual Diglossa niche. Ecologically, they are partly small tanagers and partly "Conirostra".

Incidentally, it has just occurred to me that I have never seen Sittis here without WCC's also being present in the same flocks. Is the Sitta (including Inter) always the rarest and least widely distributed species of the genus in any given area? (The relations between Sittis and WCC's here may be much the same as those between Sittas and Rufs in the Eastern Cordillera, and between Sittas and Blue-and-Chestnut Conebills in Bolivia.)

Sitta WCC Gem

May 5, 1965
Munecique

Arrive area where Black Diglossa with humeral patches seen day before yesterday 5:38 a.m. Still too dark to see well. Half clear, half cloudy. Fairly warm. Some wind. Everything quiet.

Hear faint Laf-like song, in distance, 5:41. Short phrases as before. Faint Atlapetes Whistle song 5:43. Only one. No overlap with Laf-like. Laf-like continues.

Some Laf-like songs are longer than others. Perhaps "double", 2 phrases strung together ?!?

Laf-like songs stop. Then hear Atlapetes Whistle songs 5:40 a.m.

Atlapetes shut up, and I hear more Laf.-like songs. Then they shut up. Then more Atlapetes Whittle songs.

See single Sooty Thrush alone 5:58.

This scrub on slide is really remarkably empty of bird life!

See single Cotinga alone. Usual place.

Everything getting quiet 6:04 a.m.

More single Sooty Thrushes alone 6:15 a.m.

6:24. See single Ag in tree, 30 ft above ground. Region of trees along edge of slide. Singing. Long Formulers twitters, without Intro Notes! Alternating with Laf.-like songs!

Now see Ag flit from tree to tree. Followed by large white-bearded woodcreeper, and a small green hummingbird!

Now hear Ag songs with "Tit tit" Intro Notes!

Oh Lord! 6:32. 8700 ft. 2700 m. See "Glaux". Flitting about very low scrub on top cliff edge road. Scrub-open, obviously second-growth. Bird obviously Diglossa. Alone. Dark dull bluish, apparently some white on under wings. Apparently utters brief Albi-like R!!! My trouble is that I can't be absolutely sure that it isn't a dull Albi! But it certainly did look very blue-ish.

Local Ag territory must overlap that of this "Glaux". Literally "over". The territories of the two species probably (?) completely stratified here.

6:40. See what look like mixed flocks in trees up hill; but can't identify any of the birds.

Then see single cyanocephala fly away from tall tree in which there certainly are other birds. Not followed immediately.

See single Sooty Thrush alone.

SEE ALSO TODAY'S NOTES ON MIXED FLOCKS + COMMENTS BELOW.

8:50 2750 m. Region mixed scrub, bamboo, and a few old trees fest
(4) ooned with epiphytes. Have been watching 2 Cys. Doing a lot of singing. In trees. Sometimes in same tree. Sometimes in different trees quite far apart. Then suddenly pandemonium breaks loose. 2 or more birds suddenly fly down into very low scrub. Only a few inches above ground. Quite invisible. But uttering lots and lots of very fast, long Twitters. Also a few short Hoarse Notes, scattered apparently at random among Twitters. Then one bird flies up and away. Flight rather peculiar. Head held high, belly apparently fluffed. When I look back at low scrub, another Cy emerges hopping. Normal posture. Silent. But holding long strand n.m. in bill!!! Sits a minute. Then, I see that there is another Cy perched quietly in a
96 tree 10 ft above. So presumably there were 3 birds involved in this incident. The 2 remaining fly off quietly. One still holding n.m.

I rather imagine that this may have been a "rape" attempt (which could also, perhaps, be described as a "Pounce") by an "outside" Cy on a Q of a pair. Perhaps stimulated by the sight of her beginning to nest build ???

In any case, it may be significant that the incident was accompanied by so many "long". Vide copulatory behavior of Glors. Incidentally, none of the Twitters during this incident were preceded by any kind of Intro Note

96 9:25 a.m. Watching mixed flock only 50 yds away from where the
(4) preceding incident occurred. There are 2 Cys in cluster tall trees about 20 ft "behind" this flock. Usually not close together. Often in separate trees. One of the birds utters quite a lot of long phrases, while some distance away from the other. All these phrases consist of Twitters with 1 or 2 "Init" Intro Notes.

Then suddenly one bird flies straight toward the other. The other flies, and both plunge down toward ground. Only a foot or so above ground, they suddenly swerve and fly off into distance. The downward plunge was accompanied by Twitters without Intro Notes. Another "Pounce" like incident! "Pounces" may be characteristic of Diglossa ???

NOTES:

I. The Laf-like songs heard around here definitely are uttered by Yellow-faced Whitestarts. As the nature of the Black Diglossa-type seen the day before yesterday remains problematical.

II. As far as my observations go, the territories of "glauca" and undoubted albilatera are mutually exclusive. And Cyp are equally stratified over both.

III. This morning's observation would suggest that the Cyp are breeding here now. Certainly the other diglossines are not. This is not surprising. I received the impression, in other parts of the Andes, that Cyp bred twice a year.

IV. If glauca really is similar to albilatera in ecology, habitat preference, etc., this might help to explain why albilatera does not occur in the southern Andes. I.E. glauca takes its place there. (glauca may well have originated in the south. It does not reach Venezuela.)

V. The absence of overlaps between the Laf-like songs of the Yellow-faced Whitestart and the Whistle Songs of Atlapetes (certainly rufinucha) this morning was most interesting. Perhaps this sort of mutual inhibition is widespread in birds ???

VI. Thinking it over, I can see absolutely no reason why Coers shouldn't occur here. So perhaps the peculiar song heard yesterday near the top

of the mountain really was uttered by a Coer ??????

NOTE: Looking over my notes made at the Boqueron de Yollo in 1962. I see that the territories of Baris and Albes apparently did not overlap there, although both species occurred low in scrub. And the populations of both species were not small there (the population of Baris was relatively large and concentrated). So it would appear that microgeographic segregation of different species of scrub-inhabiting Diglossas may be characteristic of the whole Western Cordillera.

Albi Baru Ogu

May 6, 1965
Munduque

Arrive same Cy area as yesterday morning 5:50 a.m. Cys apparent Cy not around. Certainly not singing.

Finally see single Cy 6:27. Flying from tree to tree. High up. 40-50 ft. Silent and alone.

Cy 99

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

Fitti's Cy wcc

(Fitti's as leaders of flocks. Fitti's in flocks without WCC's. Cys feeding in low scrub. Cy apparently taking nectar from tubular red flowers.)

Obviously, some of my previous statements about the behavior of Fitti's and Cys here are nothing more than generalizations about their usual activities and preferences. There are exceptions to most of the rules.

Cy

The fact that the Cys here have been so quiet today is further evidence that all the excitement yesterday was due to the presence of a third individual.

P.M. (Notes on Albi's)

COMMENTS:

Albi

It is now resolved, to my satisfaction, that the "glaucs" I have been seeing are really Albis. As a result of today's observations, it would appear that the inter-specific relations among the local Diglossini (and principal competitor) are really quite simple (although possibly specialized). They are as follows:

Sittis WCC

I. Sittis and WCC's are obligate commensals. Sittis range nearly a thousand feet down from the top of the mountain. WCC's also reach the top (or almost to the top), but go considerably lower than Sittis as well. The two species tend to associate closely with one another, but the association is not absolutely obligatory. WCC's probably occur in flocks without Sittis quite frequently. Sittis occur in flocks without WCC's at least occasionally.

Sitti WCC Albi

In their wanderings with flocks, both Sittis and WCC's pass over Albi territories without paying any attention to the latter. The disinterest seems to be reciprocal. Albis may "escort" or join flocks occasionally but they are not especially interested in the Conirostrum species.

Sitti WCC Cy

The Sittis and WCC's also may pass through Cy territories (see below). And, of course, Cys often join the same mixed flocks. But (again) I doubt if there is a particularly close association between Cys and the Conirostrum species (except insofar as they all tend to occur in the "tree" sub-groups of flocks).

Sitti WCC

God alone knows if the WCC's and Sittis are territorial or, if so, in what way. But there is apparently never more than one family group of each species per flock.

Cy

II. The vocal behavior (e.g. pair bonds) of the Cys here seems to be much the same as that of Cys elsewhere in most respects. But the

Cy have seem to join mixed flocks unusually frequently. They also seem to be more nearly completely arboreal than all or most other populations of the species. They appear to hold territories — probably of moderate extent — possibly only when they are not associated with flocks. (I have no real evidence as to how far they follow flocks; but the behavior of the birds observed this morning would suggest that they may go very far, outside the borders of their "normal" home range or territory, when not associated with flocks.) Their territories seem to extend over the territories of Albis without producing any contact between the species.

Cy
Albi

III Albis are territorial and scrub inhabiting in much the same way as carbonaria s.l. and lafresnayei s.l. But they obviously prefer humid scrub. On the edges of forest, or actually under trees.

Albi

IV Scan seems to occupy the "commensal of man" niche completely by itself. Overlaps with Albis in intermediate areas. And dispute with them.

Scan

V Thus the relations between species can be summarized as follows:

WCC – Sitti = "friendly"
WCC – Cy and Albi = no significant contact
Sitti – Cy and Albi = no significant contact
Cy – Albi = no significant contact
Albi – Scan = hostile (at least in wood near Jenica)

Cy
Sitti
WCC

VI Perhaps the greatest gap in my knowledge is the relation between Scans, on the one hand, and Cys, Sittis, and WCC's, on the other. Certainly Scans occur near the top of the mountain, in approximately the same areas as all four (other) Diglossini. And certainly I have seen

Scan

no contacts between the Scans at the top of the mountain and the other species. But I think that Scan territories must overlap the territories of the others. Possibly they ignore, and are ignored by, the Conirostrum species (and all other species in mixed flocks?). Possibly they do not come into contact with Cys because the latter are essentially non-nectarivorous here??? But what do they do about Albis??????

Scan

May 7, 1965
Thiendique

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS
(Albis, Scans, Coer.)

Scan Alb

As far as my observations go (I think), the Scans near the top of the mountain are segregated, microgeographically, from the Diglossa species. But Scans seem to be so rare here, and the Diglossas (at least Albis) so difficult to see, that it is difficult to be sure about this.

Alb Scan

In any case, there is not much chance of contact between Albis and Scans in the Alpine scrub-zone. Albis tend to stay inside scrub, while Scans seem to be birds of more open spaces.

Alb Coer Cy

The relations between Albis and Coers at the top of the mountain here may be similar to those among Diglossini in the Sierra de Merida. The relations between Coers and Cys may be similar to those among Diglossini near Quito.

Western Cordillera Colombia (25)

Mixed Diglossini — May 26, 1965 Farallones

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

It would appear that there is mutual inhibition of song between Cg and Slate-throated Whitestart!!! But Cg may follow Slate-throat in mixed flocks. Cg

I presume that there must be Albis around here somewhere, but they certainly were not singing this afternoon. Albis seem to be among the most silent of Diglossini in the non-breeding season. (They may utter R's more frequently than carbonaria 1.l. utter Gavilters during the non-breeding season, but carbonaria 1.l. utter many R-Sayas, at least when the population is dense. Albis

There certainly are hummingbirds around here. But I did not see or hear anything like a Scan this afternoon. This is essentially an area of thick temperate forest, interrupted by pastures, and presumably is too humid for Scans.

May 27, 1965 Farallones

Going to work around Korea station again this morning. Starting 5:15 a.m. Still very dark. Everything quiet.

First presumed Slate-throat song 5:32 a.m. 1 phrase. No Diglos sung audible at the time.

Then general volume bird noises increases appreciably. Difficult to

distinguish individual patterns. But, as far as I can tell, the chorus does not include either Slate-throats or Diglossini.

Hear first Cy Songs 5:38 a.m. Songs coming from same place as yesterday. Each phrase composed 2-4 "Jit" Intro Notes followed by long rapid Jumble. No other Diglossini or Whitetart audible at the time. The bird utters a lot of phrases in rapid succession. (W)

It is partly cloudy now, but it looks as if sun may come out.

Cy obviously singing high in tall mature tree. Apparently 30-40 ft up. Still going strong 5:44. Now, 5:45, there seem to be 2 Cys Singing. Both in tall trees. Probably 100 ft apart. Both uttering similar phrases (as before) Apparently alternating phrases. Little or no overlap. Then shut up. (W) (W) 43

Immediately, I hear what sounds like Yellow-faced Whitetail in distance. Then 1 Cy starts singing again. Presumed Yellow-face continues. Several partial or complete overlaps. Presumed Yellow-face shuts up. Both Cys resume singing. Some overlaps between Songs different Cys 5:47. Cys shut up. Presumed Yellow-face sings again. (Actually, I am quite certain that this "presumed" Yellow-face really is a Yellow-face. Songs brief but quite typical of the species.) (W)

Yellow-face shuts up. Cys sing again. Actually, there may be at least 3 Cys in this area. Yellow-face sings again. Partial overlap. Yellow-face shuts up. Cys continue. Cys shut up. Slate-throat sings. Shuts up. Yellow-face sings. Shuts up. Cy Songs. Yellow-face starts again. Partial overlap. Yellow-face shuts up. Cys continue singing. (W)

This sort of thing repeated frequently during next few minutes. There obviously is some tendency for Cy and Yellow face to avoid overlapping Songs. But at least one Yellow-face sometimes seems to be "stimulated" by sound (W)

of Cy songs, and begins to sing before Cy has quite finished. Thus leading to a lot of partial overlaps.

Cy is certainly the species singing most frequently here. Followed by Yellow-face. Slate-throat singing least frequently. As far as I have been able to tell, Slate-throat is still interjecting song phrases only when both Cy and Yellow-face are silent.

This may be comparatively "easy" for Slate-throat because its song phrases are shorter than those of either Cy or Yellow-face.

Cy 5:58. Now 1 Slate-throat does sing 1 phrase while Cy is in full voice. Complete overlap. Slate-throat shuts up. Cy continues.

Then brief period general quiet 6:00 a.m. Then more Cy songs. Cy at longer intervals now. But still frequent. Cys must be in breeding condition here now.

Cy See 1 Cy. In small tree above second growth scrub. 15-20 ft up. Makes 1 "flycatching" flight!

Cy Cy shut up. Yellow-face sings. Shuts up. Cy sings. Shuts up. Yellow-face sings. Shuts up. Cy sings. Shuts up. Yellow-face sings. Shuts up. 6:04. No overlaps at all.

Fog is approaching now. Visibility is poor.

All quiet 6:07 a.m.

Cy 6:12. Cy singing again. See bird. In isolated tree. 40-50 ft up. All song phrases as before. Song portion rather low-diagonal. Tail quivers nicely with twitters. Presumably just as result of physical effort of producing the notes. The Cy ignores 2 swallows and 1 flycatcher perched 5-10 ft away. Then shuts up. Feeds on clusters of white flowers in tree.

6:23. Now it is clearing up. And getting warm!

Hear some Slate-throat songs in distance. No Diglossine or Yellow-face songs audible at the time.

Go along path in forest. Slightly up hill. 6:50. Hear Yellow-face singing. No Diglossine or Slate-throat audible at the time. Again. This time the song seems to provoke "return" song by another individual - either another Yellow-face or (less probably) a loferagei s.l. Then both shut up. Then (first) Yellow-face sings again. Shuts up.

Reach edge of another pasture. More Yellow-face singing in distance.

44 Sun is shining brilliantly now 6:55 See Yellow-face singing. Definitely alone. In various trees edge forest. 15-30 ft up.

(Cer?) 7:05. Hear what might, conceivably, be Cer songs in distance. But can't see bird. In any case, it soon shuts up.

(Cy) Then hear typical Cy songs in distance. No other Diglossine or Whiteet are audible at the time. Shuts up. Then Yellow-face sings a few phrases. Shuts up. Then Slate-throat sings some phrases. Shuts up. During next few minutes, hear more songs by Cy (s), Slate-throat (s), and Yellow-face (s). Some overlapping!

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

COMMENT:

(Cy) Cys certainly are largely arboreal here, just as in Mt. Clinique. The Cys seen today may even have ranged higher than the birds seen on Mt. Clinique (perhaps the trees here are higher on the average than the ones in many of the areas on Mt. Clinique where I saw Cys). But the Cys here certainly also come down into scrub, to elevations above ground which also are reached by Albis, at least occasionally. I.E. the 2 species certainly are not perfectly "stratified" here.

Cy

9:30 a.m. Back at Korea station. Cys at edge of clearing still feeding frequently. No other Diglossines or Whitetarts audible.

REMARKS: One flock seen above 9000 ft this afternoon was particularly interesting, for two reasons:

WCC

I. Emifera seen with flock twice. And once it supplanted a ♂ WCC. Conceivably, this hummingbird may be an important factor (enemy and/or competitor) in the life of some or all of the local Diglossini.

WCC Cy

II. The ♂ WCC was seen to join and follow Cy. Reactions quite conspicuous and unmistakable. This probably is not surprising, in view of the fact that ♂ WCC's are quite similar to Cys in both color and pattern.

WCC Cy fritti

But I wonder why I never saw such conspicuous WCC-Cy reactions on Thunderique??? Do WCC's prefer to associate with fittis, when the latter are available???

WCC Cy

It is too bad that I never saw WCC's in the Central Cordillera. As the ♂ WCC's there have white caps (rather than blue caps like the ♂'s here) they may be less similar to Cys in appearance. It is conceivable that the ♂ WCC's here are actually "mimicking" Cys. (This is all the more likely as fittis probably are relatively rarer in the comparatively low and very wet Western Cordillera than in the higher, and presumably drier on the average, Central Cordillera.)

WCC

It may be significant that the WCC's which Lehmann collected in the Central Cordillera were with tanagers rather than Cys.

WCC Black

In any case, it is obvious, now, that WCC's are much commoner in the Western Cordillera than in the Central. This may be correlated with greater development of lush temperate forest in the Western Cordillera. (Perhaps some extra food also is available to WCC's here because "Black Diglossas"

are comparatively rare here.)

May 28, 1965
Tvallones.

Start out late, because of rain. Going up hill toward same place as yesterday afternoon. Reach upper edge Korea pastures 5:50 a.m. Rain has stopped, but clouds are very thick and light is dreadful.

On way thru pastures, ca. 5:40 – 5:45, I heard a great many Slate-throats singing. Also paid special attention to 1 Cy. This Cy definitely was trying to mimic its song phrases between those of Slate-throats. But the latter sang so frequently that the Cy couldn't always do what it wanted. As a result, there were many partial and complete overlaps, in addition to regular alternations without overlapping.

(M)

5:55. Now the Slate-throats have stopped. And several Cys are singing madly. Overlapping one another. Then Cys stop, briefly. Yellow-face mimics 1 long phrase. Stops. Cys resume singing.

Cy

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

Cy albi fitti (Cy – albis – fitta).

COMMENT: Certainly Cy and albi territories overlap broadly (perhaps completely) here. The two species certainly are less well segregated here, on the average, than at Munchique — simply because Cys come down into scrub more often here. (This is, in fact, one of the few differences between the avifaunas of this area and Munchique.)

Cy albi

fitti WCC

Note the fitti seen with mixed flock, without WCC, this morning. Perhaps fittis and WCC's do not associate closely here???

Albi Also note the attacks by 2 species of hummingbirds (X and XI — not Emifera.) on Albi. It is beginning to look as if hummingbirds can literally drive Diglossini out of an area. In any case, these inter-specific encounters are further evidence that inter-specific hostility is comparatively very strong in the Western Cordillera (vs comments in my Huancluque Notes this year).

Emifera Incidentally, I know that I have seen Emifera in Quito region. Above Nono, I think. But I don't remember ever seeing one attack or supplant a Diglossini. I must check this point carefully!

Working this afternoon.

Albi 45 2:20 p.m. Upper edge Korea flat in pastures. See "♀" Albi with mixed flock (other flocks and behavior of the Albi are described in mixed flocks notes). This certainly is an individual I have not seen before. I wonder why I have yet to see an adult ♂ Albi here??? Are they relatively rare? Or does the evi habitat preference differ from that (there) of adult ♀'s and/or juvs.? If they are more skulking than juvs., then the adults and juvs. of this species differ in just the opposite way from the adults and juvs. of all or most forms of carbonaria s.l. and lafresnayei s.l. !!!

3:45 p.m. Have reached area 2750 m. where second "♀" Albi seen this morning. Fog here. Quite thick. Hear Cy uttering typical phrases, with 3 or 4 intro-Notts in nearby tree. Then Cy starts to alternate song phrases with the R's uttered by another bird. This latter is invisible, but the R's sound Albi-like. No overlaps between Cy phrases and R's. When R's stop, Cy continues. No Mutitarts audible at any time during this performance.

Cy Albi? REMARKS: Just in case some of the preceding remarks are unclear. Territories Albi's and Cy's seem to overlap those of Slate-throats an

Albi Cy

Eurifera

d Yellow faces completely at random. They also overlap those of Eurifera, and Hummingbirds X and XI (I don't know if this overlapping is random or not.)

The two Whitethroats seem to be very well segregated, segregated micro-geographically, laterally, in most areas at least most of the time. "Stratified" vertically when both species occur in the same mixed flock

May 29, 1965
Farallones

Delayed by rain this morning. Just like yesterday. Reach upper edge Horse Station pastures 5:50 a.m. Rain has stopped temporarily. It is completely light

Going thru pastures, it was obvious that the Slate-throat is the "dominant singer" just after dawn, ca. 5:30-5:45. Slate-throat songs all over the place. Then the Slate-throats fall off, and the Cys is the "dominant singer" 5:45-5:55. I did not hear any overlaps between Slate-throats and Cys this morning. (This is does not mean that none occurred. But they must have been at least relatively rare.)

Cy

I have not heard any Albi R's (yet). Altho I have certainly passed by at least 1 area which is inhabited by a "♀" Albi.

I heard one Yellow-face utter a few song phrases early in the morning during the general period when Slate-throats were most vocal. But the Yellow-face picked a few seconds when the Slate-throats were temporarily silent. Little or no overlap.

Everything much quieter by 6:02 a.m. Going into forest

6:38 a.m. Reach area ca. 8900 ft (i.e. where last big mixed flock seen

yesterday evening). Hear Cy singing madly. Phrase after phrase, all with usual Intro Notes. Then Cy stops. Immediately Yellowface sings 1 phrase. Stops. Immediately Cy sings again. Then stops

Cy

Later on, I hear some R's in distance. Either Albes or Hilyopsis. In any case, no (other) diglomme or whitetarot is audible at the time. R's seem to be uttered by 2 different individuals. Not overlapping one another

Albs?

R's shut up by 6:55 a.m

7:02. See groups of 2 or 3 small birds high up in tree. Look blackish and diglommic! Ranging 40-60 ft up. Uttering diglommic type twitters. Some by some phrases like "Ta tas wee tas wee yoo." Could these be Alters ??? (Certainly not Cy. Possibly WCC, except that all — or both — looked dark.) When they first begin, no other diglommic (or R's) or Whitetarots audible. Then Yellowface sings. Complete overlap. Then problematical diglommic-types shut up. Yellowface shuts up.

477

WCC?

7:12 More R's a few seconds later. I think these are Albes. Coming from areas where Albes seen yesterday. R's stop. Another burst matchi of Yellowface song. Stops. Then Cy sings. Stops.

Albs?

48 7:23 See 1 ♂ Diglossa (species unidentified) 30 ft up in tree. Alone. Dog coming in 7:25.

7:30. Hear several more peculiar diglossaic type twitters in tree tops. Nothing else audible at the time.

WCC

49 Aha! See single ♀ WCC in tree, where twitters were heard only a few seconds ago. Identification definite. Bird 30 ft up. Silent (now). And apparently quite alone! A few seconds later, catch glimpse of ♂ WCC same tree. Also apparently alone. But then several other birds (unidentified, but definitely different species) fly into same tree. Now I see ♂ and ♀ WCC together in same tree. Pic

50

bug insects off leaves. Silent. No other species very closely. Then both WCC's fly off into distant tree. Nothing follows.

Perhaps WCC's are not obligate commensals in this area, at this season, at this time of day ??? Perhaps coming into breeding condition ???

WCC

Starting down hill 7:55 a.m.

Just as I go I see single grayish Diglossa in scrub, 2 ft up "♀" albe (?), I think, but it looks more olive-gray than most — at least above (I did not get good view of underparts). Silent and alone.

albe ? ♀?

Ca 8900 ft. See single Euxifera feeding in tree. Apparently alone.

Euxifera

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

REMARKS:

I. I have come to the conclusion that the coloration of C. nitticolor is "bright neutral". It includes all the conspicuous "colors", except white, that the Diglossini are "capable" of producing.

little

II. Just in case the preceding notes are not clear .... I don't think that any of the local hummingbirds are "obligate" commensals. Viz the observation of a single Euxifera cited above. Certainly, I have seen hummingbird X by itself alone very frequently. And I think that I have seen hummingbird XI by itself occasionally.

Ogan

TOTAL = 28 hrs

July 22, 1965
Valley Rio Urrao

1:30 p.m. 9400 ft. Edge long thin strip of what looks like mature "upper sub-tropical" forest (extending into large pasture). See single Brum alone. Perched 10 ft up in bush or small tree. Flies off into low scrub a few yards down hill.

Then I hear a few R-Z-Z-Z patterns in neighborhood. Same Brum back in tree a few minutes later. Now see that there is a single Ruddy Flycatcher only 10 ft away. No reaction between the 2 species. Then Brum flies off. Flycatcher does not follow.

NOTE: This area looks quite moist (although we are in middle of "verano" now, and it has been an unusually dry verano). There are white-leaved Cecropias at slightly lower altitudes. So Brums here are (at least) not absolutely confined to relatively dry areas.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.
(Brum, Cy, Sitti, Scan, other hummingbirds.)

COMMENT: Brum would seem to be the dominant diglossine here!!! This does surprise me. Area obviously relatively very humid. I also am surprised to find Brums relatively frequently high in trees. And relatively frequently associated with mixed flocks!!! The Brums here would appear to be almost (or at least) "semi-communals." (This may, of course, help to explain why they have survived in this region.)

My brief observations today would suggest that the members of the "diglossine complex" (possibly including hummingbirds) have patchy or completely overlapping territories — but do not show over

t hostility toward one another. But this is (another) point which must be checked by further observations

I was rather surprised not to see Coers today. If I understand the ecology of Coers, this is an area in which they should be found. We will see!

Coer

July 23, 1965
Valley of Rio Urrao

Going along same path this morning that we followed yesterday afternoon.

Arrive approximate area where first Bruns seen yesterday 5:15 a.m. Still dark. Overcast. Windy.

First thrush and Andean Sparrow noises 5:27 a.m.

Then the thrushes drop out and Andean Sparrows continue "full blast". Still quite dark 5:40. More thrush calls (alarm). Then Acorn Woodpeckers start 5:42.

Something begins DC-like sounds 5:48 a.m. But still there are remarkably few species participating in "Dawn Chorus".

Hear what may be first diglossini twitter in distance up-hill 5:51 a.m.

Then hear first Yellow-faced Whitetart Sowp. 5:55. Partially overlapping twitters (which may be diglossini — possibly Cy — but which I am not sure about) Then twitters and Yellow-face phrases alternate without overlapping. Then more overlapping.

And now, 6:02 a.m., I see the bird uttering the twitters. It is a cyanocephala!!! Each twitter phrase composed of a variable number of

"zee-zee" doublets (2-6) followed by a variable number of "ta-zee" patterns (again 2-6) Both species continue singing for some time. Sometimes alternating. More often with partial or even complete overlaps The Yellowfaces certainly do not seem to be "inhibited" by cyanocephala songs !!!!

Then see single Yellowfaces, oft up in scrub-edge forest. Apparently alone.

Cy Brum The local Cy(s) and Brum(s) certainly have not been very vocal this morning!

6:12. See single Yellowface alone, oft up in scrub-edge forest. Utters occasional song phrases. cyanocephala(s) seem to have shut up now.

Get several more glimpses of Yellowface(s). Always alone

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

Cy (Cys seem to occur relatively frequently low in scrub here !!)

10,100 ft. 7:28 a.m. Come across pair Cys. Definitely alone. One or both bird(s) utter(s) brief twitters, without intro notes, as greeting or "Landing" patterns. Birds ranging 3-25 ft up. In trees and scrub along path

Cy

Glorius 8:05 a.m. 10,600 ft. Finally come across Glorius. At least 2 individuals singing steadily. Long indeterminate phrases of the usual type for the species. As mentioned in my notes on mixed flocks, the individual notes of these songs are "reedy" — quite like song notes of Cafs in some (or all) other areas.

This particular area is low and moderately dense scrub. Obviously "alpine scrub" which has been burned once, some years ago, and is now regenerating rapidly. Few or no flowers around.

Glorius The scrub here certainly is less dense than the vegetation inhabi

ted by Lafs in some other areas.

Glorius — I catch glimpse of one bird singing. Perched 3-4 ft up, inside bare bush. Looking from side to side in apparently unrituralized posture.

Glorius Brunn — The birds do not look as much like the Brunns as I expected. They apparently have considerably less gray (or none?) on the sides of the breast. Rufous of breast also may be darker and richer.

Glorius — Catch glimpse aerial chase up hill. One Glorius chasing another. Song stops ca. 8:25 a.m. Renews briefly around 8:33. Then stops again.

There were no other Diglossines or Whitestarts audible at any time during any of the Glorius singing. (altho I did hear at least one Yellow-faced Whitestart singing slightly downhill earlier.)

Glorius Brunn — NOTE: The Glorius's would seem to be separated from the Brunns microgeographically. I have not (yet) seen any Brunns here above ca 9,975 - 9,990 ft. Possibly the Glorius's also are separated from the local Lafs in the same way. The highest I have seen Lafs (so far) is only slightly above 10,000 ft.

Glorius — 8:45 a.m. A few feet further on, and up, hear Glorius(s) singing in area of alpine scrub which apparently has not been burned. This scrub is denser than the scrub which was burned, but still not as dense as some alpine scrub can be. Again, no other Diglossine or Whitestart is audible at the time.

Incidentally, this area is exposed to the full force of the wind.

Birds silent again 8:50 a.m. They seem quite shy — leaving whenever I start to approach.

This area probably is only 50 ft below nearest patch of Spalathea

(Tradejón) Páramo

Everything dead quiet 8:55 a.m.

See a single Maroon-crested montane conuga alone. 10 ft up in top tree. Silent.

NOTE: I am not sure that there were ever more than 2 Glorus's singing here. And they seem to have relatively large territories. I.E. the population probably is small.

Going down hill now, to see if we can approach Glorus area from another direction.

Making loop, come to sheltered side Glorus area 9:10. Some single footy thrushes around, but that, apparently, is all

Go on a little farther. Black Diglossa flies overhead into bush right at edge of Páramo. Lands 1 ft up. Apparently Glorus. But this individual certainly does have extensive gray on sides.

Hear some more Glorus songs in distance. Certainly not same birds heard earlier. 9:22 a.m.

9:35 a.m. 10,700 ft. Hear and see Brum (definite). Singing. Edge alpine scrub and Páramo. Bird perched 15 ft up in small tree. Utters 1 phrase after phrase, in unrelated diagonal posture. All phrases fast, rapid, "formless", and prolonged. So fast that they are almost trilling. But they also include pure R's in terminal or sub-terminal position (definitely heard R's in both places). Then Brum shuts up. Immediately Glorus (several hundred yards away) begins to sing. No overlap. Glorus continues for some seconds, then shuts up. Immediately Brum begins to sing again. Again no overlap. Then Brum shuts up. Flies off. A few seconds later, I hear R-3-3-3 pattern same area.

So the Brums and Glorus's here certainly are not separated

geographically!!! (It also is difficult to see how they are separated ecologically at this particular site. The scrub in which the Brum sang was unburnt — but apparently identical, in all important respects, with the unburnt scrub in which Glorias's were heard to sing earlier.)

Glorias Brums

So far, however, I have no evidence that the territories of individual Brums and Glorias's overlap.

Also, so far my observations indicate that their songs do not overlap.

A few minutes later, see single Yellowbelly alone in same area where last Brum seen earlier. Also goes into Paraiso. Perches on Spathea!!!

Brum

Another unburnt Brum sings, and R-3a-3as, here at 9:55. NOD.

Brum

Near the area where Brum heard singing are some bushes with dark red cup-shaped flowers (a melastome of some sort). Apparently same species favored by Diglossas on Pierre.

Another burnt 3 or 4 Brum song phrases, same area, 10:05 a.m. NOD. Then another R-3a-3a. Bird invisible. Then more R's, without 3a-3a's. Catch glimpse bird(s) in flight. Apparently chasing.

Brum Settle

Then catch glimpse Brum in tree 12 ft up. Sings phrase after phrase in rapid succession. Then see that there is a Settle only 6"-1' away from Brum!!! Hopping about quite unconcernedly. Apparently paying absolutely no attention to Brum! Silent. Feeding on clusters of small yellowish white flowers. Brum eventually flies away into another tree, 12-15 ft away. Continues to sing. Settle continues to feed. But eventually disappears. At approximately same time, Brum

stops singing! During next few minutes, I hear a lot of Brum R's and R-Zaza's in area. Also catch glimpses several aerial chases. I can't tell who is chasing whom. (In this light, Brum and Setti are not always easy to tell apart. And I think that there may also be an other, second, Brum in the area.)

In any case, the singing by the Brum near the Setti may be an indication that the Brum was antagonistic to the Setti.

Setti Brum

A few minutes later, we mixed flock in area !!! Group includes at least 2 Yellow-bellies, 1 White-beard, 2 Setties, and 2 Pseudospingus. Brum ♂ ——→ group. But (now) shows no hostility to the Setties! Group moves on. Yellow-bellies apparently in lead. Pseud spinosus ♂ ——→ Yellow-bellies. Setties ♂ ——→ group. Brum apparently does not follow.

Brum

After group apparently has moved on, I still hear Brum-type R's and R-Zaza's in area. I think there must be produced by one Brum chasing another. A ♂ chasing or pouncing at a ♀ ???

Brum

Perhaps the Brums up here (if not the ones at lower elevations) are in full reproductive (countersing) mood.

Everything quiet now, 10:30 a.m.

Brum

Then a Brum sings again. 8 ft up in tree. Definitely alone. NOD

Brum

Then I see some chases with R. I am almost, but not quite, certain that this is one Brum chasing another.

Brum Setti

Possibly the songs of the Brum near Setti were not provoked by the latter, but, rather, redirected upon it?

Brum Glossy

Stopping observation temporarily 10:40 a.m.

Starting down hill 10:48. Brum (s) still singing. NOD.

10,600 ft. 10:53. Hear another matchi Glossy song. NOD.

Area unburnt alpine scrub. Quite little areas inhabited by Brums.

Hear one single Yellow-belly in tree 10 ft up. Apparently alone. Silent. Apparently eating small yellowish white flowers

Glorias

More Glorias songs same neighborhood. NOD. Again NOD. Again. NOD. Still continuing 11:07 a.m. Still NOD.

Brum

10,325 ft 11:15 a.m. Hear a couple of Brum song phrases in distance. No other Diglossini or Whitetart audible. Brum shuts up. About 1-2 minutes later, a Yellow-face utters a phrase. No other Whitetart or Diglossini audible at the time.

11:25 a.m. Just below 10,200 ft. Just inside "upper sub-Hopeanal" forest. See single Yellow-belly 20 ft up in trees. Apparently alone

A few feet further on, come across family Blue + Blacks. Obviously same family seen earlier. Juv. still Begging. Family now 3 ft up in dense scrub.

Oho! 50 ft further down path, see another pair Blue + Blacks so the population here probably is quite dense.

I can't tell if any of these birds are reacting to one another or not.

Brum Cy

12:25 p.m. Ca. 9500 ft. See single Brum 4 ft up in bush, just under tree where last Cy seen yesterday afternoon. Further confirmation that the territories of these birds are at least partly overlapping!

Arrive back at Jenica 12:45 p.m.

Brums

COMMENT: The higher altitude Brums, above 10,000 ft, are behaving in much the way that I would expect of carbonaria s.l. Also occurring in environments that are typical for the species. But the lower altitude individuals are quite distinctive. I wonder how much contact there is between the low and high populations??? Cou

ed they be two partly-isolated populations ??? (Certainly, it is my impression that Brums are less common around 10,000 - 10,200 ft than either higher or lower.

Going to work near the Finca this afternoon. Starting 1:45 p.m. Patch of low, thick, young second-growth between pasture and "upper sub-tropical" forest.

Coer ?

Immediately, I see a single bird which appears to be Coer! ✓ Hopping in scrub 1½ - 3 ft up. Alone. Utters "Tseet" notes. Then flies off into adjacent forest.

Albi

A few minutes later, see ♀ or juv. Albi in same scrub, same level. Silent and alone. Also flies off into adjacent forest.

Could this "Coer" have been a ♂ Albi — looking blurish because of the light ?????

Everything dead quiet 2:02 p.m. Seem skunking at this spot, and it is hot. Going down hill into forest and shade.

3:00 p.m. Several hundred yards inside forest. Ca 8925 ft.

Albi

See single ♂ Albi feeding 12-15 ft up in bush under trees. Taking nectar from small tubular red flowers. Also picking insects off leaves. Silent, except for occasional soft "Tsit" notes. Then this Albi is repeatedly swooped at (and chased, I think) by a hummingbird XIII.

XIII

Albi retreats a few inches each time hummingbird swoops. Swoops silent. Eventually Albi disappears. Hummingbird XIII remains behind

3:16 p.m. Near edge forest. See mixed flock small birds in tree tops 30 ft up. Most of the birds are unidentifiable. But there is one that looks (from below) like ♂ WCC. (Also something that looks like BG — but this, presumably, is impossible.)

WCC

Mixed Diglossini, July 23, 1965, IX

3:35 p.m. Nothing visible where Albi and presumed Coer seen earlier. But I do hear a couple of phrases coming from adjacent forest which might be Brun Twitters

albi Coer? Brun?

Then decide to walk up hill along scrub between forest and pasture. 3:45 p.m. See large mixed flock. Includes at least 10 WCC (possibly 2), 1 ♀ WCC (identification both sexes quite definite), 1 cyanocephala, 2 Euemiscopus, 1 Yellowbelly, tree creepers, certainly others. Probably 20 birds in all. Flock quite coherent and moving rapidly down hill. All birds apparently ranging 6 – 20 (or 30) ft up. Flock as a whole fairly noisy. Lots of CN's. Can't tell who is real leader of group as a whole. But certainly cyanocephala j ⟶ WCC's (both ♂'s & ♀) at least once.

WCC

WCC's apparently picking insects off leaves.

WCC

When flock was first seen, 2 Green & White Hummingbirds were having a fierce, but silent, aerial fight only a few feet away from WCC's and Euemiscopes.

A single Ruddy Flycatcher was about 50 ft (perhaps more) behind flock when first seen. It never actually came close to the other birds but apparently (from the sound of its R's) gradually drifted down hill in their wake – still keeping a very appreciable distance behind them.

The altitude at which this flock was seen was 9125 ft

Ending observations 5:07 p.m.

Settis WCC

COMMENT: There may be at least some geographical segregation of Diglossini here. Note that I did not see any Settis with the mixed flocks this afternoon (although WCC's were more or less common). And I must check on Coer – Albi – Brun relations!

Mixed Diglossini

July 24, 1965
Valley Rio Urrao

Going way up hill this morning. Reach approx. 10,700 ft level 5:25 a.m. (Area of highest Brun seen yesterday). Just as first miscellaneous bird noises begin. Also just as fog starts to come in. But fog is patchy and not too thick. Still quite dark. Cold. Almost no wind.

Then I go down hill a little. To area where I know there are Glorin's on both side of road (altho not close) and where I saw the problematical individual yesterday which I said was probably Glorin's, but which I now think was probably Brun.

My altimeter at this place reads 10,700+, now, but it read somewhat less yesterday.

Thrush songs in full swing by 5:38 a.m. Thrushes here probably are breeding. Fog also lifting. All sorts of things singing by 5:45. But still no diglossines.

First Attapetes Whistle Songs heard 5:54 a.m. In distance. Presumably PL. Bird is singing fairly steadily.

Still no diglossini here 6:02 a.m. Attapetes seems to have stopped singing. But many other things continuing full blast.

Then hear what may be one brief snatch of Glorin's song 6:04. Glorin's Then none more. In distance. All quite brief phrases. Then the bird shuts up. Then hear 1 brief Yellow-faced Whitetart song far down road. Then another brief phrase which may be Glorin's. Then silence. Then more Glorin's song 6:08. Identification of this song quite definite. But it is far away. No other diglossini, whitetart or Attapetes ("No

DWA") visible or audible at the time. Bird songs almost steadily now 6:11 a.m.

This development would suggest that Lafresnayei s.l. tend to begin song relatively late, even when there are no carbonaria s.l within earshot to "pre-empt" the air waves at dawn!

Lafresnayei

Wind increasing now.

Glorus

This Glorus is singing in area of quite thick and tall, and obviously unburned, alpine scrub. Still NODWA. Apparently only one Glorus within ear shot of me. And the phrases of this Glorus song are not as long, on the average, as those of many other Lafresnayei s.l. individuals I have heard in other regions. Presumably this Glorus is not being stimulated by rivals.

Glorus silent 6:18 a.m. And now I hear what seems to be Glorus Attapetes Whistle songs near by! Several Attapetes singing in different areas. Shut up 6:26. Immediately, there is a brief outburst Glorus song! No overlap. Then Attapetes and Glorus alternate phrases. Again no overlap. Glorus continues. Attapetes utters a couple of phrases. Complete overlap (But the 2 birds which are overlapping are very far apart from one another.) Then Glorus shuts up. Attapetes continue. Attapetes stops. Glorus starts again. Shuts up. Attapetes start again. No overlap. Shut up.

Glorus

Incidentally, all the Attapetes songs heard this morning have been 2, 3, or 4 note Whistle songs.

6:35 - Glorus singing again. Distant Attapetes utters many Whistle songs while Glorus is in full voice. Many (at least 6-8) complete overlaps. Then Glorus shuts up. Attapetes continues, shuts up. Glorus utters 1 brief phrase. No overlap. Shuts up. Attapetes starts again.

Glorus

6:42 a.m. Yellowface interjects one long phrase between Attapetes Minute Songs. No overlap. Glorias silent at the time.

Attapetes shut up. A minute or so later, Glorias and Yellowface alternate a few phrases without overlaps!!!

6:58 I am now within earshot of 2 Glorias's. Both singing quite steadily. Overlapping. Everything else is silent now.

Fog coming in again.

The Glorias's are really quite remarkable shy and difficult to see while singing. I have caught only one brief glimpse of one individual this morning. Flitting from tree to tree.

Everything silent 7:02 a.m.

7:04 a.m. Single Glorias flies over pasture, from patch of umbrella scrub to patch of burnt scrub 50 yards away. Lands about 2 ft up, and immediately hops further into scrub and is lost to view. Silent throughout. Has probably is not same individual seen yesterday. I was again struck by how different Glorias looks from Brun. Little or no gray on side. Chestnut very dark and rich mahogany color. (The breast of Brun is almost orange.)

Also again struck by the fact that the territories of these Glorias's must be relatively large.

As a result of today's and yesterday's observations, I would guess that the population of Glorias's here includes 3 singing individuals. Possibly only 2. No more than 4.

Fog getting thicker and wind worse. Everything silent. 7:20.

There is another brief outburst of Glorias song 7:27, when fog lifts a little, temporarily. NOSWA.

Incidentally, as far as I can tell, the general shape of the local

Glorus

Glorus's is very much like that of Laf s.s.

Fog lifts again a few minutes later, and there is another burst of Glorus song. (N.E. fog must inhibit Glorus song — when it is thick)

Litti

7:30 a.m. See small mixed flock. Edge alpine scrub. Include at least 2 Whiteheads, 2 tree-creepers, 2 Fettes. Birds quiet but close together. Fettes ranging 10-20 ft up. Others 5-15 ft up. Fettes fly away, but the others do not follow.

Glorus

This area is only a few yards from where Glorus's have been seen. But, as far as I could tell, Glorus's did not come to "escort" the group.

Glorus

Sun trying to come out 7:40. Lots of Glorus song in distance. NOOWA.

Brum

Go up to area of highest Brum 8:00 a.m. This area is 10,825 ft according to my altimeter now. Can hear bird singing phrase after phrase. Alternating phrases with nearby Andean Sparrow! No overlaps. When Brum shuts up. Andean Sparrow continues. Then shuts up. A minute later, Brum starts to sing again. Phrase after phrase in very rapid succession. Same types as yesterday.

Brum

8:05. See two Brums here. Flitting about in scrub 6-12 ft up. Usually 5-15 ft apart from one another. One utters R while landing 6-8 ft away from the other. Difficult to keep both birds in sight simultaneously. A minute later, one of the Brums here utters songs in response to songs by another Brum some considerable distance away. I don't know if this distant bird is a "third" individual or not.

Brum
Glorus

Going to a point a few feet above this Brum area, I can hear snatches of Glorus's song, very faint, downhill. So the Brums probably are in earshot of the Glorus's — if not vice versa. In any case, the Brums

are quite silent while the Gloriss's are audible.

Then I walk across a small patch of Paramo toward another isolated patch of scrub. In the middle of the Paramo, I am swooped at by a single Scan!!! (Identification definite.) Scan then flies away over Paramo.

Scan

A second later, we bush with dark red cup-shaped flowers at edge of this isolated patch of scrub. A single hummingbird is feeding at these flowers. Certainly not Scan. Has particularly brilliant patch of green on upper back. (Possibly no. XIII ?????) Brun suddenly appears. Attacks hummingbird and drives it off. Then Brun feeds on flowers itself. I don't know if this Brun is one of the individuals I have been watching in the other patch of scrub or not.

XIII ? Brun

A few seconds later, a Brun utters many long phrases in the other patch. Then shuts up. As soon as it shuts up, I can hear Gloriss long in distance down hill. Then Brun sings again. I think Gloriss down hill continues after Brun begins. Partial overlap. But then Glor is apparently shuts up. Brun continues alone. Brun shuts up. Gloriss starts again. Shuts up.

Brun Gloriss

Then 2 Bruns sing in this isolated patch of scrub. While there is no sound of Bruns from the first patch. So it seems likely that both patches are occupied by same Bruns.

Brun

Incidentally, the wind here today and yesterday (perhaps typical of the area?) has been strongly up hill, from the south. This favors the transmission of Gloriss sounds to the higher Bruns, while impeding the transmission of Brun sounds to the Gloriss's. Another significant factor probably is loudness. The Brun songs seem to be softer than those of Gloriss. (This difference seems to be characteristic of all forms of carbonaria s. l. and

Gloriss Brun

lapesuayei n.l.)

8:30 a.m. One Brum performs Song Flight over Páramo between the two patches of scrub.

Brum

I am gradually coming to the conclusion that there are only 2 Brums here, occupying both patches of scrub and flying over the intervening stretch of Páramo. If so, it can be said that the territory of the local Scan is at least partly overlapping with that (those) of one or both Brums. (NOTE: Perhaps significantly, I have not heard or seen any Scan displays here. Perhaps the local Scans are not breeding now.)

Brum Scan

Everything very quiet. 8:50 a.m.

Then Brum sings in first patch scrub. Shuts up. Then I hear Glorias some distance away (to the East — this may be a different bird from any I have heard before) Shuts up. Then Brum sings again. Shuts up. Then Glorias sings again. Shuts up. No overlap at any time.

Brum Glorias

So perhaps there is mutual inhibition between Glorias and Brum! At least, sound of Glorias may inhibit Brum.

9:00 a.m. One Brum chasing another, with R's, in isolated patch scrub.

Brum

It seems to me that these Brums are uttering comparatively very many R's without 3a-3a. Also quite a number of R's with only brief, single, "slurred" 3a at the end. Was this characteristic of the Southern Brums as well??? (To my recollection, it is not characteristic of Carbo, or even Atlapetes or Hemispingus.)

Brum

Pair of PL Atlapetes flies into isolated patch scrub. Alone. Uttering "feet" notes. Apparently ignored by Brums — although I can hear the Brums uttering R patterns not far away. Brums also seem to ignore a pair of Oreothraupis nearby.

Scam Brum

COMMENT: It has just occurred to me that I have seen only 2 Scamus here. One very high, the other relatively low. But there were Brums at both places! "Correlation" between Scam and carbonaria s.l. seems to be very close indeed!

Glorius

9:15 a.m. Go on to slightly different area where I can hear distant Glorius's singing quite clearly. NODWA.

Glorius

Then hear Glorius singing to east. At approximately the same altitude as the highest Brums I have seen here. Again, NODWA. (This certainly is the 3rd, 4th, or 5th singing Glorius in the region.)

Jam

It is obvious, nevertheless, that the population of Diglossas as a whole here (i.e. Glorius's and Brums combined) is much less — and much less dense — than the corresponding populations in many other, apparently similar, parts of the Andes (e.g. the Quito and Bogota regions)

Every thing dead quiet 9:40 a.m. Sun shining brightly. Some wind, but it is getting warm. Going to start down hill.

See single Sooty Thrush alone. 12 ft up in scrub

Glorius

Glorius's are quite silent as I pass their area. Then I hear one very brief rattle of Glorius long after I have passed 10:04 a.m. NODWA

10:10 a.m. 10,500 ft. Hear lots of Yellow-fan Tanager coming from border pasture and "upper sub-tropical" forest. Apparently a single individual singing steadily. NODWA.

Scitt Brum

10:45 a.m. Ca. 9950 ft. Near where flock with both Cg and Brum was seen a couple of days ago. See another mixed flock. Includes: 2 White-bearded Flycatchers, 1 Ruddy, 2 Yellow-bellies, 2 Scitts, 1 Brum tree creepers. Probably others. Also lots of hummingbirds around in same general area. Including at least 1 XIII. Area of very mixed vegetation, both trees and scrub. All birds ranging 10-35 ft. up. Flock

as a whole quiet. Quite coherent, insofar as all birds close together, but not making progress in any particular direction. Yellow-bellies eating mistletoe berries. Setts and Brum picking insects off leaves.

Setti Brum

Setta f ——→ Brum.

Now we that flock also includes 2 W B. nigrocristatus (1 adult & 1 juv.), picking insects off leaves 3 ft up in scrub. And 1 Yellow-face, flycatching 10 ft up. Also a third Setta (apparently adult) going around in close association with the other two.

Setti

Brum

As far as I could tell, the Brum stayed with the flock for at least a minute (which is long for such a volatile bird), but then left.

11:25 a.m. Only a few feet further on (downhill) come across what may be at least parts of same flock. 1 Ruddy, 1 Yellow-face, 2 White-beards, and at least 3 Big Butterscotches. All ranging 15-35 ft up. Butterscotches eating fruit.

Now the Setts, Tree-creepers, Yellow-bellies, and B. nigrocristatus also have appeared here. Obvious following.

Setti

1 Sooty Thrush j ——→ group. (Reaction quite definite) White-beards fighting among themselves. Many aerial chases. Flock now is definitely going up hill. Butterscotches have disappeared. They may be the leaders.

11:55 a.m. Ca 9500 ft. See pair W Yellow-faces. Hycatching 3 ft up scrub edge forest. Apparently alone. Then single Brum suddenly appears in bush 3 ft away. Obvious example of Brum j ——→ Yellow-face. Brum feeds on tubular red flowers. Then disappears

Brum

Get back to Jinca 12:05 p.m.

Brum Gloris

COMMENT: The relations between Brums and Gloris's seem to be rather peculiar. Rather peculiarly "intermediate" or "equi

vocal". Range of Brum, as a "species", completely overlaps that of glorius. At high altitudes, the two species also seem to have identical habitat preferences. But the territories of particular individuals of the two species apparently do not overlap. I have seen no signs of overt hostility between the two species. But I don't see how the segregation of territories could have originated without hostility. As mentioned above, there may be some mutual inhibition of song. At least, songs of glorius seem to inhibit Brum

Brum
Glorius

July 25, 1965
Valley Rio Verde

Going to work in forest at approximate level of Finca this morning. (8975 ft according to my altimeter now.) Arrive 5:40 a.m. Both Andean Sparrows and Thrushes in full song. Clear. Cool. Occasional gusts of strong wind.

Hear faint diglossine-type Twitter down hill, in trees, 5:44. No Intro Notes. No R. But fairly long and rapid. Cy ???? Bird sings phrase after phrase. NODWA Phrases could be transcribed as "Ta zee ta zee ta zee ta zee ta zee ..." cyanocephala ???

5:53. Hear a few soft R's in nearby scrub. Albi ??? Partly overlapping the enigmatic Twitters. When R's stop. Twitters continue

I think these Twitters must be cyanocephala.

Hear faint Yellow-face Songs 6:00 a.m. Slightly overlapping presumed cyanocephala Twitters. Only a couple of phrases. Then Yellow-face and presumed cyanocephala alternate phrases without overlap! Then Yellow-face shuts up. Presumed cyanocephala continues.

Men presumed cyanocephala and Yellow-face alternate more phrases without overlap. Men both shut up.

Albi? 6:14 Hear lots of Albi-type R's edge forest, approximate area where 4 Albi and "Coer" seen a couple of days ago. NODWA. Stop at 6:16 a.m.

Albi Possibly Albis here are not breeding now? Or population sparse? In any case, there certainly have not been many R's so far this morning.

6:20. Hear more R's, alternating with Yellow-face songs in distance. I really can't tell if these R's are Albi, or Ruddy Flycatchers, or what

More R's 6:27. NODWA.

Going along path down hill 6:30 a.m.

Albi 6:45 a.m. 8890 ft. See single ♂ Albi alone. Silent. Feeding on tubular red flowers, 6-10 ft up, in bush under tall mature trees.

More Yellow-faces singing occasionally NODWA

Everything very quiet 7:15 a.m.

7:31 a.m. Back up at upper border forest-scrub. Where Yellow-face songs and R's were heard alternating earlier this morning. When I arrive here this time, the same sort of vocalizing is still in progress. More Yellow-face songs and R's in alternation, without any overlap. And this time, I see the birds uttering the R's. They definitely are Ruddy Flycatchers!!! So the local Yellow-faces definitely are "inhibited" by a great variety of vocal patterns!!!

(Incidentally, there are at least 3 Ruddies here. Flycatching edge scrub & forest, 3-20 ft up. Apparently alone.)

♂ A second later see a single ♂, feeding on pink cup-shaped flowers in bush edge forest. 6 ft up. Silent. Alone. Then flies down into ad

Cy albi — [illegible] low, thick scrub. Disappears from sight. This is exactly where of Albi and "Coer" were seen a couple of days ago. So territories Albi (s) and Cy definitely at least partly overlapping here. And apparently not stratified

7:55. A few yards down road inside forest. Hear what are probably Cy song phrases. Long, including many notes, formless, high pitched.
Cy — Little or nothing in way of Intro. Coming from way up in tree tops. Bird invisible, but at least 30 ft above ground. NODWA

NOTE: Mulling it over, I am not sure that I have heard any Albi R's here!

Leaving 8:35 a.m.

COMMENTS:

Brun — I. The Bruns at relatively low altitudes seem to be playing the same social role as Cys in the southern part of the Western Cordillera. Arboreal and "semi-communal".

Cy — II. This may help to explain why Cys are rarer here than in the southern part of the Western Cordillera.

Cy — III. My observations, such as they are, also would suggest that the Cys here are playing somewhat the same role as carbonaria s.l. in many other parts of the Andes!!!

IV. All this would suggest that many or all Diglossa spp. have "equal potential". I.E. they are capable of playing the same role
Gen — or occupying identical niches. Whichever species occupies a particular niche in a particular region may be largely a matter of "chance".
Baro albi — I.E. it may depend upon which species "happens" to develop suitable habits first. (Note also the Baros in Chiriqui — which seem to be occupying "typical" Albi habitat.)

Albi Brunn

V. As far as my observations go, they suggest that Albis and Brunns are segregated microgeographically here.

VI The Diglossia here are really quite surprising & different from the Diglossia of the southern part of the Western Cordillera. In the final write-up of the diglossia variations, it will be necessary to distinguish between two "regions": the northern part of the Western Cordillera and the southern part of the same cordillera.

VII Nevertheless, the behavior and distribution of the birds here would seem to support my general hypothesis that the amount of contact between species is directly correlated with the size of the regions in which they occur. This region is larger than Munchique, and the local species are less segregated than the species of Munchique. But this region is smaller than the Eastern Cordillera, and the local species are more segregated than in the Eastern Cordillera.

Sittis Wcc

VIII Note that there are minor anomalies when different species are compared in detail. Thus, for instance, Sittis and Wcc's seem to be more strongly segregated here than on Munchique.

IX I do not have enough information (yet) to compare the behavior of species of different areas within this region.

Mixed Diglossia, I — August 6, 1965
Manizales

Arrive at Finca Carpentaria this afternoon. Take a brief look at the garden by the house 4:45 p.m. Cloudy. Fairly warm. Lots and lots of roses in bloom. There also are many Fuchsias in bloom — but fewer than a couple of months ago.

According to Horacio, the Mayordomo, there also are fewer birds around the garden now. And my brief observations this afternoon would seem to bear him out.

But there certainly are still 2 or 3 individual Colibri around. All the individuals I have been able to see clearly have had violet cheek and ear patches, and violet on center of breast and belly. So they are presumably definitely Scan (not thalassina). (I should add however that the violet patches on their heads are erectile, and that the violet on their breasts is relatively broad, and rather sharply "truncated" along upper border. These features may well be characteristic of all Scans; but I never noticed them before.)

Scan — Scans feed on red Abu quite frequently, fluttering hell between spals. (I.E. their feeding method looks the same as that of the Bogota Scans.) Also feeding on Fuchsias, but probably less frequently. And I saw at least one individual feed on Kniphofia. So the Scans here partly fill the niche of Cinns at Finca Canaan!

Scan — Around 4:55 p.m., I hear one burst of what sounds like typical Scan "Chuk" song in distance (other side of house).

Scan — One of the Scans in the red Abu repeatedly supplants and chases a smaller green hummingbird (species unidentified — certainly n

at the "SGH" near at Canaan).

Perhaps the few remaining Scans here are in breeding condition ???

Scan

NOTE: It is supposed to be the middle of the (or "a") dry season here now. And Horacio says that it has, in fact, been rather dry recently.

Everything dead quiet 5:25 p.m.

Both single Scan and single Andean Sparrow in red Abu. 4-6 ft apart. Scan does not attack Sparrow. (Sparrow seems to be feeding on seeds of Abu — probably just like Goldfinch at Bogotá!)

Scan

One Scan uttering brief, rather soft, low-intensity-sounding "chuk" long 5:40 p.m.

Scan

Stopping observation 5:45 p.m.

NOTE: According to my altimeters now, the altitude here is 7750 ft, 2350 m.

I am really amazed by the difference between the fauna here and at Finca Canaan! (The areas look similar, in some ways, and are of comparable altitude.)

August 7, 1965
Manduriacu

Arrive top mountain 5:43 a.m. Just getting light. Fog. Little wind. Warm.

Caer

6:30 a.m. Hear a few phrases which sound like Coer. Up in alpine scrub, flagelly below police station. NODWA.

23

A few minutes later, see single Coer. Feeding 15 ft up in

tree, region very broken up alpine scrub just above "upper sub-tropical" forest. Picking insects off leaves. Definitely alone. Flies away almost immediately. (This is not far from where Coer seen and heard a couple of months ago. And when this bird leaves, it flies straight toward the exact site where Coer was observed before. P.E. probably same individual.) While being watched today, this Coer uttered only "CN"s. Quite soft. But obviously this is the individual heard to utter songs a few minutes previously.

Coer

Ca. 6:40 a.m. Hear more Coer songs. Down hill. Coming from area to which Coer was seen to fly.

Coer

NOTE: I heard these Coer songs while watching the large mixed flock described in my notes on general mixed flocks. There was a Cy with this flock. It is interesting that the Coer did not join the flock, even though it probably was no more than 100-200 yds away, and must have been able to hear, if not see, the other birds.

Coer Cy

All my observations would suggest that Coer, as a species, always is much less gregarious than some populations of Cy.

Coer Cy

The Cy sang frequently while associated with flock. I think that there was little or no overlap between the Cy songs and those of the Coer.

✓ 24

7:45 Go up road a little. Then hear Coer singing. Phrase after phrase in very rapid succession. All phrases identical. Commence: Seeeeeeee Seeeeee-seeeee ta-ta seee-wm-eeyaa"

Coer

Songs usually uttered from posture commence:

Mixed Diglossini, Aug. 7, 1965, III. (60)

Cuer

Bird turns head from side to side during all phrases.

Bill never opened very widely

Eye conspicuously chestnut – framed in black "mask." Head looks small-ish. Rather rounded. Head feathers slightly ruffled. Breast and belly slightly fluffed.

Bill looks very un-Diglossa-like !!!

Tongue definitely raised during all or part of long phrase (certainly raised during the "twittery" bit)

Tail moves in and out with notes – probably most conspicuously during the "twittery" bit.

NODWA during all phrases by the Coer. The bird sang from several perches on adjoining bushes. All perches 4-5 ft up. Some exposed, some not exposed. Bird continues singing for at least 5 minutes. Then flies off and disappears.

This site is at least 300 yds from the nearest place where a Coer was seen earlier this morning. And much farther away from where earlier Coer did most of its singing. So I think that there probably are at least two singing individuals of the species in this general area.

Coer

It also seems probable that this last Coer (at least) is in breeding condition!

Coer

This bird quite ignored a single Rufous-cap Hummingbird feeding 10 ft away in an adjacent bush.

NOTE: So far, my observations in this region would su

Coer ggest that Coers are absolutely confined to the top alpine scrub-area. (It may be a general rule that Coers are usually, although not always, confined to high altitudes, in all regions.

Sun has gone 8:15 a.m. Fog seems to be approaching again

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

August 8, 1965
Munchique

Arrive top mountain 5:45 a.m. Weather much as yesterday. Fog. But it is colder and windier than yesterday

6:30 a.m. Can hear some Coer songs in distance. Down hill from Coer where heard Coer heard singing yesterday. S.E. near border "upper sub-tropical" forest. Lots of plevacs. NOOWA.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

COMMENT: The relations between Sitti and WCC, here, are probably identical in somewhat the same way as the relations between Cy and Coer. As far as I can tell, whenever Sitti and WCC occur in the same area, they feed on the same things in the same way in the same places!!! This is particularly remarkable in the case of Sitti and WCC because the two species tend to associate with one another!

Sitti WCC

NOTES:

I. This afternoon I passed a couple of places where I certainly saw Albis at comparatively low altitudes a couple of months ago (i.e. along the highway and between the highway and the Inca) without seeing or hearing anything of the species! The fact that I have not yet seen or heard Albis at either high or low altitudes th

Albis

is trip would suggest either that they have moved or that they have become even more shy and retiring than before.

II. From time to time today I have taken brief looks at the garden of the house of the Frica. Still some Scans about. Also some smaller hummingbirds of other genera. But still no trace of Diglossa or Colibri thalassina.

Scans

August 9, 1965
Munchique

Going to work where I thought I may have seen a carbon and s.l. or lafresnayei s.l. a couple of months ago. Arrive 5:40 a.m. Just getting light. Cloud coming up. Windy. Cool. Nothing!

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS — Finally on Albi just below 8850 ft. I.E. the Albis are still around now. The fact that they are even more skulking and quiet now than a couple of months ago would suggest that they may have been in breeding condition then !!! Probably they were inconspicuous a couple of months ago simply because the population here is sparse. I.E. there is no need for conspicuous disputes or proclamations of territorial ownership here.

Albi

August 10, 1965
Munchique

This morning going to work at a place, or in a region, call

ed "La Palma". A little mountain or foot hill on the southern flank of Munchique itself.

Arrive 5:15 a.m.! Pitch black! Finally starting to get light 5:45. Heavy cloud. Occasional drops of rain. Warm. Little or no wind.

This particular site is 8350 ft, 2540 m. It is situated on the western side, more or less. Difficult to tell exactly, because of clouds. Probably SW.

6:35 a.m. Light rain. See Yellowbellies and Blue & Oranges. Possibly associated. SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS. Then see single White-throated Hummingbird, feeding on lavender pink Passiflora flowers (usual montane shape) 15-20 ft up in scrub. Definitely putting bill to bases of long tubular corollas. I.E. definitely using Diglossa holes. Then a Black Diglossa suddenly appears in Passiflora vine, 2-3 ft from the White-throat. This looked like Aterr (altho I can't be absolutely sure, as I was very far away). Then both birds disappear.

White-throat

Gen

Black

A few minutes later, a single Violet-throat Hummingbird suddenly appears in same Passiflora vine. Feeds on flowers. Also puts bill to base long tubular corollas, i.e. also using Diglossa holes!!!! Then White-throat (or) appears. Attacks Violet-throat. Both birds fly off and disappear. White-throat apparently in pursuit of the Violet-throat.

Violet-throat

White-throat

Gen

During next 10 minutes, a Violet-throat (or) appears, twice in same Passiflora vine. Each time it is violently attacked by White-throat! And each time, the Violet-throat apparently succeeds in driving it away!!!

Competition among nectarvorous birds here must be very vite nse !!!

White throat
Violet throat

7:00 a.m. Violet-throat back in Pamflora. This time, White-throat attacks it. And apparently succeeds in driving it away!

It looks as if the aggressor always wins these encounters, no matter who it is!

7:28. No one has visited the Pamflora for some time now. And the Black Diglossa has not reappeared. This is very albi-like! (Incidentally, at no time this morning have I heard any unmistakable Diglossine vocalizations.)

Then go for a walk.

Nothing in Pamflora when I get back 8:17 a.m. Go off, and come back again 8:50 a.m. Still nothing. Then, a few minutes later, see a single hummingbird alone, visiting another Pamflora (same species) in tree 50 ft away. This bird apparently neither Violet-throat nor White-throat! But it also seems to be paying attention to the base of the long corollas!!!

Gem

White throat

9:00 a.m. White throat back first Pamflora plant. Alone. Stabs bill at bases of corollas of several flowers. Then flies off.

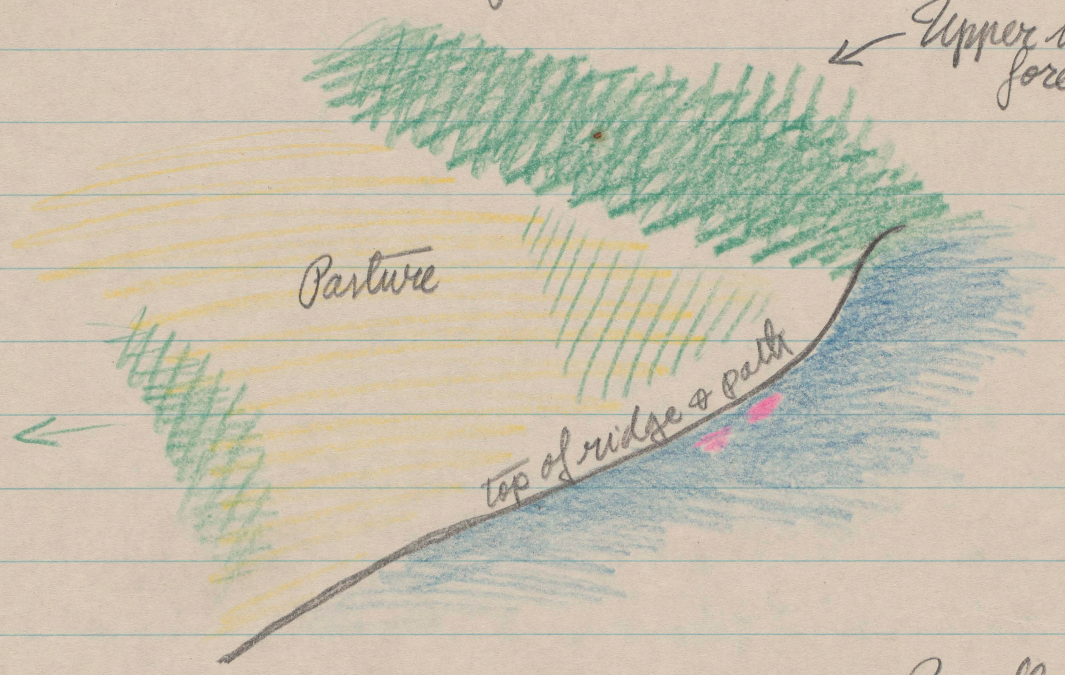
Fog coming close now.

White throat 9

Go a few yards down road. 9:12 a.m. See single White-throat feeding on another clump of Pamfloras. 3 ft up in scrub-edge pasture. Bird definitely silent and alone. Also definitely putting bill to region of sepals at base of corolla. (Finally manage to get hold of one of the flowers. There definitely are small Diglossa-type holes in the sepals. But not too small. Compatible with Ator — as well as Albi.)

Merced Diglossini, Aug. 10, 1965, III (65)

Mew complications ret ni !!! And how! In order to make them clear, I had better draw a diagrammatic map.



= Pamflora vines

= "Mature-looking" scrub.

= Obviously second growth.

The area here includes a more or less knife-edge ridge, with different types of vegetation on either side. On one side is "mature-looking" scrub. Very dense but not very high. This comes right up to the crest of the ridge. Right at its border, at the crest of the ridge, are the Pamflora flowers which the White-throated Hummingbird visited ca. 9:12 a.m. On the other side of the ridge are two large patches of "upper sub tropical type" forest. Lots of tall trees, 30-40 ft high. Between these 2 patches is pasture. Mostly grass. A few dead or dying tall trees scattered in middle of pasture. Also a strip of obviously young, rather sparse, very low, second-growth between the main grassy part of the pasture and one of the patches of "upper sub-tropical" forest.

White throat

Coer

The complications began ca. 9:20. I was still watching Pamfloras which were visited by White-throat a few minutes later. Suddenly see 2 Coers (definite) in adjacent scrub. Ranging 2-8 ft up. The two birds stick close together. No sign of hostility. Obviously mated. Very quiet. Only occasional soft "seet" notes. No trace of any kind of song (I am sure that Cyp would sing in similar circumstances!!!).

Coer Cy

Both Coers repeatedly come close to the Pamfloras (with 1 or 2 ft.). But they show absolutely no tendency to visit these flowers. I.E., like the Cyp, Coers probably do not eat nectar. Probably are not insectivorous either! SEE ALSO BELOW

When I first see Coers, I also hear Attapetes "seeeee" notes not far away. Attapetes apparently gradually moving along ridge. Coers gradually moving in same direction. But at least 20 ft behind the Attapetes. Then the Attapetes turn around and start to move in opposite direction. Now I see that they are 3 PL's. (Probably same 3 seen earlier this morning.) PL's j ——→ Coer. All 5 birds hop about in the same clumps of bushes for some minutes. No obvious hostility between species. In fact, no very obvious inter-specific reactions of any kind. Several times, PL's appear to join and/or follow Coers. And several times, Coers appear to join and/or follow PL's. But all these reactions appear to be eventually "coincidental". No overt sign that one species is strongly attracted to the other.

While this is going on, I can hear a very large mixed flock down hill, approximate area where "upper sub-tropical" forest verges on the very young second-growth and pasture. I do not have time to identify the birds in this flock. Certainly include a couple of Yellowbellies. Also I hear Yellow-faces singing in same area. Quite a lot of phrases

at irregular intervals NODWA. Then Yellowface(s) shut(s) up. Cy And then I hear definite Cy Song phrases! Long rapid Twitters, probably with "Init" Intro Notes (but not many or loud Intro Notes). Then I see the Singing bird. Definitely Cy. Singing 30 ft up in isolated trees in pasture. Phrase after phrase. NODWA Then Cy flies off, to join main body of large flock in edge "upper subtropical" forest.

Coer Cy The Coers on the ridge certainly could hear the Cy Singing. Probably also could see the Singing bird occasionally. But they did not seem to react in any way. Continue feeding as before.

NOTE: Of course – in my haste to get this all down – I forgot to mention that both Coers pulled insects off leaves throughout the whole period of observation. Quite clear. Not only did the Coers ignore the Panifloras, but they also ignored a variety of small yellow, white, and orange flowers in the general neighborhood.

Coer The two groups of birds maintained themselves for some minutes. Then 2 of the PL's with the Coers flew across the ridge and j ⟶ the large mixed flock edge "upper subtropical" forest.

Coer" The third PL remains behind with the Coers. But it gradually becomes separated from them. Coers eventually disappear. Apparently go downhill, further into "mature-looking" forest. PL apparently does not follow. I.E. the PL-Coer group probably was largely a "chance" association, not a "real" social group.

All birds gone ca. 9:50 a.m.

COMMENTS:

Coer The altitude at this precise spot, according to my altimeters now, is 8250 ft, 2500 m. I think that this is the lowest altitude at which I have ever encountered Coers (with the possible exception of Chacha

Coer Cy

White throat Coer

Coer

Indigo

pozas). But it should be noted that the "mature-looking scrub" here is very similar to what I have been calling "alpine scrub". Both might be considered "dwarf forest". Trees seldom or never more than 20 ft tall. Frequently only 10 ft. ("Mature-looking scrub" may be "dwarf" here because of frequent wind — see also yesterday's notes on general mixed flocks.) Is Coer primarily a bird of dwarf forest or thick scrub, while Cy is primarily a bird of tall forest?

The White-throated Hummingbird did not appear at all while the Coers were present. But presumably its territory partly overlaps that of the Coers.

All the time both groups of birds were under observation, there were occasional patches and tendrils of fog drifting by. This is just the upper limit of fog level now.

Some small green hummingbird feeding in same Pamflora as 10:35. But apparently getting insects off leaves. In any case, quite unmolested Hotting else appears to attack or chase it.

Leaving 10:55 a.m.

COMMENTS: At last, I feel that I am beginning to understand the behavioral (very clear today) and ecological differences between Coer and Cy. (Of course, Coers probably are not always purely non-nectarivorous in all regions. Viz the Coers in the Bruno Eucalypts above Bogotá a couple of months ago.)

The only thing I don't understand now is why Coers are rare (or absent?) in Central Ecuador.

I was rather surprised not to see indigotica today. It must be a species of relatively very low altitudes around here. (The exact equivalent of glauca on the eastern slope of the Andes.)

In general, today's observations would confirm the theory that the local Diglossa spp. are well segregated (although there is, perhaps, more "overlap" within the "Diglossine vocal complex" — including hummingbirds — than I expected.)

Certainly it is not coincidental that there were more flowers of many different species, in the area worked this morning than anywhere else, around here, where I have worked during this trip.

This afternoon, going to work where joint "Glauc" and the albi-lacan interactions were seen a couple of months ago.

Just as I start to leave, I see what is apparently a single Rufous-capped Hummingbird feeding on fuchsias in garden of house. Apparently not attached. Disappears almost immediately 2:15 p.m.

Arrive "glauc" area 2:30 p.m. See ♂ albi "escort" flute throats (see description in notes on general mixed flocks). This is exactly where both ♂ and ♀ albis seen a couple of months ago. So perhaps all or most of the local albis are resident the year round (quite unlike most of the local lacans).

August 11, 1965
Mun chique

Going to work in same place as yesterday morning.

Arrive 5:15 a.m. again. Beautiful, calm, clear moonlight night. Cloud and some wind come up at dawn.

Joint bird sounds 5:47 a.m. Normal alarm notes and long. Followed immediately by "DC". Also some flycatcher song.

Going to watch Pamplona I (where Black Diglossa seen yet

everday – and hummingbird disputes).

"DC" continuing full blast 5:55. Most other birds silent.

Faint hummingbird sounds heard 5:58

Feat Attapetes Whistle Songs heard 5:59. Overlapped completely by "DC", but NODWA.

Faint hummingbird visits Passiflora I 6:02. Not identified.

Quite a lot of Attapetes Whistle Songs. Presumably PL. Are they breeding here too.

Violet throat 6:05. Violet throat in Passiflora I ("PI"). Peculiar. Then feeds bases corollas. Silent. Quite alone. Flies off. Then small green hummingbird (possibly same SGH seen in "Canada") visits PI. Also feeds bases corollas. Flies off.

Feat unmistakable Chlorospingus semifuscus DC and R's heard 6:14 a.m. (I think earlier "DC" must be by another species!).

12 Here seem to be 1 or 2 Blue-Black(s) 20 ft up in tree tops around here. Uttering "CN"s. Apparently alone.

PI doesn't seem to be very attractive this morning! Then, 6:25,

Violet throat Violet throat back. Feeds base corolla one flower. Flies off. Then single

13 White throat White throat flies into bush left from PI. alone. Flies off. Then catch

14 glimpse single "Black" Diglossa 1 ft up in scrub near PI. Don't see

Albi any white patches, but bird looks very grayish. Must be ♂ Albi

Silent & alone. Disappears immediately.

Then see single Brown Squirrel in nearby scrub. Apparently alone. Silent.

Albi 16 Then, 6:35 a.m., see furious dispute between 2 ♂♂ Albis. One bird chasing the other madly thru low thick scrub. 1–3 ft up. No special postures or movements, but one or both bird(s) utter a number of

moderately short, hoarse, very nasal "Huaap" notes. Rather surprisingly, the white flank patches were not visible on either bird. I.E. they are not displayed in hostility. (But I am sure of my identification because both birds distinctly were grayish.)

While all this is going, a mixed flock seems to be building up only a few feet away. Certainly includes 1 Blue-Black, 1 PL, 1 Ruddy Flycatcher, others. All birds seen are 6-12 ft up in small trees. Ruddy utters R's. Can't tell who, if anyone, is leading.

Did the dispute between ♂ Albis occur because one ♂ Albi "escorted" a flock into the territory of the other ♂ Albi?

Was the Squirrel seen earlier joining this flock? I think so

Going down to visit Pamplonas near where Coers were seen yesterday ("PII") 6:50 a.m.

On way, see 2 or 3 PL's top edge "mature-looking scrub". 2 ft up. Alone. Certainly alone now. But moving up hill in direction of mixed flock seen earlier.

Nothing in Pamplona, and no Coers visible in neighborhood.

Hear Yellow-face song down hill. NODWA Again. NODWA.

Sun shining brightly now.

Then walk along ridge into patch of forest more or less transitional between "mature-looking scrub" and "upper subtropical". See single Chlorospingus canigularis alone. 15 ft up in tree inside forest. Utters "CN"s. Flies off.

NOTE: The whole area where I have been working is almost due West of Municique. The slope with "mature-looking scrub" faces due West. The slope on which PI is located is WNW. (Dejmute.)

Back to PII 7:20. A single long tailed green hummingbird

(possibly same species seen on Guadelupe above Bogota) visits flowers but ugly. Also pierces bell to bases corollas!

Well! Well! Well! 7:25 a.m. Single Cy (definite) appears. Morning up bell storm "mature-looking scrub" (possibly coming from what looks like "upper sub-tropical forest" way down below. Passes thru some of the bushes visited by Coers yesterday. Silent. 3-6 ft up. Apparently does not feed. Then passes thru PII. Shows no interest in the flowers. Then passes over ridge and down into tall forest on the other side (where I can hear Basileuterus and/or Hemispingus type R's and Flowerpiercers). Apparently on its way to join mixed flock!

So Coer and Cy territories or ranges are at least partly overlapping here. Not stratified.

NOTE: Altho Cy probably is essentially a bird of tall forests this does not mean that it does not occur in "dwarf" forest occasionally (esp also the top of Munchique itself).

Everything very quiet now 7:35 a.m.

Back to PI 7:49. Single Albi hops out of low scrub. (Identification definite - see both gray colors and white patches). This bird is tail-less! Did it lose its tail during the fight earlier this morning? Hops rapidly up into PI. Feeds on at least 8 different flowers. Definitely cutting into sepals! (And the cutting seems to be quite a struggle too!). Then flies away.

So it definitely is the Albis that are being "parasitized" by hummingbirds!

Incidentally, this bird was absolutely silent throughout. Not even a trace of a "CN". (I was only a couple of feet away from it.) Was it silent "in order" to avoid attracting the attention of the local

hummingbirds ??? (To the best of my recollection, the Albs seen on Pipeclique itself and near the finca have uttered "CW"s most of the time.)

It is interesting that I have yet to see a ♀ Albi here. Are they separated from the ♂'s during the non-breeding season? More important, do they have different feeding habits ???

Albi

No hummingbirds come to PI after the ♂ Albi.

Going along path into forest 8:12 a.m.

Hear some more Yellow-face songs down hill. NODWA.

27 See several small groups of furnariids, apparently not mixed.

28 9:03. See single Pipreola riefferii (left up in bushes region "upper sub-tropical" forest. This is not far from where "Barred" Pipreola seen yesterday. There certainly are a variety of furnariids in the general neighborhood at the time, but the riefferii doesn't seem to be paying any attention to their sounds. I think that the riefferii must be classified as "alone".

Violet throat

9:10. See single Violet-throat. Silent & alone. Upper edge "wet

White throat

tree-looking scrub" ("MLS").

29 Back to PI 9:20. See single White-throat feeding isolated Pan

flora flowers, 20 ft away, in usual way. Not molested. Flies off. Then

see single Violet-throat feeding on flowers of PI itself, in usual way.

Not molested. Flies off. Both birds quite silent throughout

Albs Violet White

♂ Albs(s), White-throat(s), and Violet-throat(s), may all show a tendency to refrain from visiting this area when other species are present! But they all are here so rarely that the tendency is not clear.

Nothing in PII. No sign of Covers around.

Cover 30

Aha! 9:34 a.m. See Cover, 3 ft up in one of the bushes visited

yesterday. Utters occasional soft "feet" notes. Then disappears.

It looks as if these birds may follow a regular routine, regular pathways around their territory.

Leaving 9:45 a.m.

NOTE: Horacio thinks that the small mountain here is called "San Gerardo". And he is sure that the name of the finca here is "La Palma".

Coer COMMENT: I am surprised that I have not heard one or both of the Coers near PII singing. Is that because the mates keep together.

Coer In general, it is my impression that almost all Coers sing relatively rare. The species certainly appears to be "less" vocal than carbonaria s.l., lafresnayei, or cyanea. Almost as quiet as albilatera! Why??

Working along highway, in "permanent fog zone", this afternoon. SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS. Ca. 3:30 p.m., see pair of Setties with mixed flock. At 8140 ft.! Surely this is the lowest altitude at which I have ever seen Setties??? Do they come down to unusually low altitudes in very humid, foggy areas???

Setti WCC It is interesting that there were no WCC's with this flock. Although I have seen several WCC's with other flocks earlier this afternoon. Are WCC's and Setties less apt to associate with one another at relatively low altitudes than at relatively high altitudes???

Considerably later, see another mixed flock which includes a Cy. Cy This Cy quite low in scrub. Ranging 1-10 ft up. Usually in lower half of this range. It is my impression that the lower altitude Cys here may come down low in vegetation much more frequently than the higher altitude Cys. When they do come down low, they come into what looks like Cy albi perfectly typical albi habitat. Unfortunately, I have never seen a Cy

come down low in an area which I knew was part of an Albi territory. Possibly, segregation between Albi and Cy breaks down at relatively low altitudes. Certainly, if it is maintained, it is not "perfect" strata such as on at such altitudes.

August 12, 1965
Munchique

Going to work on top of Munchique still this morning. Arrive 5:38 a.m. Just getting light. Partly cloudy. Very windy. And unbelievably cold!!!

Coer 6:17 a.m. Hear a couple of Coer long phrases down hill from site where bird seen singing a few days ago. NODWA

Then I go down into VSF Zone. And hear more Coer longs ca. Coer 6:30 a.m. This singing bird probably is in area of tall forest! NODWA

Then go back up to "alpine scrub" ("As") Zone. And down side path there As. 6:59 a.m. Hear Coer singing phrase after phrase. This certainly is not the same bird heard singing earlier today (although it probably is one of the ones heard a couple of days ago). Long phrases exactly like those heard a couple of days ago. i.e. 3 "feeeee" notes, followed by brief flutter, ending in "flowrrk" (or "flur"). Bird apparently singing 15 ft or so up in small trees, but I can't see it.

NODWA when Coer longs finish. Then I hear Yellowface insert one long phrase between Coer phrases. No overlap. Coer resumes singing. Coer Yellowface utters one more phrase. Complete overlap. Yellowface shuts up. Coer continues singing. NODWA. Coer shuts up, 7:09 a.m. Then starts ✓ 25 again a few minutes later. NODWA. Then catch brief glimpse of bird.

It is 20 ft up in tree. Then it flies away.

Cocr — There may be three Cocr individuals who sing in this region from time to time.

26 — 7:16. Yellowface sings one more phrase. NODWA. See bird. 15 ft up in distant tree. Apparently alone.

Albi 27 — 7:37. Right up by Police Station (a side of the station clearing I have never visited before). See what appears to be Albi flitting thru AS. 2½ ft up. Silent. Definitely alone. Flies off immediately.

A few minutes later, see single Rufous-capped Hummingbird feeding reddish-pink tubular flowers same area. Silent and alone. Rufous-cap probably is another competitor of Albi.

Cy, Setti, WC, Albi — 8:30 a.m. et seq. See mixed flock, with Cy, Setti(s), and WC c's. (This is described in my mixed flock notes). A single Albi twice appears to escort flock. One low in scrub, once fairly high in tree. The Cy and Setti(s) with flocks also ranged high to low. Thus, in this area, now, ranges of Cy and Setti at least partly overlap the range or elevation of albi. Not perfectly stratified. This area is 9240 ft according to my altimeter now. Is segregation, between Cy and Albi, by stratification characteristic of the breeding season alone? ??

Cy — 9:37 a.m. See single Cy. Apparently alone. 2 ft up in scrub-bc low tree with white berries at uppermost limit VSF. Silent.

Stopping observation 10:06 a.m.

August 13, 1965
Region of Umbe

Reach the highest point on the highway (way part the town of Ur

ible) 5:42 a.m. 8400 ft. 255° m. This area is facing more or less due West. Clear. Fairly warm. Everything quiet

5:53. Hear Diglossine-type Twitters up hill. NODWA.

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS.

8:30 a.m. Hear what might be Albi Trills down hill in distance Can't see bird. Then I do see bird. It is a Ruddy Flycatcher. Up up isolated tree in middle of rock slide. Definitely alone

9:55. See single Cy. Definitely alone. Uttering lots of long phrases in rapid succession. All phrases perfectly typical "Northern Cy" type. Rapid Twitters preceded by 2-4 "Tsit" Intro Notes. Bird sitting in perfectly unisolated positions, on a variety of perches, 30-40 ft up. I think that solitary Cys always choose high song perches. This bird is being answered by another Cy several hundred yards away. Latter apparently also high in tree. Certainly some of the phrases of the second Cy are quite like those of the first. But possibly others have "Zeee", "Za-zee" and or "Seeet" Intro Notes. Are Intro Notes of this type related to "PN"s? Phrases of the 2 Cys frequently overlap broadly.

Cy

Leaving 10:07 a.m.

Albi Cy

COMMENTS: The birds here this morning seem to have behaved exactly like the birds on and near Minchique. The Albis here seem to be very skulking. The Cys here are allopregarious, and also show a surprising tendency to come very low in scrub.

Cer

I was pleased, in a way, not to see Cobs this morning. There is nothing around this area which could be called dwarf forest.

Incidentally, looking at the surrounding mountains, I could see nothing that looked like suitable habitat for lafresnayei s.l. Can de Schauensee's reference to Gloria's in the mountains west of

Popayán be correct? Could the species have become extinct on Mu nduique itself (or also the Pico de Erpejo)???

Diglossini in general certainly seem to be rare in the area visited this morning. (This is more or less true of all the southern part of the Western Cordillera.) But, rather to my surprise, humming birds also appeared to be relatively rare. This may have been du e to lack of food. I saw very few suitable flowers this morning. Perhaps flowers and hummingbirds both are commoner at other times of the year???

Fem

It is interesting that I have yet to see Violet-back Hummi ng birds in the southern part of the Western Cordillera. This specie s does seem to have much the same requirements as carbonaria s.l.

Carbonaria V B

Mixed Diglossini — October 21, 1962
For Medellín — Boqueron de Palmitas
Central Andes Colombia

This morning I spent a lot of time looking for Diglossini between 7500 - 7800 ft. Quite a lot of scrub, and lots of small-ish trees. Apparently quite humid. But both tubular red or pink flowers and Diglossini were very rare.

I finally found 2 damp ravines with very thick vegetation and a few clusters of tubular red flowers. In one of these ravines, I found a single diglossine — a Cy — the only Diglossine seen all morning!

These birds seem to be quite remarkably dependent on such flowers! It was particularly surprising that I saw no Conurostrum this morning!!!

(Cy) The single Cy was associated with a mixed flock (see today's notes on mixed flocks). Behaving much like the Cys of Venezuela in similar circumstances. Largely or completely silent. Certainly no song. And apparently associated with flock only while latter was in its (the Cy's) territory.

While associated with the flock, the Cy remained fairly low in vegetation. Feeding on insects, and (at least once) sucked (Cy) tubular yellow flowers.

Once the Cy definitely followed other bird(s). Directly (Cy) after a pair of Yellow-faced Myiotheras (no. XX), which were following other birds.

Mixed Deglonini, I. November 1, 1967
Santa Elena
Central Andes

Arrive one nte 5:10 a.m. Still dark 8000 ft. A variety of different types of vegetation around.

albi? Hear a few "albi" type songs 5:40 a.m.

Then absolutely nothing! Area may be too wet for carbonaria sp. Leaving 6:30 a.m.

9:20. Have spent hours walking around various areas 8000-8400 ft looking for Brunneus, No luck. Watching mixed flocks in areas which looked suitable for some subspecies carbonaria (even had pink tubular flowers around). Brunneus must, I think, have very special requirements, or be unable to compete with other species

SEE TODAY'S NOTES ON MIXED FLOCKS

albi 9:30 a.m. New area. See single ♂ albi feeding on tubular red flowers in tree on edge of grove.

Ca 9:45. Have just seen another Cy with a mixed flock here.

Cy A single Cy seems to be regular member of almost all mixed flocks here. This area is not too far from where the albi was seen earlier, but there was no albi with flock.

Mixed Diglossini, I May 8, 1965
Region of Puracé

Going up Puracé Road to Moscopán, Neiva, Bogotá, etc. Arrive spot 5:20 a.m. 3180 m 10,275 ft. Still too dark to see

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS.

COMMENTS:

I. This is (yet) another area where Cys seem to be conspicuous in mixed flocks.

II. I was very interested to see two of the local hummingbirds, the Cinnamon species and a green one (VII and VIII — probably different sexes of the same species) feeding (very frequently) on the cup-shaped dark red flowers which were favored by the Cyp of the eastern cordillera. It will be even more interesting to see if these hummingbirds ever dispute with Cyp. In any case, it seems obvious that these hummingbirds are taking nectar which would otherwise be available to Cyp!

III I certainly heard Cyp singing this morning. And I think I heard both Atlis and Lafs singing. But there were no overlaps between songs different species. And, as far as I could tell, different species never sang from exactly the same area(s).

May 9, 1965
Region of Puracé

Arrive same place where most work done yesterday 5:30 a.m. Still

Partly cloudy. Clear. Cold

VIII Laf 5:58. See Green Hummingbird VIII feeding on same species red and white flowers on which Laf fed yesterday. About 30-40 ft away from where Laf was seen

Laf It is interesting that there has been no Laf song this morning — yet. 5:55 a.m. This would suggest that population is not dense

Then hear what is almost certainly Laf song 5:58. Brief phrase.

5:59. Hear what is undoubtedly Cy song Coming from area 30-40 ft from where Laf was seen yesterday (and also heard today). NOD. The area Cy VIII from which Cy songs are coming also is only 20 ft from where hummer VIII was seen feeding earlier. Cy phrases with "Jit" Intro Notes.

White-bearded Flycatchers moving over toward Cy! 6:02.

Black Cy 108 Now an Black Deglovini, bulky, in bush only 20 ft or so from where Cy is singing. Disappears immediately. Cy still singing. One or two more phrases. Then disappears. Could it have retreated before approach by Laf ???? (Apparently there was no overt attack.

Everything quiet now 6:07 a.m

Now hear Cy singing slightly up hill. Alone. NOD. In tree, isolated Cy 109 in pasture, 15 ft up. Then flies off to another tree 50 ft away. Sings some more All phrases "Jit" Intro Notes. Like most Cy, this individual seems to have relatively large territory. At least 300 yds across.

Laf Cy shuts up. Laf (up hill) sings. No overlap. Then hear several Laf Laf's singing. Overlapping one another. Also overlapping some Poecilotriorchis vs "Songs". Then Laf (s) shut up. Poecilotriorchis continues Then more Laf. Overlapping Manager.

Sun reaching this area 6:20 a.m.

Laf? Now Laf-like phrases in distance are short. Can't tell if they are by Laf or Whitethroat. Probably the latter.

Aha! 6:25. Can hear what is obviously real Laf singing. After Whitethroat shuts up! This Laf uttering long indeterminate phrases. Then shuts up

Incidentally, I now think that it was a Whitethroat which overlapped the Poecilotriccus earlier

Cy 6:31. Hear Cy singing in bush, 15 ft up. Phrases quite like those heard earlier this morning, but twitter parts shorter, including fewer notes. Whole long phrases overlap completely with twittering songs uttered by wren low down in same bush. Unfortunately, I can't see the Cy while it is actually singing. But see single Cinnamon Hummingbird, in flight, make repeated short swoops at spot where Cy songs are coming from. Cy continues to sing throughout the swoops. Then the Cinnamon flies away. Cy stops singing. Hops up to my right. Presently adult Cy sees me. Very alarmed. Lots of hopping about with many WE's & TE's & "Jit" Notes.

Finally flies away to more distant bush. Utters a few more long plover-like, as before. 6:43. NOD. Shuts up.

Clouds obscuring sun now.

More Whitethroat songs. All Diglossini silent at the time. Then Whitethroat shuts up. Laf begins to sing down hill.

Cinn 111 Cy 6:57. Down by road. Cinnamon & Cy in same bush. Pass only a few inches or a foot apart. Cinnamon retreats a few inches. Cy flies away.

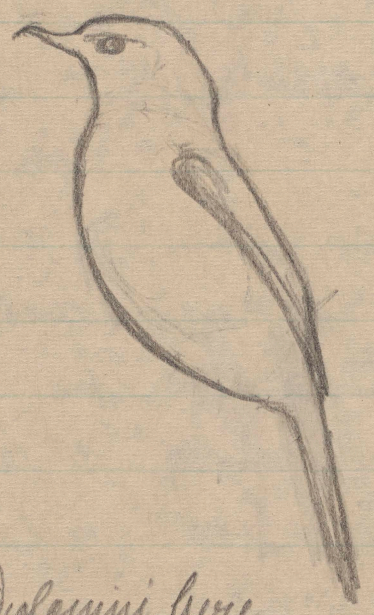
Laf Laf singing again. No other Diglossini audible.

Cy Flights up hill. Cy singing. No other Diglossini audible.

Laf 112 See single Laf in isolated bush. Alone. Silent. This probably is the first Laf seen yesterday down by road. But now it is on the other side of clump

Laf of scrub where Cy sang earlier today. I.E. low tones of Cy and Laf here probably overlap to at least some extent.

7:20 a.m. Whitetart singing in distance. flicts up. Then Laf near me begins to sing. No overlap. Perched exposed left up. In posture common Head flat on top. Head looks relatively small. Whole bird looks sleek. No Belly fluffing. Bill pointed diagonally slightly upward. Opened very little during notes. Closed between notes



The Diglossini here seem to be very careful not to overlap one another's songs. Nor do they overlap Whitetart. Quite Quito-like in this respect. Whitetarts seem to be equally careful not to overlap Diglossini.

Laf flicts up. A few minutes later hear Cy singing some distance away. No other diglossini or Whitetarts audible.

Cy 114 Well! Well! Well! No sooner said than done! See the Cy singing in small tree 15 ft up. Definitely alone. All long phrases with "Fut" Intro Notes. (Mere Intro Notes do seem to be characteristic of isolated birds.)

Laf Cy Conn Bird moving about from perch to perch within tree, singing at each perch. Then, 7:37 a.m., Laf begins to sing down hill. Probably 30-40 ft from Cy. Nevertheless, the Cy continues to sing. Repeated (perhaps 20) complete overlaps songs of the two birds!!! Then a Cinnamon appears close to the Cy. Swoops at it at least 3 or 4 times. Obviously hostile. But each swoop stops just short of actual attack. And Cy continues to sing. Altho it eventually does move away a few inches. Cinnamon flies off. (It appears that Cinn-

Comm Cy Laf Cy 116 a mons are particularly liable to show overt hostility toward Cys when the latter are singing. Because they are more conspicuous then ?). Both Cy and Laf continue singing with complete overlaps. Then a pair of Whitetarts, about 30-40 ft from Cy, and twice the distance from Laf, also begin to sing. Complete, repeated overlaps all 3 species. Then, eventually, both Cy and Laf shut up. Whitetarts utter a few more phrases. Then shut up too.

All this quite reminiscent Eastern Cordillera!

Incidentally, the Whitetarts were quite alone at the time.

Hear Dulumia in distance 7:50.

One aspect of Cy behavior here is most interesting and unexpected. I have repeatedly seen individuals in the bushes with dark red cup-shaped flowers. These are the flowers which the Cys in the Eastern Cordillera liked so much. But I have yet to see a Cy here feed on one! These flowers seem to have been appropriated by the hummingbirds here (especially VII and VIII).

Cy VII VIII

During next few minutes, hear quite a lot more Cy and Laf phrases not overlapping. But then, 7:58, there is another complete overlap. Cy begins to sing after Laf has started.

Cy Laf 118

Oh God! 8:01 a.m. See one Black Diglossa repeatedly attacks, chases, and supplants another. Some distance away, downhill. In region relatively tall & dense scrub. The attacker is certainly a Laf. But the attacked does not have visible humeral patches, and appears to be relatively small. Presumably Cten! All very Eastern Cordillera-like!

Laf Cten?

Go on up hill. Lafs singing various places 8:30 a.m. Then shut up.

Cy

Going down hill 8:50. Hear some more Cy songs as before. No other Diglossini audible. Cy shuts up. Whitetart sings. Shuts up.

Cy

Cy 119 See single Cy alone. Apparently same seen yesterday. Feeding clusters on

all white flowers in small tree 15 ft up

Cy 120 Then see single adult Cy alone. Top tree 25 ft up.

Ater ? 121 Then see single black Diglossa alone Ater ? In thick low scrub.

Good god! 9:02 10,225 ft. 3090 m. Region family dense scrub.

CC 122 See single CC. (Buffy breast). Feeding clusters whitish flowers top tree 25 ft up. Then passes thru scrub where Cy - presumed Ater dispute occurred earlier this morning. Also passes very close to where Cy seen earlier. This bird definitely alone.

A few minutes later, hear some long phrases which might conceivably be uttered by this bird Twitters "Tuh-uh-sreeeee-uh-yeh". Some times repeated once to form doublet. Unfortunately bird not visible But it certainly sang, several times, from a tree in which an adult Cy was seen earlier this morning. No other diglossia or Whitetaret while the CC was visible There was a single Whitetaret, alone, about 30 ft away while the long phrases by the unseen bird were being uttered But it didn't seem to pay any attention to them.

Ater 123 9:20. About 30 yds away. See single Ater (definite). Low thick scrub. Feeding on cup-shaped dark red flowers. Same spp which the hummingbirds favor here, and the Cys favored in Eastern Cordillera Feeding usual Diglossa style by cutting into bases corollas. Quite silent and alone Then a Cinnamon appears. Perches about 2 ft from Ater. Ater flies a couple of feet further away (down into bush). Cinnamon flies away. Ater comes back to feed as before. Cinnamon flies in again. This time does semi-swoop. Ater flies away a few feet Cinnamon flies away Ater comes back, again, to feed as before. Eventually moves off and disappears from view.

Then is not far from where dispute seen earlier this morning. So

Laf ater now I am quite certain that dispute was Laf – ater.

cc ater It is interesting that CC should appear in same general area as ater. Altho this area certainly is not denser, and the scrub is not thinner or lower, than elsewhere around here. Don't tell me CC is a "commensal" of ater ??? (This might help to explain how it has evolved different-looking vocal habits from other montane Conirostrum spp.)

There is some rain now, 9:35, but very light. Hardly a sprinkle.

Laf Cy cc 124 Hear Laf singing in distance. Walk over, and discover that bird is singing from same tree where Cy seen earlier, and from which possible CC song came from!

Laf Cy This Laf and the Cy seen here earlier almost certainly different individuals from the ones whose territories were found to overlap earlier. So Laf-Cy territorial overlaps may be regular in this region.

Cy 125 Another area, 9:53. See single Cy alone. In tall bushy tree. 10 ft above ground. Select. NOD.

Cy Laf Laf's still singing down Cy road 10:00 a.m.

Leaving 10:17 a.m.

COMMENTS:

Gen I. I must say that the results of my observations here, so far, have been rather surprising. The species of Diglossini here seem to be the same as near Quito; but their reactions to one another seem to be more like those of the (partly different) forms in the Eastern Cordillera.

Gen Cy Laf ater II A thought has just occurred to me. Possibly the absence of Carbonaria s.l. songs in the neighborhood may be a factor contributing to the frequency of overlaps between Cy and Laf songs both here and in the Eastern Cordillera ????

III. In view of the many hostile reactions between Diglossini and hummingbirds observed in all parts of the Colombian Andes, it is especially remarkable that I did not observe more overt hostility between Diglossini and Scans in the Sierra de Mérida.

Jem
Scan

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

May 10, 1965
Region of Pereira

Arrive same place as yesterday 5:45 a.m. Getting light. Cloudy, but no rain — yet. Andean Sparrows in full swing.

Arrive general area where Aten & CC men yesterday 5:50 a.m. Faint (beep) notes Lsf song (in distance) 5:53. No other diglossine or Whitetart audible.

Lsf

albi?

5:56 a.m. Hear what might be albi R up hill!

Faint Whitetart song 5:58. No diglossine audible. Apparently coming from tree where Cy seen yesterday and where CC may have sung. The Whitetart utters several phrases. Overlaps completely with Andean Sparrow-songs, but nothing else.

Now Whitetart sings up hill. See the bird. In small tree 4ft up. Definitely alone. Whitetart shuts up. Hear faint Cy song in distance 6:03. Cy shuts up. Then hear some very faint formless little twitters nearby. Probably diglossini; but God alone knows which yours. Then these stop. More Whitetart songs.

126

Cy

Things in general quieter than yesterday. Everything quite dead, in fact, 6:13.

6:15 a.m. Hear some more formless, faint, high pitched Twitters. Single phrases. No intro notes. Then silence. Then some more Whitetarit songs. Then hear some Twitters "Dub-dub-dub dub-dub-dub"

Cy 127 Apparently uttered by Blue Diglossa, presumably Cy. At least, I see Blue Diglossa same area just after Twitters stop. Are these the very lowest utterances Cy has of. When this bird first began to sing, nothing else was audible. Then this bird stopped. Whitetarit began. Then this bird and Whitetarit alternated phrases. Then this bird shut up again. Whitetarit continued for a while.

Now a different bird in same bush as Blue Diglossa utters (more) long phrases. Quite similar to "Dub-dub-dub...." type transcribed above, but a little longer and more formless. And now I see that they are being uttered by a brownish bird. But light is atrocious and I can't tell if bird is CC or worm. (Cy) Then this bird shuts up, seems to disappear 6:25. And then I see Cy (back?) in bush. Feeding on dark red cup-shaped flowers (definite). Silent.

This area is approximately 100 yds from where Ater and CC seen yesterday.

Again, everything dead quiet, 6:37. Must be the weather. It is now very cloudy, relatively dark, no wind. Sort of suspenseful!

Now some Whitetarits singing in distance.

Blue 127 6:45. 2 Blue Diglossas fly by. Silent and alone. Land in some-
Laf 130 what only a few feet from where Ater seen late yesterday morning. Immediately nearby Laf begins to sing. Blue Diglossas fly away. Laf shuts up.
Cy Ater Laf CC This would certainly suggest that there is some Laf-Cy hostility here!!!
131 Single Cy back in bushes. Apparently feeding insects. Left up. In general area where Laf, Ater, and CC have been seen. But no other Diglossa

Cinn Cy VIII appears or sings this time. Interestingly enough, there was a Cinnamon near the Cy this time. Also a Green Hummingbird VIII. Neither appeared to pay the slightest attention to the Cy. Because the Cy did not sing ??? Cy flies off almost immediately.

161 Single Swallow flies into tree where there is a Whitetarot. Swallow sees about 10 ft up. Whitetarot feeds 20 ft up. Fly catching Swallow silent. XXV Laf N 162 Whitetarot sings immediately, single Laf appears, hopping up to top on all bush 30 ft away! Just sits there silently. Then Swallow and Whitetarot disappear. Laf flies back down into bush and disappears too 7:01 a.m.

Whitetarot sings in distance. No diglossine audible before or after. It looks as if these Whitetarots do not stimulate song by Diglossini, at least not by any to any appreciable extent.

Large green hummingbird with blue wings feeds in tree where I have seen Cy, near where Laf, Ater, and C have been seen. No diglossine appears to resent it. (This hummingbird is species I have seen elsewhere in Andes. Eastern Cordillera? I have never seen it present with Diglossini anywhere.)

Ater Laf 132 7:13. See single Ater feeding dark red cup-shaped flowers only 2 ft from where Laf seen only a few minutes earlier. Silent. Alone. Disappears almost immediately.

Cy Laf Ater Obviously, Cy territories here overlap both Laf and Ater territories.

Cy Laf Ater 133 7:16. More proof. Single adult Cy, uttering "Leet" notes flies over scrub in which both Ater and Laf seen this morning. Lands in tree. Then flies off again.

Cy Laf Ater 134 7:25. See single Laf feeding dark red cup shaped flowers. In scrub 4 ft up. Not far from where both Ater and Cy seen before.

Cy Laf Ater 135 7:31 a.m. Single Cy, alone, flies out of exact same bush where Ater was yesterday, and into bush where Laf was today.

7:40. See wren in bush. Alone. I think this is the bird which has been giving the faint, thin, high pitched twitters without Intro-Notes (or R) that I have been hearing from time to time. Very ventriloqual.

Laf 136 Single Laf suddenly flies in to join wren in bush. Immediately flies away again. Did the Laf (also) think the wren's twitters might be Dog Lovers in origin?

Going up hill 7:47. Hear Cy singing in distance. Shuts up. Then Laf sings. No overlap. Then Laf shut up.

Cy Laf Laf 137 7:58. See another single Laf. Silent. Alone. Feeding dark red cup shaped flowers small bush sparse second growth scrub.

8:01. Good heavens! See another bush same species plant about 100 ft away. Much bigger. Region sparse scattered second growth scrub.

Ater Cy 138 On this tree, feeding on flowers are 1 adult Ater, 1 juv. Cy (complete mask but dull blue). No more than 6" apart (if that). Absolutely no sign of hostility between the 2 birds. And, in same bush, only 2 ft away, is a 140 juv. Ater! (All identifications definite.) Also feeding flowers. Then the adult Ater starts to chase and supplant juv. Ater. Again & again & again. The 2 Aters repeatedly pass very close to the Cy. Without paying any attention to it. Or it to them. Eventually the 2 Aters fly off into adjacent bushes, still chasing and supplanting. All chases and supplants quite silent! Cy does not follow them. Eventually flies off in different direction.

Ater Cy 141 When I look back a few minutes later, I see an adult Cy and the same 2 Aters feeding on flowers same bush! All within a few inches of

one another. No obvious hostility between species. Cy sings typical song phrases. But Cooing away from Aters. Then Cy flies off. Aters do not follow. Then adult Ater begins to chase and supplant juv., as before. Eventually they move off and disappear from my sight.

Ater — Whether of the Aters seen here could be the same as the one seen down below. So there are at least 3 individuals of the species in this region.

Cy Ater — Obviously Cy and Ater territories overlap here too. And it is really most remarkable that there is no hostility between the 2 species !!!! Every region in the Andes has its own peculiar Diglossic complex!

Cy Ater — Look back again a minute later. Again, there are the same 2 Aters and single adult Cy in bush. Adult Ater chasing juv. as before. Adult Cy feeding peacefully, paying no attention to Aters. Then all fly off. Cy probably in different direction from Aters.

Cy Ater Laf — Incidentally, neither the Cy nor the Aters payed any attention when Laf near me sang briefly. And the Laf here has shown no indication of a desire to either join or attack the Aters and Cys only 100 ft away.

CC 142 Laf Ater — 8:20. Good god! See single CC (definite) perched 2 ft up low open scrub only 6 ft from where Laf was earlier !!! NOD. CC feeds by picking insects off blades leaves. Utters a couple of "Tit" notes. Flies off.

VIII Laf — 8:30. Adult Ater still chasing and supplanting juv. from bushes. One supplant accompanied by R (no Zaza). Cys not around.

Green VIII hummingbird feeding same bush as Laf earlier.

Everything gone now 8:35 a.m. Going further up hill.

Incidentally, the weather hasn't changed at all today.

C? — 8:40. Region scattered second growth scrub. Some small brownish bird uttering single "Zee wee zee dee dee" song phrases. CC? Or wren?

NOD. Mixed bird flies off without my getting a good view of it.

VIII 8:53 See single Green VIII Hummingbird visiting clumps tubular red flowers. (Small flowers – not Paniflora) Repeatedly puts bill to base corolla! When I check the flowers, there were no holes in the corollas. But was this bird looking for Diglona holes??? ✓

143 Cy 9:15. Single Cy singing exposed 30 ft up isolated tree. Then flies down into low scrub. Sings there. All songs long rapid formless twitters some apparently without intro notes. Some probably with one "Jut". But this bird is definitely alone. Could its songs be reactions to the mixed flocks only several hundred yards away??? Yes!

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS.

Titti Mixed flock with pair of Titti pass by. Once, when one Titti responded the other, in low-brush, one of the birds uttered "greeting" twitter. I heard it quite well. Could be transcribed as "Duh-duh duh-duh-dee duh-duh

Cyn It certainly looks as if all Conirostrum spp. may have similar voices and vocal repertoires!

Laf Hear more Laf song down hill 10:02. No other diglossine audible at same time. Then Laf shuts up. Whitetail sings.

Laf Cy 145 XXVI N 10:12. Good God. Reach area where Cy and Alters were feeding together earlier. Nothing there now. But then, 100 ft away, where single Laf were earlier, are single Laf and single Cy feeding in same small bush with dark red cup-shaped flowers!!! (Incidentally, this plant may be a melastome. Has melastome-like leaves.) Only a foot or so apart. No obvious attack or escape movements by either bird. But the Laf is a

Ay Laf

uttering lots of loud hard "Jit" notes. Obviously SHN's. Laf flies away. Ay f ⟶ Laf !!! Both disappear temporarily. Then Laf reappears in an other bush same species. Feeds. Ay j ⟶ Laf ! Both hop about. Laf supplants Ay (can't tell if this supplant "intentional" or not). Ay retrea ts. Then flies off. Laf continues feeding. Then a Cinnamon appears. Makes a couple of unhibited swoops at Laf. Laf moves off gradually and disappears

Cinn Laf 10:23. Laf back alone, feeding in fruit bush. Silent. Suddenly a Cinn amon appears, apparently buzzing in from some distance away, swoops on ce at Laf, flies off. Swoop does not actually come within 3" of the Laf. Laf doesn't seem to react to it at all. Continues to feed. Then moves on in nor mal manner

Laf

Hear more Laf songs down hill 10:27 a.m.

Now the rain has stopped, wind is coming up, and cloud cover has lightened.

Leaving 10:45 a.m.

COMMENTS:

My preliminary assessment of the Diglonine situation here wo uld be as follows:

Laf Cy Ater Cc Jitt Cinn VIII

I Laf are common here, although not as numerous or as crow ded together as in some areas other parts of the Andes. Similarly, Cys are co mmon (for the species at least), but the population is not as dense as in a few other areas other parts of the Andes. Ateres are relatively rare, Cc's are relatively very rare. Jittis are rare in their usual manner.

Cinnamons are very, very common. Undoubtedly the dominant nectarivorous type here. Green VIII Hummingbirds are moderately common (much less so than Cinnamons, but possibly more so than Laf

s).

Yellow-faced Whitetarts may be approximately as common as Laps or Cys. (It is my impression that the population density of these species — and the representative species in other parts of the Andes — does not vary greatly from place to place.)

II. The relations between Songs different species are much the same as in the Eastern Cordillera. Of the Diglossini, only Laps and Cys have definitely been heard to sing. Early in the morning, their songs do not usually overlap. Later in the morning, they may do so. As far as song is concerned, the Yellow-faced Whitetart seems to be an integral member of the Diglossine complex here. Its songs do not usually overlap with those of Laps or Cys early in the morning, but may overlap with either one or both later. As far as I can tell, the Yellow-faced Whitetart is the only "outside" member of the Diglossine song complex here.

Jgm

III. Cy territories certainly overlap those of Laps, Aters, and CC's. The Cys here probably are more frequently arboreal than any of the other local Diglossini, except Sittids (see below); but they certainly come down into scrub quite frequently. They are not "stratified" above the scrub-inhabiting forms like the Cys at Huanchaque. CC territories certainly overlap those of Cys, Laps, and Aters. Laf territories certainly overlap those of Cys and CC's. Ater territories also overlap those of Cys and CC's. I am not certain of the relationships between Laf and Ater territories. They may overlap. Or (perhaps more probably?) they only adjoin one another.

Jgm

Cinnamon and Green Hummers VIII territories seem to overlap those of all Diglossini in a perfectly "random" manner. So, I think

k, do the territories of Yellow-faced Whitestarts.

IV As usual, Sittis do not seem to be really part of the Diglossine social complex as a whole. Move over and through territories of the other species without, apparently, reacting to the latter in any special manner or provoking any special reactions by the latter. And the Sittis "sing" so infrequently that they probably are not involved in the mutual song inhibition relations

V Cys may join mixed flocks here more frequently than the other non-communal Diglossini. But they certainly are not associated with mixed flocks as frequently as in Mt. Muncling (or the northern part of the Central Cordillera, for that matter). They seem to be more consistently territorial here than in Muncling.

VI The personal contacts between species are the most surprising features of Diglossine behavior here.

Lafs and Cys sometimes come close together. In such circumstances, Lafs may show some overt hostility (vocalizations) but do not (at least usually) actually attack.

Aters and Cys sometimes come close together. In such circumstances, there seems to be no hostility by either species!!!

I have seen too little of CC's to be able to say anything about their personal contacts (if any) with other species.

Cinnamons certainly show overt hostility (more or less inhibited attacks) toward Cys and (perhaps less frequently) both Aters and Lafs. Surprisingly enough (if they really were adult ♂'s of the same species as the Cinnamons), Green VIII Hummingbirds do not seem to show any hostility toward any of the Diglossini.

Mixed Diglossini, May 10, 1965, IX.

Cinn VIII Yel

(It is conceivable that Cinnamons merely compete with Diglossini for nectar from the same flowers, while Green VIII's may actually "parasitize" the Diglossini — using the holes the latter make in corollas)

I think that the Yellow-faced Whitetarts come into contact, i.e. face to face, with Diglossini only "randomly". Neither the Whitetail nor the Diglossini seem to make special attempts either to join or to avoid one another.

See this afternoon's notes on mixed flocks for BQ, Scan, and (possibly) CC near Popayán itself

May 11, 1965
Region of Purace

Arrive same place as yesterday morning 5:37 a.m. Just starting to get light. Sky about 3/4 overcast. Cold

Albi ??

5:48. Hear what sound like Attapetes Whittle songs. No Diglossini or Whitetarts singing at the time. Then hear a couple of R's which might be by Albi (same general area where Atte and CC first seen, and where Laf and Cy also occur). Overlapping Attapetes completely. Then hear distorted R's shut up. Attapetes continues.

Attapetes starts to stop. Songs coming in irregular bursts. Then hear a faint Whitetail song. Partial overlaps with Attapetes 5:52 a.m.

Laf

Then Whitetail sings again. This seems to stimulate Laf to sing!!! Wide overlap Whitetail and Laf. Both overlapping Attapetes! Both Laf and Whitetail shut up. Attapetes continues. Attapetes stops. Whitetail sings.

Laf

Stops. Laf sings. Stops. No overlap at all in these last phrases

Laf Albi ?

6:00 a.m. Some more Whitetarct and Laf songs. Not overlapping. Then an Albi-type R. NOD.

Then we group 3 Whitetarts chasing one another. Alone. Some song and SHN's during encounter. No diglossine audible or visible at the time.

Cy Laf

Then hear what may be Cy songs overlapping Whitetarts! Then "Cy" shuts up. Whitetarts continue. 6:09. Again, an outburst of Whitetarct song seems to stimulate song by Laf. Wide overlap. Laf shuts up. Whitetarct continues. Shuts up. (It is obvious that Whitetarct song does have some stimulating effect after all!)

More Whitetarct songs. No diglossine audible. Whitetarts singing in tree, 15-25 ft up. Same tree where Cy has been seen. Also very close to where Ator, Laf, and CC have been seen. Then the Whitetarts move their low songs fly over area where Albi-type R's have been heard. Into area where CC has been seen.

6:17 a.m. Whitetarts still singing occasionally. All Diglossini silent.

Gyn

The Diglossini seem to be very dull and inactive in this area this morning. Just like yesterday morning same area same time. Surprising today, as sun seems to be coming out 6:28. Is dullness and quietness at this time of day just characteristic of this particular area ???

Laf Cy Laf Gyn

Now 6:40. Hear Laf and Whitetarct alternating songs up hill. Then Whitetarct continues alone. Then Whitetarct resumes. And what seems to be Cy songs in distance. Wide overlaps "Cy" and Whitetarct songs. "Cy" shuts up. Whitetarct continues. Shuts up. "Cy" sings again. Then Laf starts up hill. Partial overlap. "Cy" shuts up. Laf shuts up. Whitetarct sings again. Mutual song inhibition simply does not seem to be working very well here this morning! At least as far as Whitetarct is concerned!

6:43 Whitet ants now lenging alone. Whitet ant shuts up. Then hear Albi-type R's. They stop. Then I see Black Diglona fly by. Then hear Laf long. No overlap with anything. Laf shuts up. Then "Cy" sings alone.

6:47. Good heavens. See single Blue & Orange Tanager. 4 ft up in second growth scrub where Alter has been seen. Deputtly alone. Then it flies up into adjacent tree, joining a Laf there! This is exact same tree wh one Cy has been seen. Both birds hop from branch to branch. Blue & Orange repeatedly (at least 10 times) follows Laf. Both birds silent. Then Blue & Orange repeatedly chases and supplants Laf!!! Both birds still silent. Both fly away. Blue & Orange in permit. Disappear. Then, a minute or so later, see them both in scrub. Blue & Orange still perming. Both birds still silent. Incidentally the scrub-thru which the 2 birds passed is where I have heard Albi-type R's.

6:55. Now there seem to be 2 "Cy"s lenging. Some distance apart. Overlapping. Or are there 2 "Cy"s. One seems to have Intro Notes. The other does not. Then Card without Intros shuts up. The other continues. Then shuts up too. Were there 2 birds Cy and CC ??? I think so.

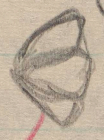
7:16. Several Lafs lenging. Overlapping one another. Then silent up.

Laf lenging 7:25. NOD. In tree 15 ft up. Also low scrub going up hill.

7:27. See pair Lafs supplant Alter. In small tree, 12 ft up. Probably silent. Alter makes no resistance. Disappears. The Alter and one of the Lafs probably same birds involved in chase observed a couple of days ago. But this area is 100 yds up hill. The relative positions of these 2 sites might support hypothesis that the territories of the 2 species are adjoining rather

than overlapping

Arrive area where Laf and Cy, and Aters and Cys, seen together yesterday 8:00 a.m. Nothing visible now, except a single small green hummingbird (not VIII, possibly Eriocnemis species) feeding flowers Ater-Cy bunch.

Laf 155 Then see single Laf, alone, feeding dark red cup shaped flowers of bunch 20 ft away. (Even though these flowers are not tubular, more or less commune ca,  , the Lafs still cut into the base of the petals — or sepals).

Ater Cy 157 Then see juv. Ater feeding same bunch as yesterday. Adult Cy j ——→ Ater! Both feed. A few feet apart. Then fly in different directions.

Ater 158 8:10. See adult Ater singing, perched exposed bunch about 30 ft away. 10 ft up. Short twitters. One might be transcribed as "Tuh-tuh-tuh-zee-tuh-tuh-zee". NOD. Shuts up. Flies off. A minute later, I hear Laf singing down hill. Then shuts up

Laf Ater 8:18. Juv. Ater back feeding same bunch. It also is cutting into base flowers. Then suddenly supplanted and chased by adult Ater.

Everything very quiet now. 8:30 a.m. Going further up hill.

Just as I start to go, hear Cy songs. With Intro Notes. Then 2 Cys (adult and presumed juv.) fly into bunch where Laf seen feeding earlier Cy 160 Laf feed on dark red cup-shaped flowers. These birds do not cut into the base of the flowers. Stick bills into cups, just like hummingbirds. The Laf does not show up while the Cys are feeding. They soon fly on. The territory of these 2 Cys (and I think they must be mated pair) certainly overlaps, and probably overlaps completely, territories both Aters and Laf. And must overlap territory CC at least to some extent. No trace of vertical stratification of territories here. (The vegetation would not permit it. Tall trees are

too scattered here.)

Cy Adult Cy back a few minutes later. Feeding another bush. Silent and alone.

VIII Then see Green VIII Hummingbird feeding flowers same bush where Cy Laf Ap and Laf fed earlier. Hunting bill into cups.

Laf singing 8:42. NOD.

Fog definitely coming in now. Still very thin.

Going down hill 9:20. Lafs and Whitetarts still singing occasionally. No overlaps. Rain starting.

Laf 161 See peculiar "pin" Agraonis" – type alone. On pasture ground, running between patches low scrub.

166 Rain stopped 9:39. See pair Whitetarts in isolated bush where both Cy and Ater seen (at different times) on previous days. Utter occasional songs. Then see Laf in bush 10 yds away. Identification dispute. But this is certainly in bush where I saw Ater a couple of days ago. Ater apparently not around now. Was Laf – Ater boundary shifted (this is region where chase occurred)??? Also in bush with Laf now is small olive yellow-bird. 170 B. nigrocristatus??? Whitetarts ↓ ——→ Laf. Then Laf and olive-yellow-bird disappear Whitetarts remain behind.

Cinn Laf Incidentally, just before Whitetarts joined, a single Cinnamon appeared and made one inhibited swoop at Laf. Laf didn't react visibly and the Cinnamon flew away again.

XXIX N 163 172 Down by road. See pair Whitetarts alone. Then they join group of birds in low thick scrub. Group apparently a mixed flock. Can't see all members, but flock certainly includes 1 White-bearded Flycatcher and 1 Cy. Cy 174 Noisy. Lots of "CN"s. Cy also sings repeatedly. All phrases long Switter

165 s, preceded by 3-4 Intro "Zit" Notes. Nu Whitetants fly on. Not fo
166 llowed by anything else. A minute later Ag flies off, opposite direction. Als
XXX o not followed. Sings some more in small trees across road. A mugle
Ag 176 Dulumia ♂ ——→ Ag. Ag flies on. Dulumia does not follow — or, at
least, not immediately.

At this point rain starts to come down in torrents. Leaving 10:00 a.m.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

COMMENT:

It has just occurred to me that there may be a general rule which could explain some of the variations in vocal behavior of Diglossini. It might read as follows:

Within any given region (e.g. the Sierra de Mérida, the Eastern Cordillera of Colombia, Northern Peru), if there are differences between the reactions of Diglossini in different areas (e.g. Paramó de Guasca, Guadelupe, Gardens of Bogotá), then individuals of different species living in more open areas will tend to have fewer "contacts" (either physical and/or vocal) with one another than species living in less open (i.e. more crowded with vegetation) areas, and/or their contacts will be more openly hostile.

Some examples may be cited:

I The Sierra de Mérida. Three different areas. (1) The area around Teleférico Station on Pico de Espejo, an area of relatively dense forest and (occasional) patches dense scrub. Territories different species overlap, and individuals of different species come into contact with one another without fighting. (2). Paramó La Negra. Reg

con of fairly thick scrub, scattered trees. Territories of different species overlap, but no contact between individuals different species. (3). Chosas de Bella. Scattered trees and scrub in pasture. Individuals of different species fight with one another. (Of course, fights bring individuals of different species together, in the short run, but they presumably function to keep the individuals apart in the long run.)

II. The Eastern Cordillera of Colombia. Three different areas. (1). Paramó de Guasca. Thick scrub. Territories of most (not all) species overlap. Occasional overt fights between individuals different species. (2) Guadelupe. Thick scrub with occasional open areas. Territories of most species overlap. Fights between individuals different species sometimes frequent. Certainly more common than at the Paramó de Guasca. (3). University Gardens in Bogotá. Territories different species overlap. Fights between species very common indeed (at least at some times of the year).

III. The Western Cordillera of Colombia. Two different areas. (1) Up on Munchique. Thick forest and scrub. Territories different species overlap. But no fights between individuals different species. (2). Near the Finca "Carpintería". Open gardens and isolated patches wood and scrub in pasture. Territories different species not usually overlapping. Some fighting between species in border zones.

IV. Northern Peru. Two different areas. (1). The mountains above Chachapoyas. Thick scrub. Much overlapping songs of different species, and also overlapping of territories. (2). Around Chachapoyas itself. Region of scattered patches of scrub, hedges, and gardens. Almost no overlapping of songs different species. Probably not very much (?)

overlapping of territories.

Presumably there is a simple explanation of this general rule or correlation. Presumably it is advantageous for species in open areas to be dispersed and/or advantageous for species in areas with dense vegetation to be close together. (It may be significant that all the Conirostrum species which are obligate commensals of mixed flocks occur in forest and/or relatively thick scrub.) It is easy to imagine various advantages and disadvantages of all types of Diglossine social organizations, but it difficult to decide which are really important. Perhaps food sources are less evenly distributed in open areas than in areas of dense vegetation? If so, it might be even more advantageous for an individual to repell all possible competitors in open areas than in areas of dense vegetation. Or, possibly, the poor visibility in areas dense vegetation favors aggregation of individuals as protection against predators (vide my card re remarks on the advantages of forming mixed flocks).

I think that this general rule does not apply in comparisons between populations of different regions. Surely the fighting individuals at the Paramo de Guasca and the mountain above Palca were in as dense vegetation as many of the non-fighting individuals near Quito? And surely the almost completely segregated individuals in the Yungas of La Paz were in as dense vegetation as any Diglossini I have ever seen?

Nevertheless, if the differing social organizations of the "typical" (i.e. non-commensal) Diglossini are adaptations to obtain the most advantageous population density, and if the differing social organizations of tanagers, finches, volutentants, etc., are correlated with frontier conditions and/or ability to "hop" between islands, then this would certainly ex

Gen Plainly the variations in vocal organization in the two groups seem to be non-correlated.

May 12, 1965
Region of Puracé

Arrive same place as yesterday morning 5:25 a.m. Rain and fog! Still quite dark. Impossible to work for the time being

Go on to new area 3210 m. 10,350 ft. Thick scrub. Alpine type Looks mature (altho it may well be second-growth — there has been a lot of burning around here.

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

COMMENT: Some new thoughts have occurred to me. A gen
Gen eral rule which may explain the differences between the vocal organiz
ation of (non-commensal) Diglossini in different regions of the Andes. It may be stated as follows:

In large regions, there is a relatively large amount of non-hostile contact and/or overlapping between species. (Example: Quito reg
ion). In small regions, different species tend to be segregated ecologica
lly and/or to be overtly hostile to one another. (Examples. Northern
Gen Bolivia, where the humid temperate zone must be a narrow "fringe" along the eastern slope of the Andes and/or a series of semi-isolated "pockets" in the Yungas. Also the Western Cordillera of Colombia.)

I think that this correlation may "hold" everywhere. And w
ork out very nicely, even in detail. Thus, for instance, there may be re
latively less overt fighting between species in the Sierra de Merida — a ra

other small region — than in the Eastern Cordillera of Colombia — an appreciably larger region. But it is characteristic of the Sierra de Mérida that some species are extremely rare, e.g. Lafresnayei, while only one or two species are really common in any given area (e.g. Albi and Glor). Thus, ecological segregation may be more pronounced in the Sierra de Mérida than in the Eastern Cordillera of Colombia.

The obvious corollary of this general rule is that small regions will have fewer species than large regions (not just a smaller number of individuals of the same species).

(It may be mentioned, in this connection that the small Chiriqui - Costa Region contains only one species of Diglossa. The small Santa Marta region also lacks one or more of the characteristic Andean species.)

The differences in social organization between non-commensal Diglossini of different regions may be the result of the fact that fewer species survive in small regions (some species being eliminated for any one or all of several conceivable reasons). And/or a cause of the survival of fewer species in small regions.

In all regions, there must be both advantages and disadvantages to disputing with competing species. Elimination of a competitor vs tame "wasted" in disputes.

Perhaps in small regions, the advantages to be gained are relatively greater than in large regions. The populations must be small in small regions. Perhaps, in small regions, an individual of one species can hope to eliminate another species by disputing with only a few individuals of the latter. In large regions, however, it seems likely that more and more individuals of the other species would keep "drifting in"

even after a very large number of disputes.

The whole subject of the variations in social organization of (n on-commensal) Diglossine social organization might be summarized as follows: Differences between the behavior of Diglossini in different regions are adaptations to regulate competition between species and/or reactions to the varying number of species which have been "left" in the region by competition. Differences between the behavior of Diglossini in different areas of the same region seem to be adaptations to secure the most advantageous degree of dispersal of individuals.

The various hypothetical stages in the evolution of social organization of Diglossini which are outlined in my Revista de Mérida notes, pp. 97-98, may well "represent" real situations. But evolution might have gone from "Stage V" to "Stage I", instead of the reverse, in some areas.

May 14, 1965
Region of Puracé

Arrive same place as May 14, 3:45 p.m. Light rain.
SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

May 15, 1965
Region of Puracé

Arrive same place as yesterday 5:28 a.m. Sky largely overcast. Still quite dark. Apparently not much wind. But cold!

Lof 6:16 a.m. Whitetarts have been singing for some time. Off and on. Then hear first Lof song. At a time when all the local Whitetarts are silent.

Lof 6:35 a.m. There have now been quite a lot more songs by both Whitetarts and Lafs. But neither species is singing very frequently or continuously. And there have been no song overlaps.

Lof 7:50 a.m. Lof(s) still singing down by road when everything else quiet.

Lof 1617 8:05 a.m. Walking along road. See Lof supplant another bird. In small tree alpine scrub. 15-20 ft up. Unfortunately can't identify supplanted bird. But the aggressive Lof sings for a minute or so immediately after the supplant.

Lof 1618 A minute later, see another Lof feeding dark red cup shaped flowers right at edge of road. Silent. 3-4 ft up.

after? 8:35 Hear what is either Cy or Alter singing in distance. No other dig bassine or Whitetarts singing at the time. Bird utters about 4 phrases. Then shuts up.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

COMMENT: The difference between the Diglossine fauna of the area where I worked today and that of the area where I first began to work is really enormous! This would suggest that ecological segregation really is quite appreciable in this region.

(The tanagers and finch faunas of the two areas also differ, but much less than the diglossine faunas.)

gen All in all, I am gradually coming to the conclusion that the vocal organization of the birds here is almost perfectly intermediate between that of the birds of the Eastern Cordillera and that of the birds of the Western Cordillera. (This does not necessarily mean that the birds here are not a

lso intermediate, in many respects, between those of the Ecuto region and those of some other part(s) of the Andes, such as the northern, isolated, part of the Central Cordillera.)

May 16, 1965
Region of Puraui'

Going to work again in fruit area visited here (the area where there are so many Diglossini and hummingbirds). Arrive 5:38 a.m. Just starting to get light. Sky partly cloudy. Not too cold.

Fruit Whitetaret Song (Buf) 5:51. No diglossini audible at the time. In general, birds have been quiet so far this morning.

Clouds piling up fairly rapidly. Looks like it might rain.

Whitetarets and wrens both singing 5:56. But not overlapping. Whitetaret songs seem to be composed, essentially, of "sextuplets." Commonly: "Tub-tub-tub-tub tub-ta." Sometimes repeated.

Very light sprinkle of rain starting 6:01 a.m.

6:02. Whitetaret sings. This seems to stimulate Laf to sing also. Wide overlap. Then Whitetaret shuts up. Laf continues alone. Shuts up. Whitetaret sings. Laf starts. Small overlap. Whitetaret shuts up. Laf continues. Shuts up. This whole procedure repeated several times. I.P. Whitetaret songs seem to "trigger" Laf songs. But Whitetaret shuts up soon after Laf begins.

Laf

1770 See Whitetaret singing 6:08. With mate. In tree. 20 ft up. Alone.

Now Whitetaret singing alone. Low in scrub. Only 3½ ft up. Laf has been silent for some minutes. Whitetaret shuts up. Cy sings typical phrase in distance. Cy shuts up. Whitetaret sings. Shuts up. Cy sings several phrases.

Cy

Ater Laf

1171 See single Ater feeding in scrub. 6ft up. Silent. This is general area where Ater - Laf dispute seen. And the place where Ater is now is well within area which was Laf territory on last day of observation here. But Laf is not visible now. N.E. "boundary" between Laf and Ater territory here has not "shifted." And there seems to be some overlap between their territories. But probably only partial. (And the territories of Laf and Ater is slightly uphill do seem to be exclusive.)

Laf Cy

6:23. There have been a few more Laf and Cy songs. Not overlapping. Then both silent up. Then Whitethroat songs. Then Whitethroat and Cy alternate phrases.

Rain stopped 6:26 a.m.

Laf Cy

Both Cy and Whitethroat silent. Laf sings single phrase uphill. Then Laf sings again for long time. In the midst of this, several Whitethroats sing briefly. Complete overlaps songs of the 2 species.

1172 See single Whitethroat alone. In scrub. 3ft up.

Rain suddenly powers down 6:45 a.m. Too hard to continue observation

Laf 1173 From car, see single Laf feeding dark red cup shaped flowers 3-6 ft up. Quite squeaks a single Cuthia in same bush, only 2 ft away. And vice versa. Both birds eventually fly away, but separately.

Rain getting much lighter 7:12 a.m. Going to try to work

Rain stops almost immediately.

Laf 1174 Laf sings. NOD. Then see another Laf feeding alone on red and white flowers

Both Lafs and Whitethroats singing occasionally 7:37. No overlaps now.

Cy 1175 See single Cy alone in bush, 6-12 ft up. Uttering lots of single "Jit"

Cinn Ag Notes. A Cinnamon comes and perches in another bush, 10 ft away, but does no t attack and eventually flies away.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

Cinn Alter 1776 (Again) we Cinnamon swoop at single Sooty Hornuk going from bus h to bush. Hornuks perches. Cinnamon perches 5 ft away. Single Alter ; — Hornuk - Cinnamon group. Then all 3 fly away in different directions

Alter 1777 ? 7:59. Hear what sounds like Alter long without R in area where Alt. Br and Laf territories apparently overlap partially. Then we 1 Black Diglossa repeatedly supplant another in scrub. Presumed Alter songs continue for a few seconds. Then stop. All birds out of sight. More inter-specific hostility ???

Laf A few seconds later Laf sings not far away. No other diglossine or Whitetaart audible. Continues for a long time. Then see bird. In small tree, 8 ft up. Apparently alone.

Laf 8:18. Going up hill. Lafs and Whitetarts still singing occasionally Without overlaps.

Laf 1778 Cinn 8:20. Laf singing near top small tree. About 15 ft up. A Cinnamon flies in and swoops at Laf repeatedly. After 3rd swoop, Laf shuts up. Retr eats several inches downward, further into leaves. Apparently to get more cover as protection against Cinnamon. Starts to feed. Then, every time Laf hops from one perch to another, the Cinnamon buzzes in to attack. This occu rs 5 or 6 times. Once, I think Cinnamon made actual physical contact!!! After about a minute, Laf flies away. Down into low thick scrub. Cinna mon does not follow.

Cinn Gen The presence of Cinnamons here must make the area much less optim al for Diglossini than it would otherwise be! Cinnamons not only take same food as Diglossas, but they can also force them to retreat and prevent them

from singing!!!

8:33 Laf songs alternating repeatedly with what are either Cy or Ater songs. Then there is one complete overlap. Then Cy or Ater shuts up. Laf continues.

8:40. Arrive area where Cys seen "associating" with Laf and Aters some days ago. Nothing audible or visible at the moment. Then catch brief glimpse Black Diglossa down hill.

Birds in general much quieter now 8:50.

Will! Will! See single Laf flitting thru scrub not far from large bush with dark red cup shaped flowers in which Aters and Cys fed a few days ago. (Shall call this "bush A"). At one time, comes to within 20 ft of bush A. But does not enter it. Eventually flies into tree covered with tangles of vines about 30 ft away. Lost to sight. During whole period Laf under observation it was silent and alone. As soon as I lose sight of Laf, I turn to bush A and see that there is an adult Cy feeding in it. Silent and alone. Sticking bill into centers of flowers. Also, apparently, putting bill to bases corollas thru holes made by other Diglossas??? Then Cy flies into same tree as Laf. I can't see reaction (if any) between the 2 birds. But Laf certainly still there. So this seems to have been a definite joining reaction. A few seconds later, Laf comes flying out. In hot pursuit of something. But its quarry appears to be a hummingbird! Both birds involved in pursuit lost to view almost immediately. And I don't catch sight of Cy again (either).

A few seconds later, single CC flies into Bush A. Silent and alone. Feeds on flowers for some minutes. Like Cy, appears to stick bill into bases of corollas as well as into center of flowers. Eventually flies off, without any other diglossine having put in an appearance.

9:14 a.m. See green VIII hummingbird feeding in bush A. No diglo-

same audible or visible at the time. Hummingbird soon flies on.

What has happened to the adult and juv. Ater here?

Ater 183 Speak of the devil! 9:18. Single Ater, adult, appears moving thru lo
Laf w scrub only a few ft from where I am sitting. This is well written area in wh
ch Laf has been seen to range. Ater is silent and alone. Laf not visible or au
dible at the time. So it would appear that the territories of this Ater and Laf
also overlap, partially, and/or that Ater may range into Laf territory when
the owner is "away" (presumably at opposite end of territory).

A few minutes later, see what is undoubtedly same individual Ater fee
Ater ding in adjacent bushes 5-10 ft above ground. Silent and alone. Apparently lo
Laf oking for insects on leaves. Flies off in direction Laf went earlier.
VIII 9:40 a.m. Queen VIII hummingbirds feeding bush A (again)
Going down hill again 10:00 a.m.
Whitethroats still singing occasionally. Then shut up. Then hear one
Laf Laf song
Ravi starting. Very light. 10:15 a.m.
Laf 184 See single Laf alone. 4 ft up in dense shrub.
Laf 186 10:20. See Black Diglona chasing a Blue in flight. In area where I
know both Cy and Laf live. The Blue, in fact, was almost certainly a Cy whi
Cy ch had been associated with nearby nursed flock a minute earlier. This flock
Laf? dispersed when I arrived. Probably the Cy, in its panic at my appearance,
flew into bush too near to Laf.
Laf 187 See undoubted Laf same area a few seconds later. It is repeatedly
Cinn swooped at by Cinnamon.
Laf 189 10:40. Now see 2 Black Diglonas engaged in chase same area. One
Laf Ater of them definitely a Laf (seen afterwards). But chasing also is accompanied

by several typical carbonaria s.l. R-Zaza's. This must, I think, be Laf-Ater dispute.

laf ater

These birds certainly not the same as the Laf and Ater men disputing the other day.

Leaving 10:48 a.m.

COMMENTS:

There really seem to be a surprisingly large number of inter-specific disputes in this area. Especially as there are no overwhelmingly attractive and minimal concentrations of food (such as an Eucalyptus or an Erythrina in bloom) here.

gen

I am surprised to find no Coers here. The region is humid — but probably not more humid than the Pico de Espejo in the Sierra de Mérida. And Coers certainly occurred above Chachapoyas, an area which appeared to be relatively dry (for the humid temperate zone).

Coer

An observer working in the Andes certainly gets the impression that the survival or disappearance of certain particular species in particular areas is largely a matter of "chance". I.E. when two closely related species (e.g. the Cg and the Coer, or the Firebelly and the Yellowbelly) occur in areas which are more or less equally suitable for both, the ultimate fate of either one or both species may depend upon "accidents".

gen

MORE COMMENTS:

I My very few observations of birds around Popayán would appear to support my hypotheses. In the area where I have worked, there are only comparatively narrow strips of scrub and trees along streams and rivers. These are surrounded by very wide expanses of pasture. I.E. this area is about as "open", on the whole, as any place where members of the

gen

Icam BQ diglossic social complex are likely to be found. And the Icans and BQ's here don't seem to come into any sort of contact at all. Possibly even the ri territories are non-overlapping.

Bari CC II I now doubt that either Baris or CC's occur in this area near Popayán itself

III There is one important piece of evidence which supports the th conj that the selection factors involved in (i.e. the advantages secured by) the evolution of different social reactions in different regions are not qui te the same as those involved in the evolution of different reactions in differ ent areas of the same region. In relatively open areas, the population is sparse and scattered, irrespective of whether it is composed of one species or several. This is quite consonant with the hypothesis that the greater separa tion of species in open areas is an adaptation to disperse individuals. Ten But populations of comparable areas of different regions may be (in fact, probably usually are) equally dense when species are ecologically separated, and therefore do not fight among themselves, and when they are not ecolog ically separated but do fight among themselves.

May 17, 1965
Region of Puracé

Arrive same place as yesterday morning 5:43. Getting light. Sky half clear, half cloudy. Looks as if there might be rain later

Lof Hear first Whitetart song 5:43. Only one phrase. Then Lof sings briefly. No overlap. Lof sings again. Shuts up.

Going to look at area where Black Diglossa was seen to chase Blue

and where R-3azas were heard yesterday

It is cold this morning!

Lef More Whitetart song. Then silence. More Whitetart again. Whit
etart shuts up. Lef sings. Shuts up.

190 Cy sings 6:06 a.m. Short twitters, preceded Cy 3 or 4 "Jit" Intro
Cy notes. 4 ft up in scrub. NOD. Then, this Cy is supplanted by another bird
(unidentified). Flies away.

Whitetart sings. Seem to stimulate Lef in distance. Partial overlap.
Lef Both shut up. Cy sings again. No overlap. Cy sings phrase after phrase.
Cy All just as before. Also feeds from time to time. Feeds on red and white flow-
ers on which Lefs have been seen to feed. Cy 2-4 ft up in scrub. Then sing
191 le Lef (definite) appears low in scrub, about 10 ft from Cy. Gradually ad-
vances, hopping, toward Cy. Cy gradually retreats before Lef. Cy continues
singing during retreat. Lef quite silent. During advance, Lef passes thru
some of the bushes in which Cy sang earlier. Both birds pass out of my si
ght, Lef still advancing after Cy. Cy eventually shuts up.

Lef 6:15. Near Lef song. No other diglossic audible at time.
Lef It is obvious that Lefs are dominant over Cys here and (at the very
Cy least) have no hesitation about advancing toward them.

Everything quiet 6:17 a.m. Then Whitetart sings. Again this se
Lef ems to start Lef singing! Partial overlap. Whitetart stops. Lef continues
for a few seconds. Stops

192 Cy seems to have flown up hill. Catch glimpse Lef feeding silently
from time to time.

More Whitetart song. No diglossic audible at the time. Again.
Again.

Laf Incidentally, the Whitetarit territory here certainly overlaps that of the
Laf Cy. Almost certainly also that of the Cy. But I have yet to see a Whitetarit
Cy close to a Diglossa at this particular site.

Laf sings briefly. Shuts up. Immediately Whitetarit begins to sing.
Laf No overlap. Then Whitetarit also shuts up.

6:41. More Whitetarit songs in distance. No diglossine audible at the time.

Going up hill 6:45 a.m.
Still more Whitetarit song when no diglossine is audible.
Laf 193 See a single Laf alone, feeding 3 ft up thick scrub
Reach A bunch area 6:59 a.m. Nothing audible or visible at the time
Cinn VIII Whitetarits singing down hill. Then single Cinnamon feeds on flowers A bunch. Flies away. Then a green hummingbird (VIII ?) comes and feeds on flowers. Flies away.

7:10. Clouds getting thicker. Wind increasing. Still cold. Looks even more like rain than earlier. This presumably is reason why diglossini seem to be keeping under cover. (In fact, all birds around here are very quiet now.)

Cy 194 7:14. Single Cy appears in bunch same spruce only a few feet from me. Apparently the pair which lives in this area. Feeds on flowers. Fluttering bill in to caps. Quiet. Utters only occasional soft "Tit." Then Ater (definite) flies
Ater 195 in, supplants Cy. This apparently is the adult Ater. Supplant is silent.
Ater perches quietly in bunch for a few seconds. Cy apparently has retreated in
Cy to scrub a few yards away. Ater flies off. But apparently it has caught a
Ater glint of Cy again. A second later see Black Diglossa furiously chasing Blue. Presumably same Ater chasing same Cy.

Laf A few seconds later, Laf begins to sing near A bunch. No other di

glomnie or Whitetart audible at the time. Laf shuts up. Whitetart hugs up hill. (I can see this bird. It is alone, 40 ft up tall tree.)

Cy — Then see single adult Cy feeding dark red cup-shaped flowers bush about 20 ft from A bush. Apparently alone. Flies away.

Ater 196 — A few minutes later, see juv. Ater feeding in A bush itself. Solent. Apparently quite alone

Going up hill 7:45 a.m.

Ater 198 — See long Diglona chase in area low scattered vegetation. Adult Ater is certainly the pursuer. The pursued is apparently the juv. Ater. Chase accompanied by lots of R's, a few R-Za-Za's, and at least one peculiar pattern cut enmediate between R and Twitter: "Zreeee Zreeeee Zreeeee Zreeeee rrrrgoo"

Then two birds eventually

Cy 199 — fly down hill. Immediately, a Cy, about 30 yds away from where chase took place begins to sing. Songs usual type. Three and four "Jit" Intro Notes with each phrase. Then, Cy alternates a few phrases with Whitetart some distance away. No overlaps.

Going down hill 8:06 a.m.

Leaving this area 8:45 a.m.

Another area where rufinucha seen yesterday 9:15 a.m. Scans displaying. Vocalizing and flights. Also see what looks like Ater display flight with Twitter about 30 yds from where presumed Scan displayed a minute earlier (This incident also recorded in notes on general mixed flocks)

Albi? — 9:27. Hear Albi-like Twitter from low scrub-edge pasture.

Cinn Scan? — 9:55. See a Cinnamon attacked by a greenish hummingbird of equal or greater size. Can't identify the latter, as it just buzzes in and then away. But it might well have been a Scan!!!

Mixed Diglossini, May 17, 1965, V

Otter 202

10:10. Another area. Edge large patch fairly low second growth. See 2 Aters flying around together. 2-6 ft above ground. Alone. Feeding on orange-red tubular flowers. Also picking insects off leaves

Scan?

Catch brief glimpse hummingbird feeding white trumpet shaped flowers. Apparently typical Scan.

Leaving 10:30 a.m.

CC

Jon

NOTE: It was nice to see CC's associated with a flock in the second area visited today. Thus, their behavior toward mixed flocks would seem to be essentially similar to that of all the other non-commensal Diglossini. Their behavior toward other Diglossini, however, may be rather different from that of the other local species. They may be the only one of the local Diglossini which has a full set of "mutual avoidance and inhibition" reactions – like all the species near Quito

Saf

Jon

COMMENT: One aspect of diglossine "social complex" behavior was not particularly evident today or yesterday, but was fairly conspicuous during some earlier days. Yellow-faced Whitestarts start singing shortly after dawn, and their songs quickly reach a peak of frequency. Then they decline, very irregularly, during later periods of the morning. Saf's, by contrast, sometimes (perhaps usually) do not begin to sing very frequently until after the frequency of Whitestart songs has already begun to decline. This must help to reduce overlaps between the songs of the two species. (As I remember, this "delayed" onset of frequent singing is characteristic of other *safranayi* s.l. populations in other parts of the Andes. In many or all areas it (also) helps to reduce overlaps with *carbonaria* s.l. songs.)

Important I have found that some "Greeting Twitters" of PRA

Jen
tlapetes here are very diglossinic-like. Particularly reminiscent of Laf songs in tone and loudness. I am not sure that some of the "buzz Laf songs" recorded in my notes were not actually uttered by PR's. Especially the "Laf songs" overlapping Whitetart songs at dawn. Overlapping often makes it impossible to analyze individual songs very precisely. In any case, if my amount is wrong, it over-emphasizes rather than under-emphasizes the frequency of overlaps between Laf and Whitetart songs.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

Worked along edge Cauca River near Popayán this afternoon

COMMENTS:

Thelan? Dean?
I. I am not sure that all the "Scans" I have seen at the altitude of Popayán are not Hummingbird IX (presumably another species of Colibri.)

II. The area where I worked this afternoon looked almost ideal for Barns. Large patches thick second growth scrub, some with many trees of moderate size, scattered among pastures. It also looked good for
Jen BG's. (Actually as far as the mere "shape" and density of the vegetation is concerned, large parts of the area looked almost equally suitable for carbonaria s.l., CC's, or even albis.) But all diglossini were at least rare in the area.

At the same time, I noticed that hummingbirds were very
Jen common throughout the scrub part of the area. About as common as I have ever seen them anywhere.

This area (between the Eastern and Western Cordilleras) prob-
Jen ably is more humid than the comparable low altitude scrub areas where I have seen many Diglossini. (Certainly, there is nothing here like

the semi-desert which comes close, geographically, to Mérida.)

This suggests a general principle to me. It is my impression that, throughout the Andes, areas which are relatively humid have more hummingbirds and fewer Diglossini than similar-looking areas (with similar "physiognomy" of vegetation) that are relatively less humid. Hummingbirds seem to "take the place" of Diglossini in very humid areas. They may drive out the Diglossini and/or move in to fill the niche left vacant because most Diglossini cannot survive in a very humid environment.

(I think the former alternative is more plausible. Note that the two Diglossini which seem to be most common in very humid environments, the albi and the cy, are the two species which would be expected to encounter and/or compete with hummingbirds least frequently. Albis are "skulkers", usually staying inside low scrub — a type of environment which many hummingbirds seem to avoid. And cys are, on the whole, relatively strongly frugivorous and relatively weakly insectivorous and nectarivorous.)

If hummingbirds do drive Diglossini out from relatively humid areas, this might help to explain why Diglossini are so rare in the southern part of the Western Cordillera of Colombia.

(But competition with hummingbirds, by itself, probably is not sufficient to explain all variations in distribution and social behavior of Diglossini in other parts of the Andes. It probably will still be necessary to invoke such factors as density of vegetation — quite apart from humidity — and size of regions in which populations occur. Viz Bolivia where populations of Diglossini seem to be dense, and hum

mixed birds probably are not unusually abundant, but different species of Diglossini still are segregated.)

May 18, 1965
Region of Purace

Arrive 5:56 a.m. Clear and warm. Already light.
Hear what sound like Ater twitters
The Colibri here definitely seems to be Scan (see purple mountaintop stripe)
Displaying and vocalizing actively.
Diglossine-type twitters stopped by 6:03 a.m.
See another Colibri which is definitely Scan. (Incidentally, bills of these birds are almost straight. So probably hummingbird IX belongs to another genus.) Another Scan, definite.
Scans seem to be very common here.
They are quite ignoring the numerous fooly flowerbushes in the neighborhood.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

7:20 a.m. Area of low but very thick scrub, with lots of small alpine type Pauciflora, slightly below road. Two Aters flitting about. Feeding on Pauciflora and other flowers. Usually not together. Once, one lands one foot from the other. The approached bird does TV (no trace BV). Apparently silent. The other bird flies off.
Part of the time, there also is a Scan (definite) present in area. Scan territories seem to overlap Ater and CC territories completely here. At one time, the Scan was only 10 ft from one of the Aters. Then it followed the Ater for some

appreciable distance. Did not actually attack. I couldn't tell if following was coincidental or not. Scan eventually stopped following and performed display flight (which may be territorial and/or hostile).

Scan

Scans still vocalizing and displaying vigorously 7:33. They would appear to be in breeding condition here now!

Ater 203

7:35. Single Ater perches exposed, 4 ft up, and utters several long phrases. Rapid Twitters NOT.

Ater

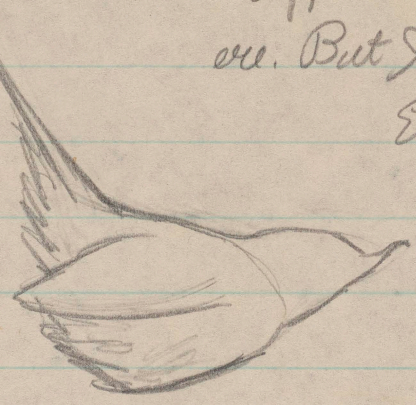
Songs of Aters and CC's seem to be as similar here as in Quito region.

CC

7:40. Same Ater back same place. Singing as before. Then shuts up. And suddenly performs extreme TV. Apparently there is another bird around somewhere. But I don't see it. Then the Ater relaxes

Ater

Eventually flies off



Are these Aters coming in to breeding condition?

Scan

Singing postures of this bird apparently unritualized. No belly-fluffing. Scans seem to be ignoring Pauxi oras. (I think this may be true throughout the Andes.

Ater

Same Ater back singing again same place. As far as I can tell (above the roar of nearby torrent) phrases are without R component. Certainly all phrases are very short.

Ater 206

One Ater chases the other furiously. Chase is prolonged. Then one comes back and sings in usual place.

Ater

Territory of Ater here is very large. At least 500 ft one direction, 200 ft in the other. Population cannot be dense here.

Scan Ater

Although one of the Scans here visits small trees and scrubs with Ater for
eating quite frequently, it does not seem to favor the same trees and bushes.

Scan 207 Ater

7:57. Aha! Scan appears, just above low scrub. Ater flies to it
coming from rte 30-40 ft away. Lands on branch about 1 ft - 9 inches away from
Scan. Scan immediately hovers right above Ater's head. Scan may make a few
slight forward movements, i.e. inhibited attack movements; but, if so, they are v
ery slight indeed. But Ater also makes a few forward movements toward Scan.
Lunging forward with head & bill. Wings once slightly spread (apparently mut
tualized). Then Ater flies up toward Scan. Brief aerial dispute. Ater perches ag
ain. Scan hovers over its head again. Then Scan flies away. Ater would seem
to have "won" this dispute. As far as I could tell, both birds were silent
during this dispute. But a few seconds later, Ater (presumably same individ
ual) back lunging usual perch. Now, its song phrases seem to have slight tra
ce terminal R or, at least, hoarse "slur".

Scan Ater

Apart from the incidents described above, the local Scan(s) are not
in the Ater territory very frequently when Ater is visible. It is quite possible that
the Scan(s) is (are) avoiding the Ater(s) — when not actually fighting with
them. If so, the Ater-Scan situation here may be comparable to the Cy-Laf
situation at higher altitudes in this region.

Going to walk on a little further 8:10 a.m.

Scan Ater

NOTE: It has just occurred to me that I paid no attention to temp
oral patterning of vocalizations during observations recorded above. But, as
far as I am aware, Ater and Scan vocalizations overlapped at random

8:19. Hear Whiteheart lunging. Obviously Yellow-faced. No diglos
sic audible at the time.

Ater 208

8:31. Back to area of lunging Ater. Bird perched usual place. Utters

Ater Scan

4 or 5 long phrases. All phrases rapid twitters, definitely without R. Then the bird flies away into low scrub. There were no Scans audible during the period Ater sang. Altho Scan(s) vocalized immediately before and after. (Scan vocalizations both cases long indeterminate series harsh "chunk" or "chup" notes.) Was this just coincidence???

Ater Scan

8:38. Again Ater back usual place. Uttering songs without R's. NOD. Again, Scans are silent at the time! But songs of Ater do overlap one long whistled phrase in distance.

Ater shuts up. A few seconds later, hear Scan "twitter". (These "twitters" are the rapid series of notes which Scans seem to give in alternating one another.) Scan sounds coming from area far away from singing Ater. Then I hear brief series harsh "chunk" notes. (These series may be the Scan equivalent of territorial "song".) Then everything is silent for a while.

Ater Scan

Then Ater sings a couple of phrases. Stops. Immediately a nearby Scan utters a few "song" "chunk" notes. Stops. Immediately Ater utters a few more phrases. Stops. Immediately Scan utters more "chunk"s. Stops. Immediately Ater sings again. Stops. General quiet.

So it does look as if mutual inhibition song is effective in the Scan-Ater relationship!!!!!!

8:45. Ater sings a few more phrases. NOD. And no Scan audible at the time! But Ater song does overlap Catamenia song in distance.

It looks as if this may be (another) area where Scan is a full fledged member of the Diglossine social complex.

Ater Scan

Now one or more Aters are uttering "chunk"s in distance. Ater Scan sings nearby. This time, there seems to be complete overlap!

Ater 209

8:52. Another area a little further along road. Yet another Ater

Alter Sean

Jungle and alone. Region fairly tall thick second growth. Bird feeding white cup shaped flowers. Then it sings. All phrases short Twitters without R's. NOD. No Whitetart or Sean audible. Then bird flies away. Sings again a few minutes later. This time Songs overlaps Sean "chuk"s in distance. Then Alter shuts up. Immediately Sean begins to utter "chuk"s nearby. Shuts up. Alter sings again. At first, nothing else audible. Then Sean begins to utter "chuk"s not too far away. Long overlap. Then Alter shuts up. Sean continues. Then during next minute or so, Alter utters a few more phrases at irregular intervals. While Sean continues. Complete overlaps. So Sean can begin singing while Alter is singing — and Alter can begin while Sean is singing.

Alter Sean

9:00 a.m. It is getting very warm here.

Again, Alter sings while Sean, 100 yds away, is uttering "chuk" Notes

Sean

9:18. Several Seans singing vigorously. No Alters audible (all to) I know that there is at least one present in neighborhood.

Alter Sean

9:35. See several Seans feeding same species of white flower that Alter fed on earlier.

2 11 CC

9:45. See pair CC's in hedge. This is area where CC's have been seen with rufinuchas. But now the CC are definitely alone. 4-6 ft up. The 2 birds do not stay close together. Usually at least 20 ft apart. One utters Twitters when landing by itself. One Twitter might be transcribed as: "Ja-ta-see ta-ta-see-ee-yoo". Uttered very rapidly.

XXII CC 1779 1783

Go on up hill in direction in which CC's are moving. See Yellow-joined Whitetart 2 ft up in hedge. Now see it is pair of Whitetarts. Don't see CC's, but they must have joined and passed Whitetarts earlier. Then see 3 rufinuchas in low scrub 40 ft away. Whitetarts join and follow rufinuchas. Group goes down hill thru low scrub. Then I see that there is at

185 least 1 ♂ with group. Following. Probably pair has been with group all the time. This is undoubtedly same group seen yesterday. It seems to be very long sustained! Now see that there is a single cyanocephala with group. Also following. All birds quiet. 2-4 ft up.

186 On way down hill, get another (very poor) view of same flock. Still includes Whitetarts and cyanocephala. Cyanocephala flies away. No one follows.

Leaving 10:20 a.m.

COMMENTS:

I. Although I did not see much fighting between Diglossini and associates or competitors, in the area in which I worked today, this is not necessarily very significant. As far as I know, the Diglossas and hummingbirds never fight with Conirostrum species at higher altitudes in this region. And, at least none of the species seen this morning associated with one another in an apparently non-hostile manner, as do (at least occasionally) some of the species at higher altitudes here.

II. The "general rules" controlling mutual song inhibition might be summarized as follows. Any Diglossa species will tend to avoid overlapping the songs of another species (of any group) when: (a) the songs of the other species are very similar to its own songs; (b) and/or the songs of the other species are uttered very closely; (c) and/or the songs of the other species are uttered very frequently (i.e. the Diglossa has become thoroughly familiar with them).

And all my observations tend to confirm the hypothesis that mutual inhibition of song works best when species are moderately motivated. At very high intensities, the species cannot "contain" themselves —

and overlapping occurs. At very low intensities of motivation, the species grow "careless" — and (again) overlapping occurs.

III. This afternoon I worked in area on banks of Cauca near Popayán. I saw a Scan there (definite). This means that the presumed Scans I saw a few days ago in scrub and trees along small stream near Popayán probably (almost certainly) were identified correctly.

Scan

In spite of the fact that hummingbirds in general are very common in scrubby areas around Popayán, Scans certainly are rare. The habitat preference(s) of Scans do, in fact, seem to be much more similar to those of most Diglossini than to those of most other hummingbirds.

Scan Gen

I have yet to see a BQ along banks of Cauca. This would support the hypothesis that territories BQ's and Scans do not overlap in such areas. (Although both species seem to be so rare that the apparent absence of overlap may be an artifact of the brevity of my observations.)

BQ Scan

May 19, 1965
Region of Puracé

Arrive same place as yesterday morning 5:20 a.m. Still quite dark & hazy half cloudy.

Various sub-oscinine and thrush sounds. Then one burst of what may be Scan song 5:27. Shuts up immediately. Then I hear lots of Atti songs. From several areas. Neighbors overlapping.

Scan Atti

Atti song phrases fairly short — atti-o probably slightly longer on the average than late yesterday morning. Without R components.

Atti

The Attis I am listening to now are not the same individuals he

and yesterday.

Ater Aters seem to pay no attention to thrush and sub-oscine sounds. Continue singing no matter how noisy the latter are.

Ater 5:33. One Whitetarst song uttered while Aters are in full chorus. Complete overlap. Aters continue. Then Whitetarsts sing again, twice. Again complete overlaps. Then Ater shuts up. Whitetarst sings again. No overlap. Shuts up. Ater sings again. Shuts up. Whitetarst sings. Ater sings again. Partial overlap. Then both Ater and Whitetarst sing off and on at irregular intervals Lots of partial and complete overlaps. As far as I can tell, the 2 species are singing at random vis a vis one another. Neither stimulating nor inhibiting one another.

Ater There seem to be a lot of Aters around here. I am certainly hearing more than I have seen before. Also at least several Whitetarts singing different areas. Presumably 2 or 3 pairs.

5:44. I have yet to hear any songs which I recognized as CC. Or any allbi type phrases.

Sean Ater Hear faint Sean-type Twitters 5:46. Overlapping both Aters and Whitetarts. Then hear Sean song (i.e. indeterminate notes "clunk" notes) in distance. Overlapping both Ater and Whitetarst songs. Then both Ater and Whitetarst shut up. Sean continues for a few seconds. Then shuts up. Then another Sean begins to sing. Alone for some seconds. Then Whitetarst utters one phrase. Complete overlap. Whitetarst shuts up. Sean continues

Sean Faint Sean aerial display 5:49.

Faint Attapetes Whittle song 5:50.

Absolutely no Ater song now. But I do hear one R-3a3a

5:51. Attapetes Whittle songs. No Ater, Whitetarst, or Sean song

Scan gp audible at the time. Then Scans begin to sing. Partial overlap. Attapetes shuts up. Scans continue.

Well — at least there is some "segregation of song" here. Except for the Ater–Whitetart relationship!

Birds in general getting much quieter 5:55 a.m.

Ater Scan 212 See male Ater feeding alone on small white flowers.

6:01 Now only Scans are audible.

It is a lot colder today than yesterday!

Scans silent 6:03. And I can hear Attapetes Whistle songs in distance. Shuts up. And Scan sings (again) in distance. Shuts up. A couple of minutes later, Whitetart sings a couple of phrases. Shuts up. Then Whitetart sings again. Shuts up. Then Attapetes sings a number of Whistle songs. Shuts up. Whitetart sings. Shuts up. Attapetes sings again. Then Whitetart and Attapetes alternate phrases in quite regular fashion. They certainly are being very scrupulous toward one another. Then both shut up.

Scan Ater Then Scan begins to sing! Shuts up. Attapetes sings again.

It is really quite incredible, but it looks as if Ater is the only one of my species here which is not much affected by mutual song inhibition!!!

Attapetes shuts up. Scan sings again.

Reach area where Ater–Scan dispute was yesterday 6:15 a.m.

Scan Ater 214 Scan singing and performing aerial displays. Don't see Aters. Scan shuts up. Then I see Aters flitting through scrub. Then Ater sings usual place! Then Scan sings again. Large overlap. Scan shuts up. Ater continues. Shuts up.

Cloud cover increasing 6:22.

Scan Ater Scan singing again. The favorite song perch of this Scan is approximately 100 yds from the song perch of the Ater. (And so far, today, the "ran

ges" of the Aters and Scans here have not overlapped!)

Scan 215 Ater — Scan still singing quite steadily 6:28. Then Ater appears usual song perch. Just sits there silently while Scan continues to sing. Then Scan stops, for a second. Immediately Ater utters 1 song phrase. Then Scan resumes singing. But Ater continues also. Utters several phrases. Complete overlaps. Ater shuts up. Scan continues. shuts up.

It is turning cold and windy now 6:33

Scan 216 Ater — Scan singing again. Then Ater flies up to usual song perch. Sits there for some minutes, quite silently, while Scan continues singing. Then flies down into scrub.

Scan — See 3 Scans chasing one another furiously. With lots of chords twitters

Going to move on down road 6:40 a.m.

Lots of Scans still singing all over the place 6:46

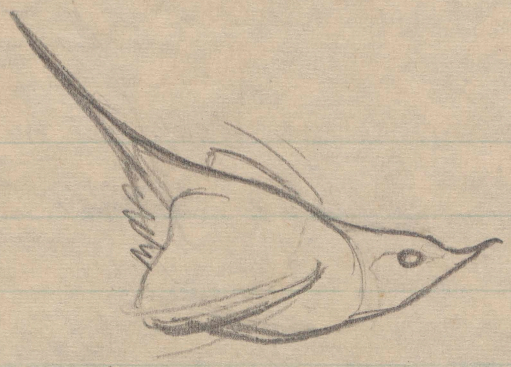
7:00. Wind is so strong now that all the Aters seem to have taken cover. But Scans are still vocalizing and displaying vigorously. Then I hear White start utter two song phrases, separately, just in intervals when Scans are silent. Again. This time, the White started began while Scan was still singing. But Scan shut up immediately. Little overlap. Then White shut up. Scan resumed singing immediately.

Ater 217 Scan — 7:15. Come to area of almost garden-like scrub near small pasture. See single Ater alone. Feeding usual white flowers. Utters 1 song phrase, when everything else is silent. Then flies off. Then Scan starts singing nearby.

Wind better, and it is getting warmer, 7:35.

Everything except Scans very quiet now.

Ater 219 — 7:50. Reach area where CC-rufinucha flock seen every day. See 2 Aters flitting about. Lots of R's, with more or less distinct terminal Zaza's.



Bill closed or opened only very slightly.

Atten

At least once (and probably several times) one of the birds (the pursued, I think) goes into TV Posture, with wings spread to at least a considerable extent. Breast lowered, so that rear of body, as well as tail points upward. No trace BV. Belly feathers probably fluffed, but probably not extremely. I think that the bird uttered R in TV. Wings certainly Q'd, slightly but rapidly, in TV. I couldn't tell if this was done on "purpose", or was simply the "shaking" produced by the R. All this occurred in very low and scattered scrub (the sort of thing that grows up in pastures after only a couple of years). Then one of the birds disappeared. The other flew to a bush. Perched 2-3 ft up and sang repeatedly. Song perfectly typical. No R component.

Atten 187 194 CC XXXIII 110

Then the singing bird shut up. Flew to join mixed flock. At the time of joining flock included 3 rufinuchas, 2 CC's, 1 cyanocephala, 1 Yellow-faced Whitestart, and 1 Andean Sparrow. Moving down hill, through same region of low scattered scrub. All birds very quiet. Sparrow on ground. Others ranging 1-5 ft up. After apparently stays with flock for only a few seconds, then disappears. Sparrow also disappears soon. Then cyanocephala flies away. Definitely not followed by any body. Rest of flock continues moving down hill. For a time, at least, CC's definitely in lead. rufinuchas repeatedly follow CC's. But they do so at a distance. Often 20-30 ft behind CC's. Whitestart repeatedly follows and joins rufinuchas. (The detailed course it followed showed that it was much more strongly attracted to the rufinuchas than to the CC's. Not surprising, in view of the color schemes of the species!)

CC

This is undoubtedly same flocks I have been seeing in this area every day. It seems to be at least semi-permanent. (Incidentally, I have now seen these birds at various sites over an expanse of at least several hundred yards square. I.E. they are not associating with one another simply because they are always feeding in exactly the same place.)

Jean & C

It is highly significant that there are the exact same species which occur in the Quito area — where they do not form flocks!!!

While with flock, the CC picked insects off leaves, and also got nectar from the lavender melastome flowers (very common here — but I have not seen either Aters or Jeans feed on them)

C

There were lots of Jeans not far from the flock at various times, but none of them showed any tendency to approach and/or attack any of the members of the flock. Continued singing and aerial displays as usual.

Jean CC

8:40. Sun shining brightly and weather beautiful in general

Ater 222 Aters still singing and displaying vigorously.

It is now obvious, I think, that Aters and Jeans do not usually dispute with one another here, at this time of year. I have now seen a great many areas which I know are inhabited by both species, without seeing fights. It would appear that Ater-Jean relations here are not very greatly different from their relations in the Quito area.

Ater Jean

8:47. Just slightly down hill. Come across 2 CC's. Feeding in scattered bushes of the melastome with lavender flowers. 2-4 ft up. Feeding on flowers themselves and picking insects off leaves. There must be the birds that were with flock earlier. But they certainly are alone now. One or both utter(s) twitters when landing alone. Not too rapid. Quite variable. Different phrases could be transcribed as follows: "Ja-ta-see ta-ta-see ta-ta-see ta-ta-see-yoo".

224 CC

"Ja-ta-see ta-ta-see ta-ta-see" "Ja-ta-see ta-ta-see ta-ta-see-ee-Sss-yoo"
SE. basically composed of triplets.

CC Scan Ater

There was nothing else audible while these phrases were uttered. Then the C's move on and fall silent. Within a few seconds, Scans resume singing. And then an Ater, not too far up hill, utters 2 or 3 long phrases. Completely overlapped by Scan songs. Scan finally shuts up. Then Whitetarst sings one phrase. No overlap.

Ater 225

Ater flies by, in level flight (i.e. not usual display flight). It is singing, however, and being swooped at by hummingbird! I am fairly certain that this hummingbird was not Scan. The swoops were not accompanied by characteristic Scan vocalizations. This is the area where Cinnamon was seen a few days ago. I imagine that Cinnamon was the aggressor during this incident.

Scan Ater

9:05, Whitetarst sings while all other birds are silent. Then shuts up. Then both Scan & Ater sing. Complete overlap. Shut up. Whitetarst sings again. Shuts up. Scan sings again. This sort of behavior seems to be very stereotyped here now.

Ater Scan CC

Incidentally, the Ater, Scan, CC, and Whitetarst territories all seem to be completely overlapping here.

XXXIV 196 9:15 a.m. See mixed flock. Probably pretty same as before. 2 Yellow-faced Whitetarts 5-15 ft up in trees of "hedge". Cyanocephala j ⟶ Ater 197 Whitetarts. 2 Ater 199 also j ⟶ Whitetarts. 1 Ater f ⟶ Whitetarts. 200 Sooty Thrush (!) j ⟶ group.

Ater stay with group for some time. Feeding quite close to one another, at times, with no obvious sign of hostility. But once one supplants the other with R-Zaza.

Ater

Incidentally, all the Aters I have seen in this area have been in adult

Jen common there; and there seem to be only 1 species (Laf) at slightly higher altitudes, and 1 other (Aten) at lower altitudes.

III. Again and again, I have been struck by how perfectly inter
Jen mediate this area is! Intermediate between Eastern Cordillera, Western Cor
dillera, and Quito region!

May 20, 1965
Region of Puracé

Arrive highest area where I have worked before (alpine scrub) 5:22 a.
m. Still quite dark. Sky partly cloudy. Fog not far away.
SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

May 21, 1965
Puracé – Tijeras

Going further along road to Tijeras and Neiva this morning. Eastern
side of mountain. More humid than western side. Arrive area scrub and forest
2825 m, 9225 ft, 5:35 a.m. Weather good. Only a little cloud.
Black 16 6:12. See Black Diglossa flitting by low in second growth scrub
SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS
Laf 17:12 Hear unmistakable Laf song area of low second growth sc
rub, interspersed with swamp-pasture. Not far from where mixed flock
seen earlier. No other diglossine or Whitestart audible at the time.
Back to area where first mixed flock seen 8:20. Light rain.
Laf 19 See single Laf alone. Low in isolated patch scrub

plumage.

I also heard some sounds which may have been rufinucha in low scrub near this last flock, but I never actually saw the birds.

226 9:35 a.m. Another area. Low scrub edge highway. See single CC alone. CC is joined by an elaenia. Joining probably coincidental. CC flies on. Elaenia does not follow.

Slight rain starting 9:40. Leaving 9:45 a.m.

NOTES AND COMMENTS:

I. I forgot to mention that the Ater which performed TV this morning did so while facing away from its opponent (or partner). I.E. the pattern appeared to be "designed" to reveal conspicuous under tail coverts. In this subspecies, of course, the under tail coverts are colored the same as the rest of the plumage. But they are differently colored in another subspecies, i.e. carbonaria s.o. I think that it is quite likely that the TV pattern originated in a form which was colored more like Carbo than like Ater. If so, the TV (and associated visual displays) may be obsolescent, i.e. in process of disappearance, in Ater. This might help to explain why the Aters of the Quito region do not seem to have much in the way of visual displays (according to my recollection, they do not have TV).

It is possible that the birds here are not absolutely pure Ater. At least one individual observed, and probably more, appeared to have a very slight trace of grayish humeral patch!

II. After thinking things over, I have come to the conclusion that there is a fair amount of ecological segregation among Diglossini (and associated forms) of this region. It is true that there are 3 species of Diglossa (Laf, Cy, Ater) in the area I worked in Sept; but only 2 (Laf & Cy) are

Cy XVIII HO Then hear Cy singing in distance. No other diglossine or whitestart audible. 200 Then see Cy. 15 ft up in small tree thick scrub edge river. And there are 202 3 Yellow bellies in same tree. Only 1 ft away. No sign overt hostility between species. All silent now. Then I see that there are a lot of other birds in scrub 203 below tree. Including 1 Pl Atlapetes (relatively very dark underneath). 213 Then all lost to view 8:30 a.m. ✓✓✓✓✓✓✓✓✓ 4567

Cy Lof As far as I have been able to determine so far this morning, there is only 1 Cy and 1 Lof here. And their territories are not overlapping. Diglossini seem to be rare here — presumably simply because it is so very humid here.

Cy 8:40 Catch glimpse same group further down stream. Cy and Yellow belly together in small tree. Cy f ⟶ Yellow belly.

Rain stopping 8:45 a.m.

Leaving 8:55 a.m.

Then worked in various other areas at lower elevations

NOTES:

Lof Albi I. The last Lof seen with the last mixed flock was in an area which looked perfect for the Albi of Munchique. Perhaps Albi and Lof are nearly mutually exclusive.

Cy Lof II. At no time this morning did I hear any overlaps between Cy, Lof, or Whitestart songs. This may be correlated with the fact that both Diglossines, at least, seem to be relatively rare in the areas visited this morning. It must be easier to prevent overlapping of songs when populations are sparse than when they are dense.

III Although both a Lof and a Cy were seen with the last mixed flock this morning, I am not sure that they were with flock simultaneously. I.E. I am not certain that the territories of the 2 birds over

lapped.

May 22, 1965
Tijeras

Going to work in area where Aglaiocnis - Pipreola - Tangara nigro-viridis seen yesterday morning. Arrive 5:30 a.m. Just getting light. Cloudy.

Hear faint song which may be Yellow-faced Whitestart 5:43. No diglossini audible at the time.

SEE TODAY'S NOTES GENERAL MIXED FLOCKS

Arrive area where last big mixed flock (with Laf, Sitti, and Cy) seen yesterday. Cloudy. No rain. Just below fog level. 9:30 a.m.

Albi Then see ♂ Albi with flock. Obviously largely same flock seen yesterday, in almost exactly same place, but it does not, apparently, include Laf, Cy, or Sittis.

Albi Laf Cy Laf Albi My observations this morning do not prove that this ♂ Albi's territory or range overlaps those of the local Laf or Cy, but they do indicate that it is at least adjacent (borders meeting) to the latter.

According to my recollection, this is the first time I have seen Laf and Albis in same area and environment.

Albi Incidentally, the area in which this Albi was seen was very similar to some of the environments inhabited by Albis on Pinnacle Ridge and elsewhere. Scrub under or very near large trees. True "cover" would appear to be indispensable for Albis. Why? They do not seem to make much obvious use of trees. Probably no more than carbonaria s.

l. or lafresnayei r.l.) Presumably flowers and insects under trees are different from those in the open. (This is, in fact, quite obvious – even to my ignorant eye.)

Note that Ags were the only Diglossines seen near Tijeras. Apparently quite common there. More evidence that the local Diglossini are rather strongly segregated! (To my recollection, the Central Cordillera is the only part of the Andes in which I have found areas apparently inhabited by Ags alone. Viz my 1962 notes in the northern part of this cordillera.)

Ag
Jm

May 23, 1965
Pinaue' – Tijeras

Going to work same place where 81 Albi seen yesterday. Arrive 5:30 a.m. Just starting to get light. Rain & fog!

There is some bird noise already. Thrush and sub-oscines. Hear-just burst what may be Attapetes 5:38. Brief. Then perhaps a brief snatch of H. atropileus DC.

Lots of bird noise 5:45 a.m

Lots of R's 5:47. Probably all flycatchers.

Birds moving around actively and still vocalizing frequently 5:55. Light is too bad to permit identification; but it is obvious that mixed flocks have not been formed yet.

Near-just snatch Whitetaut song 5:58. Brief. No diglossine audible. Then another phrase a few minutes later. Again no diglossine audible. Then more Whitetaut songs. See birds 20-25 ft up in isolated tree. Two Whitetaits. Alone. Both fly off. One attacks the other in flight. I should've be

81 VV

surprised if the Whitetarts here are breeding now.

Rain getting lighter 6:03

Whitetarts sing some more. Then shut up. Their songs do overlap at least some Attapetes Whitetail song-type vocalizations not far away. Also some wren songs. But there are so many birds vocalizing around here that the Whitetarts could hardly "help" overlapping

7:19. Hear what sound like Cy songs in distance. No other Diglossini or Whitetarts audible at the time (Whitetarts have been "sulked" out of the area with enemions mixed flock.) Cy sings only a few phrases. Then shuts up.

Albi 22 7:55. See small black Diglossa fly across road. Near where Albi was seen yesterday. This also is not far from where second large mixed flock seen a few minutes earlier. This flock included Cy. It is interesting that Albi did not join. Are Albis less likely to join flocks than Cyp or Lafs here?

Cy

Cy

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

May 24, 1965
Ponce? - Tijeras

Going to work same place as yesterday. Arrive 5:25 a.m. Heavy fog! Cold! And still very dark

6:10. Hear high thin Twitters in distance. Sort of "Tah-tah-tah-see eeee-ee-ee-yoo". Possibly diglossini? (This is area where Cy seen yesterday) Or possibly wren??? Only a few phrases. No (other) diglossini, Whitetarts, or Attapetes audible at the time.

Then hear faint Whitetail songs 6:12. No overlap. Again only a couple of phrases.

Then several White-tarts singing simultaneously. See one, apparently a bow, 30 ft up in tall tree. Soon shut up.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

9:55. Fog gone. Cloud cover getting lighter. Getting warmer. Hear faint & but unmistakable match of Laf song up hill. Nothing else audible at time so there are at least 2 Laf in this area. (See also below).

Laf

Then re large mixed flock, including Fitts, Laf, and Cy (described in mixed flock notes).

Fitts Laf Cy

I have seen far too little of the birds in this particular area to be able to say anything very definite about their behavior in general. (Also the weather has been so bad during the last two days that the diglossini — unlike the tanagers, finches, and warblers — have remained hidden.) But my tentative impressions are as follows:

Laf Cy Albi

I. Laf(s), Cy(s), and Albi(s), all are relatively rare here. Not only have I seen the birds infrequently, but they also have definitely being relatively rarely. In the case of the Laf(s) and Cy(s), at least, this last point would seem to be conclusive. I.E. individuals can not encounter territorial rivals frequently.

Fitts

Fitts probably are relatively common (for Fitts).

Fitts Gen

II. Fitts ranges (with flocks) certainly overlaps those of all 3 Diglossa spp.

Fitts Laf Cy Albi Gen

III. Today's observations prove conclusively that Fitts compete with Laf(s). I presume that they must also compete with Cy(s). They may not compete with Albi(s) to any appreciable extent — Albi(s) being largely confined to low scrub and Fitts being largely arboreal.

IV. It is interesting that the Diglossa spp. here have been seen

very little apart from mixed flocks. This might suggest that they are associated with mixed flocks more or less all the time. I rather doubt this, however. I think that they probably are resident on territories, and appear when mixed flocks are present simply because that is the only time when they come out of their "hiding" places (presumably to "escort" the flocks).

V. Granted that the Diglossa spp. are resident, it still is very difficult to determine exactly how many individuals are present. Gen

I certainly have seen only 1 Albi. A ♂.

There may be either 1 or 2 individuals of both Laf and Cy.

If there is only 1 individual of either one or both species, its territory or home range must be very large. I certainly have seen Laf(s) and Cy(s) on both sides of area where ♂ Albi was seen. Thus, if there is only one individual of either Laf and/or Cy, its (their) territory (ies) must overlap that of the ♂ Albi completely. If there are two individuals of either Laf and/or Cy, they may have separate territories on either side of the ♂ Albi territory. In which case, there may be little or no Albi-Laf and/or Albi-Cy territorial overlap. Laf Cy Albi

Certainly the territories of Laf(s) and Cy(s) overlap to an appreciable extent, at least. Laf Cy

VI. None of the 4 species seems to encounter any other face to face. (Possibly Cy and Laf sometimes are not far apart, when both are associated with the same mixed flock.) I haven't been able to determine if this is because one species retreats before another and/or one species refrains from approaching another. Gen

VII. None of the local Diglossini, or the local Yellow-faced Whitestar Gen

ts, is singing frequently now. Perhaps the o7 albi and the Lettis are not singing at all at this time of year. The songs of Laf (s), Cy (s), and Whi testants apparently are not overlapping at all.

VIII. It has just struck me that I may have seen relatively more single Cys (as distinguished from pairs) in the Central Cordillera than anywhere else in the Andes. This is a point which must be checked very carefully!

May 25, 1965
Popayán

Going to work in area near town where both CC's and Scan were seen a couple of weeks ago. Arrive 5:18 a.m. Still quite dark. Sky partly cloudy.

Hear faint twitters which may be by BQ 5:45 a.m. Coming from 2 nites. Overlapping. Then birds shut up.

Small hummingbirds feeding on Guayo flowers. Also fighting among themselves.

Scan? 6:12. Hear what may be Scan song in distance. No diglossine audible at the time. Song is very brief.

See single BQ singing. 15-20 ft up in small tree. Phrases extremely variable in length. Shortest sometimes like "Ja ta ta ta ta zee-ch". Longer phrases with lots of "Ja"s. Some with sub-terminal R. A couple of long phrases with some trace of repetition — somewhat reminiscent double phrases of Mérida birds. This BQ then shuts up and flies away.

Momentarily are some (other) parauimes feeding on Guayo flowers,

but I haven't been able to identify most of them yet.

6:47. Hear what probably are more BG pleases in distance. Not overlapping anything of interest.

6:55. See single Scaup alone. Perched upon, silent, top dead tree. Preening. Then feeds on adjacent Guavo flowers. This is about 150 yds from where a Scaup was seen a couple of weeks ago. I have not seen BG's in this particular area. Scaup eventually flies away.

7:16. See a pair of CYR's, definitely alone, definitely feeding on Guavo flowers. There must be a lot of competition for these flowers!

7:30. See what may possibly be a Scaup flying and perching in tree about 50 yds from where BG's seen a couple of weeks ago. Silent. No display.

7:35. See what appears to be ♀ Bari. Silent. 15 ft up in tree 25 ft from where BG sang earlier this morning. NOD. Bird disappears almost immediately

7:58. See BG singing upward top tree quite near where presumed Scaup seen a couple of weeks ago. Short phrases. NOD. No hummingbirds near.

Leaving 8:05 a.m.

This morning's observations would suggest that BG's and Scaups (and Baris, if they really occur here) are rare and rather sparsely scattered around here. The territories of different species seem to overlap, at least to some extent; but individuals of different species do not seem to come into contact with one another. Nor do their songs overlap (now).

REMARK: Lehmann has collected the local WCC's (the white-capped form) at or just above Tijeras (probably in the exact same place where I have made some observations). These WCC's were in a mixed flock, which also included Blue-Blacks (and possibly parzudakii).

(46.5)

NOTE: According to Lehmann, the generic name of the "Guavo" is Inga. Apparently there are several species.

Central Cordillera Colombia

(67)

Mixed Diglossini, I

July 17, 1965
Piedras Blancas

Arrive 8050 ft 6:00 a.m. Area low-moderately thick scrub. Apparently mature.

Albi?

Hear what sound like Albi R's in distance.

Then see and hear songs by Blue Diglossa. All song phrases essentially similar "feee seee seee mrrryoo". Hummingbird perched exposed 20 ft up top conifer. Ordinary diagonal posture. Tail depressed conspicuously beginning each "feee". Intro Note. Bird apparently is Coer. Apparently none of its phrases overlap with Albi-type R's.

Coer?

Lots of hummingbird sounds around. Not a species I recognize. 6:20. No Diglossas audible when hummingbirds in full swing.

Then hear some songs in distance which might be Whitetart or Diglossa. 2 or 3 phrases.

Then hear Coer type phrases again. 2 or 3 phrases. Overlapping hummingbirds, but nothing else.

Coer?

Then general quiet 6:32 a.m.

Then see and hear Coer again. Identification definite. Single bird alone. Flitting thorn scrub 3–6 ft above ground. Eating red berries. In "ordinary" ways, i.e. chewing — not piercing and sucking like Cyp on Pico de Espejo near Merida. Uttering long phrases in intervals. Songs more or less as before. But somewhat more variable. Many with only 2 Intro Notes "feeee seeeee". The succeeding twitters variable in length and complexity, but all comparatively short. Overlapping hummingbird sounds at random, but nothing else. Then bird shuts up. Flies away.

Coer 29

Coer albi ? Then hear more Coer type songs distance. Also 1 albi-type R. Non-overlapping.

There are some small tubular pink flowers around here which look suitable for Diglossas — but I have yet to see them visited.

Coer 6:43. Coer still singing in distance. Overlapping hummingbirds but nothing else.

albi 30 6:45. A few feet further along road, single albi flies from one side of road to the other, silent and alone. Vegetation here essentially identical with that of areas where Coer seen.

Then see single Atlapetes rufinucha same type scrub, so far further on. Alone. Utters a couple of PN-type notes.

Coer 6:55. Hear more Coer songs in distance. Again, overlapping hummingbirds but nothing else.

Coer I am not sure that there is more than 1 Coer in this whole area. If there is only 1, it has an enormous range or territory.

Everything but hummingbirds silent 7:02 a.m.

Colibri ? Further along road, same type vegetation, hear and see what appear to be Colibri displays. Species not identified.

Also see lots and lots of single dusky Thrushes, and pairs, quite alone, from time to time.

Drive along road to another area, a mile or so away. Vegetation similar, but some taller native trees around.

Hear what may be whitetail out in distance. Presumably White faced or White-spectacled or related type. Laf-like songs. No diglossa are audible or visible at the time.

Then everything very quiet.

33 7:30. Flush a pair of Basileuterus - Types from low bamboo

scrub edge of road. Possibly migrocrustatus Loud SHN's. Disappear immediately. They Humberto Alvarez sees tanager in tree 40 ft away.
34 Possibly Blue & Black. Silent. Flies off. Probably was not associated w th the Banderterus-types.

Very cold and windy now.

Will go on at least 5 miles further down road. Reach area 8100 ft 8:15 a.m.

(M) 35 Catch glimpse of what is probably Blue Diglossa, probably ♂, flitting thru thick low scrub near pines. Silent and alone.

Everything very quiet. And there seem to be remarkably few birds of any species around! (See comments below).

Back to first area 9:15. Still cold and windy.

Albi 36 Alvarez catches glimpse of ♀ Albi in thick scrub. About 15 yards from where Coer seen earlier. Silent and alone.

Hummingbirds still vocalizing.

Albi Coer 37 9:30 a.m. See single ♀ Albi. Silent and alone. In bush 2 ft up. Between 2 sites where Coer (containg same individual Coer) see n earlier this morning. ∴ There is at least some territorial overlap of the two species here. NOD while the Albi is visible. Albi flies away almost immediately.

Albi ? 39 Seen coming out 9:50. And there is a burst of Albi-type R's in the neighborhood. No other diglossine audible or visible at the time.

Albi Albis seem to be quite common here.

Coer When Albis fall silent. A few minutes later, hear single Coer phrase in distance. Then Coer shuts up.

Albi 40 Then see single ♀ Albi, 1½ ft up in thick scrub. Silent and alone.

Albi NOTE: The Albis seen today have not been in scrub-under tall trees. This is not surprising, in a way, as tall trees are very scarce and scattered here.

Albi Cocr Similarly — although the Cocr(s) has (have) been seen in fairly high trees — they certainly are not separated from Albis by complete or perfect stratification. The Cocr seen feeding on berries certainly was low and in what appears to be perfectly typical Albi habitat here.

Albi A few more Albi songs 10:05 a.m. NOD.

Leaving 10:20 a.m.

SUMMARY AND COMMENT:

Albi Cocr To my recollection, this is the only area I have visited where the combination of Albi and Cocr is dominant.

The vegetation here is rather distinctive. Mostly thick scrub of moderate height. Perhaps not as thick as some scrub just below the páramo level in some other parts of the Andes — simply because the bushes are not encrusted with lots of epiphytes and parasites — but the bushes themselves are very close together.

Carbonaria The area as a whole looks very suitable for carbonaria s.l. But I certainly did not hear any traces of carbonaria-like song. Perhaps the area is too humid ?!?!? (It doesn't look extremely humid to my eyes — but this appearance probably is deceiving. It always is difficult to detect the signs of extreme humidity at relatively low altitudes in non-forested areas — largely because of the poor development of epiphytes and parasites. Certainly the presence of Albis and Cocrs would support the theory that the area is very humid. This also is what I have been told by Alvarez.)

Possibly extreme humidity is the reason why carbonaria

s.l. is rare here (as well as in the southern part of the Western Cord illera). But if so, why is it that brunneiventris is the local subs pecies ??? Merely an historical accident ??? (The range of D. lafresnayei gloriosissima may also be relevant in this connection — altho I don't see exactly how.)

The general situation in the first area visited this morning may be summarized as follows. Only 2 species present. Albi and Coer. Albi is common. Coers less common (population much less dens e). At least partial overlap territories of the 2 species. No indicati ons overt inter specific hostility. Mutual inhibition of song appare tly perfect. (The local Muitearit almost certainly involved in this mutual song inhibition. As far as I could tell this morning, its son gs did not overlap those of either Albi or Coers.)

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

July 18, 1965
Santa Elena

Arrive one of the areas where I worked in 1962, 8300 ft, 5:25 a.m. Just starting to get light. Quite a lot of bird sounds. Apparen tly largely Andean Sparrows

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

(Single Albi alone, several Cys in mixed flocks).

The assemblage of Diglossas here is very reminiscent of the corresp onding assemblage at Munchique. In both regions, Albis and Cys are comparatively common (the Albis being essentially non-gregarious while the Cys associate with mixed flocks relatively frequently), Coers are seen occasion

Jen ally, and both carbonaria s.l. and cafresnayei s.l. are very rare or absent. Both these assemblages also resemble the assemblage on the Farallones (which seems to differ only in lacking coers).

Jen These types of Diglossa faunas obviously are "marginal."

Probably one of the reasons why these faunas are impoverished is the "excess" humidity of the regions in which they occur.

But humidity, by itself, is not a sufficient explanation. I don't think that Munchique, the Farallones, and the northern part of the Central Cordillera really are more humid than parts of Purace (or the Cordillera de Merida) where other species of Diglossa (also) occur.

Jen Probably the crucial factor is a combination of humidity and relatively little land at very high elevations (say, above 9000 ft).

Probably such species as carbonaria s.l. and cafresnayei s.l. cannot survive at relatively low elevations during particularly unfavorable (i.e. particularly humid?) years. But they can survive at relatively high elevations at such times. Thus, wherever there is a relatively large amount of high altitude land available, the populations of carbonaria and cafresnayei which survive periods of stress probably will be relatively large and can "easily" re-invade lower elevations when more favorable conditions return. When the amount of high land is small, however, the surviving populations may be so small that they may become extinct "by accident", and/or be so altered (e.g. reduced variability and adaptability) that they are unable to re-invade the lower altitudes

Comroostrum carbonaria - cafresnayei

The diglossine fauna here in the northern part of the Central Cordillera, now, seems to differ from the corresponding faunas of Munchique and the Farallones in lacking (or almost lacking) Conroostrum

spp. The case of the WCC probably is particularly significant. The absence or rarity of the "commensal" Conirostra there presumably is correlated with the almost complete absence of (native) forest.

July 19, 1965
Boquerón de Palmitas

Arrive area 7750 ft 5:35 a.m. Just getting light. Miscellaneous scrub around. Some bird noise. Largely Andean Sparrows.

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS
(Cyp as "obligate" commensals of mixed flocks)

(N)

July 20, 1965
Finca "La Montaña"

Arrive 5:35 a.m. 7900 ft.

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS
(Cy(s), Albi(s), and Scans.)

Cy Albi Scan

July 27, 1965
Finca "La Montaña"

Going to work where Scan, Cy, and Albi seen last week
Arrive 5:40 a.m. Clear and cool.

A few birds are audible when we arrive. But very few. And certainly no Diglossini or Scans.

Hear what may be first Scan "chunk" Song, in distance, 5:48.

Nearest Scan on nearby perch (the same one favored last week) uttering "chunk" Song 5:52 a.m. Song sustained. Overlapping distant Scans at random.

First Scan aerial displays 5:55.

5:57. First R's. Approximate area where Albi seen last week. R's certainly uttered by Albi or Scans. Then more R's. All completely overlapped by "chunk" Songs of several Scans in neighborhood. Then R's stop 5:59. Then start again. All R's quite far off. Down hill in patch wood growth woods. Then R's apparently stopped again.

Several Scans continue, full blast.

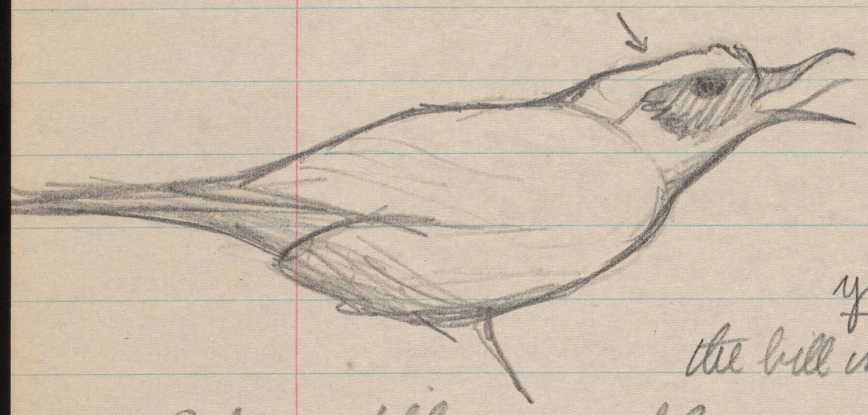
Scans here obviously prefer fairly high perches, in more or less isolated trees or clumps of trees, with relatively wide view of surrounding open areas, for their Songs and other displays. I.E. they are not usually inside the forest and scrub (where the Albis and Cys presumably usually are). Remember also the Scan in the Paramo at Frontino?

Scans still continuing to sing frequently 6:21 a.m. NDWA.

Then I hear another R in distance. Again completely overlapped by Scan "Chunk" Song.

6:30 a.m. At least 2 Cys suddenly appear edge of scrubby

wood. Only a few yards from where Cy seen last week. Ranging 6-10 ft up. One or (more probably) both singing frequently. All songs composed of rapid Twitters, preceded by 2 or (more often) 4 Intro Notes. Commence: "Tsit tsit tsit-tsit rrrrrrrrrrrr" Songs given from unvirtualized diagonal-horizontal perches



Front part of crown sometimes slightly "ruffled", but this appears to be largely "accidental". More important, the tongue is always raised during the Twitter. (I think the bill is kept wide open throughout the Twitter But mandibles presumably move a little with the notes.)

All these Songs appear to be "Greeting" and/or "Landing" calls. It is interesting that they include Intro Notes, altho (or in spite of the fact) that the two birds usually are close together.

Cy Seen

All the Cy Songs are completely overlapped by "chuck" Songs of several Scans. But none of the Scans are very close. At least 50 yards away.

Up more quickly than vegetation — apparently not feeding — and then disappear from view.

66

At one time, there certainly was a third bird near these Cy's. About 6 ft up. Unfortunately, I couldn't identify it. It might have been a third Cy

Allen

6:55 a.m. There is a medium-small green hummingbird feeding on the purple flowers favored by Allens. Apparently no Diglossini around at the time.

6:58 Hear some R's. Again completely overlapped by Scan "Ch

Scan Albi ?

uk" songs. But nothing else audible at the time. R's continue steadily for some minutes. Scans also continue, but with occasional brief pauses. Thus, most of the R's are completely overlapped by Scan "chuk" songs (also by Scan aerial display vocalizations in some cases). Some R's also are uttered during brief periods of Scan silence. Thus, three R's are not overlapped. But this absence of overlapping seems to be "accidental."

Albi 69

Then, suddenly, a ♂ Albi appears in bush quite close to me. Feeding on small purple flowers. Quite high. 8–15 ft up. This individual is quite silent throughout. But the R's I have been hearing continue, in distance. The ♂ Albi seems to ignore them completely.

While the ♂ Albi is feeding, I can hear a hummingbird flying around 15 or 20 ft away. Presumably the medium small green species. The ♂ Albi seems to ignore this bird, too — for some minutes — but then suddenly swoops down and attacks and chases it furiously. Apparently drives the hummingbird completely out of the neighborhood. Then the ♂ Albi hops around low in bush, only a few inches above ground. Then disappears.

The attack by the ♂ Albi was quite silent.

As soon as the ♂ Albi disappears, the medium small green hummingbird comes back! Feeds and perches quite unconcernedly. Certainly not afraid of me!

Albi

Then the hummingbird suddenly flies away. Immediately a ♀ Albi appears in area. Hops about in bushes silent. 4–8 ft up.

Albi

Then the ♂ Albi reappears. Supplants the ♀!!! Obviously aggressive. This supplant also silent. ♀ flies away and disappears. ♂ apparently follows.

MP A second later, a single Cy appears! Silent and alone. Feeds on green and orange fruit in tree 6-15 ft up. And then the medium-small green hummingbird reappears! Feeds on purple flowers. About 4-6 ft from Cy. Apparently no reaction between the two birds. Hummingbird apparently quite unconcerned. I.E. obviously not afraid of Cy. Presumably Cys do not attack it. Then Cy moves off — quite gradually. Also lose sight of hummingbird.

During their various appearances here, the Cys, Albis, and the medium small green hummingbird all have visited many of the same trees and bushes. Their territories certainly are broadly overlapping.

The medium-small green hummingbird is going to be very difficult (or impossible) to identify. Very nondescript. Bill medium long. More or less straight. Plumage generally dark, rather dull green all over. Primaries brownish. Tiny white spot behind eye. Adult ♀ or juvenile? Amazilia spp.???

7:28. Three Cys (re) appear in bushes of scrub-zone 30-40 ft away. Ranging 2-12 ft up. Picking insects off leaves. Also feeding on berries. One individual apparently also picks at some purple flowers. Same species favored by Albis and hummingbird. This is the first time I have seen Cy show an interest in these flowers. But the Cy soon moves on. I.E. this species certainly does not favor these flowers as much as do the Albis and the medium small green hummingbird. Two of these Cys are quite bright, while the third is dull. Obviously a family group. All three birds staying quite close together. Uttering lots of "Jut" notes, in singlets or doublets, but no song.

Then I lose sight of the birds. But a few minutes later, hear several unmistakable Cy songs in neighborhood. Again, comp

letely overlapped by Scan "chuk" Song.

Allo Cy MSG-H Scan

NOTE: At no time, when the Allos, Cys, or medium-small green hummingbird have been here, have there been any Scans closely. All Scans up on perches isolated trees 50-100 yds away. I am not sure that the Scans have even been able to see the other birds

Cy Scan ↑↑↑

7:48. More Cy Songs overlapped by Scan "chuk" Songs.

Cy Allo MSG-H

Cys gradually come closer. Then I see the ♂ Allo again, silent. Feeding on clusters tubular red flowers. Perhaps 30 ft from the Cys. Also see medium-small green hummingbird in area. Perhaps 30 ft from ♂ Allo. But somewhat closer to Cys.

Cys continue to advance. And ♂ Allo moves off. Apparently retreating before Cys (although they have shown no obvious, overt hostility toward it.

Dominance hierarchy here presumably is Cy > Allo > medium-small green hummingbird.

Then I lose sight of the medium-small green hummingbird. A few seconds later, another hummingbird, apparently Scan, flies through area. Very rapidly. Does not feed. Ignores Cy approximately 5-10 ft away.

Cy Allo Scan MSG-H

Cys continue to sing from time to time. Also Scans. Complete overlap. Then Scans shut up. Cys utter a few more phrases. Then move off and fall silent.

Cy Scan

Overlaps Cy and Scan Songs here probably is completely rand om.

Scan Cy Scan

It also looks as if the Scans here are not members of the local diglossic complex in any way.

Scans singing "chuk" Songs again 8:06 a.m. NDWA

Albi 175 MSGH

8:15 a.m. ♀ Albi back. Feeds on purple flowers 10 ft up. Then medium-small green hummingbird appears. Flies to same bush as ♀ Albi starts to feed on flowers. Immediately, the ♀ Albi supplants the hummingbird. Both birds quite silent. Hummingbird retreats. Then flies back toward same bush with purple flowers. Just about this time, Cy (s) begin to sing again. About 20-30 ft away. And ♀ Albi just disappears. Presumably moves off. Hummingbird stays around for a few seconds. Then also disappears. Cys shut up. (Are some of these Cy songs provoked by presence other species ???)

Cy

All these Cy songs were completely overlapped by Scan "Chuck" songs in distance.

Cy Scan

8:27 a.m. ♂ Albi back for brief visit. Feeding on purple flowers 8-10 ft up. Quite silent.

Albi

Albis here certainly do not seem to be in breeding (or at least courtship) mood now!

Then medium-small green hummingbird back. Flies around me or ♂ Albi. Perhaps 5 ft away. ♂ Albi seems to ignore it. But hummingbird flies away after only a few seconds. ♂ Albi remains for some minutes. Feeding purple flowers 3-6 ft up. Then also disappears.

Albi MSGH

Scans still singing 8:38 a.m.

Scan Albi 176

♂ Albi back again a few minutes later. Alone and still silent. Feeding purple flowers usual bushes.

The way in which the ♂ Albi keeps reappearing at frequent intervals would suggest that its territory must be rather small. The fact that the Cys appear less frequently would suggest that their territory is larger than that of the ♂ Albi.

Albi Cy

Albi Cy

The Albis and Cys here certainly do not appear to be stratified in any way. (Of course, the scrub and wood here is so low that there is hardly room for stratification.)

Well! well! well! 8:45 a.m. Single Scan (identification definite) appears very close by. No diglossinae or other hummingbird around at the time. Scan spends at least a minute, definitely feeding on purple flowers, same species favored by Albis and medium-small green hummingbird (MSGH). Quite silent. The particular bush in which it is feeding is not one of the ones which the Albis visit most frequently, but I definitely have seen ♂ Albi, one or more Cys, and MSGH in it occasionally.

MSGH Scan

Then MSGH suddenly appears. Swoops at, and chases, Scan. Attack is silent. Scan leaves without resistance!!! (Altho the MSGH is very appreciably smaller than it is).

Scan

Are the Scans less aggressive here than in some other parts of the Andes??? Or is this particular area "marginal" for the local Scan????

Scan

Scan songs becoming increasingly brief, and separated by increasingly long periods of silence 8:55 a.m. Probably the Scans also are past the peak of display now.

I wonder why there are no Whitetants in this area? The area looks as if it could support at least a small population.

Albi MSGH

9:08 a.m. ♂ Albi back. Silent and alone. Feeding purple flowers & lit up. Then there is some kind of rapid hostile encounter between the ♂ Albi and a hummingbird, probably MSGH. Hummingbird certainly the aggressor. Apparently swoops at ♂ Albi. The latter holds its ground, doesn't even flinch. And the hummingbird flies

off and disappears.

Leaving myself 9:20 a.m.

Some Icans still uttering "chuk" songs in distance.

COMMENTS:

Sean

There certainly is some hostility between members of the diglossine complex here — although not between species of Diglossa itself!

Jean

As a general rule, I suppose that overt hostility between different species is directly and positively correlated with the amount of competition (for food) between them. Thus, the MSG-H tends to feed on the purple flowers favored by Albos more frequently than do the Cys; and, therefore, it fights with the Albos more frequently than do the Cys

Jean

July 28, 1965
Region of Balmora.

Working around area called El Herbal Ca. 8400 ft.

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

Brun Cy

(Both Brun and Cy with mixed flock. In low scrub. I.E. their territories are at least partly overlapping here too. And both may be "semi-commensals" here.)

7:35 a.m. Same area, Most of flock seems to have moved on. But Cy has remained behind. Now uttering many long phrases. In scattered mature-looking trees above scrub. Usually 15-30 ft up. All phrases composed of "Jit" Intro Notes followed by long, rapid, formless Twitters. Bird definitely alone. Songs uttered from unwitnessed semi-

Cy

horizontal postures. Every once in a while, one or more Yellow-faces in distance also utter(s) long phrases. Between phrases of Cg. No overlap.

9:55 a.m. Flights below forest flock area. Catch glimpse Colibri sp. feeding pink flowers in scrub. Also hear brief snatch "chunk" long. Sounds like Scan.

Scan

10:00 a.m. Down by Finca. Ca. 8400 ft. Can hear presumed Scan "Chunk" long. Bird perched high in isolated tree in pasture.

Scan

Leaving 10:05 a.m.

July 27, 1965
Region of Belmira

Going to work same place today as yesterday. Arrive 5:45 a.m. Cloudy. Looks like rain. Cool.

Quite a lot of bird noises by Finca. But presumed Scan in isolated tree not singing yet.

First Yellow-face songs heard 5:55 a.m. Below where first flock seen yesterday. NODWA.

No singing where first presumed Scan seen and heard yesterday.

Arrive area first flock 5:58 a.m. Cg singing. In bush left up. Long phrases. Twitters with "Jit" intro notes. Yellow-face(s) also singing in distance. Long phrases of the two species generally alternate, but there are at least 2 or 3 partial overlaps. Cg beginning a phrase before Yellow-face is completed through. Also Yellow-face(s) beginning phrases before Cg is completed through.

Cg 176

Then Cg shuts up. Flies away. Yellow-faces continue.

Cg

One Attapetes White-long inserted between Yellow-face phrases

es. No overlap. Then Yellow faces shut up.

Then one more Cy pleurare in distance. NODWA. Then more Yellow fac. NODWA. Then more Atlapetes Whistle Songs NODWA. Then more Yell ow face. NODWA. Then silence 6:05 a.m. Then more Yellow face Songs at irregular intervals NODWA.

Cy

6:30 a.m. Area second flock. Can hear Cy singing in distance. NODWA. Utters only 3 or 4 pleurares, then shuts up.

Cy

It would appear that Cy is the dominant species of Diglossini here — just as in other parts of the northern section of the Central Cordillera

Cy

A few yards further on, up hill. 6:40. More Yellow faces Si nging NODWA

Considerably further on. 8600 ft. 7:05 a.m. See single Brum. Brum 179 Get particularly good view of it. Looks just like Brums near Páramo Frontino, except that mountaches are smaller, thinner — perhaps even partially interrupted (Also notice that when the bird faces me directl y, its rufous breast is "framed" by a stripe of light gray on either side.) This bird cannot be same individual seen yesterday. When first see n, it was sitting 3 ft up, on exposed perch, in scrub. Looking from side to side. Also uttering "Tit" Notes at quite regular, rapid, inter vals. Continues doing this for some time. The general effect is quite DC-like !!! Then goes to feed on small pink bud-like flowers. Definitely quite alone

I wonder why there are no Albis here ??? The general form of the vegetation here (with its patches of apparently natural forest) loo ks more suitable for Albis than does the vegetation at "La Montana", fo r instance. (But I must admit that I have not seen any of the purple tubular flowers favored by Albis here so far.)

Albi

Brum Alb

Are Brum and Alb mutually exclusive ??? Viz both Frontin o and the southern Andes.

Agm 80

NOTE: The diglossine population as a whole seems to be relat wely very sparse here. Even less dense than near Páramo Frontino.

Cy 81

7:23. About 20 yds further on. Hear Cy uttering typical longs, with intro notes, in distance. NODWA. About 3 phrases. Then silence. Then some Yellow-face longs same general area. NODWA.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS —

Cy Brum

Cy attacking and probably chasing Brum!!!

Cy 82

8:50 a.m. On way back down hill. Area where second flock seen yesterday. Hear Cy singing in distance. NODWA.

Further down, I notice that none of the presumed Scans is singing

Scan sig

Leaving 9:18 a.m.

Central Cordillera Colombia

Mixed Diglossini, I

August 1, 1965
Parque'

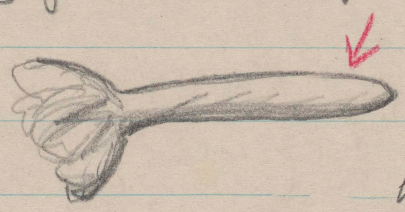
Going to work this morning in the first place I worked a few months ago — i.e. the place where Cy, Ater, Laf, and CC all occurred together.

Arrive 5:31 a.m. Still quite dark. Cold. Sky partly cloudy. Some fog in distance, coming up from Moscopán.

Everything very quiet at dawn.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

6:08. See green hummingbird, presumably no. VIII, feeding on pink tubular Pan flora (cunal Andean type). Surprisingly enough puts bill to base of green tubular part of the flower — not into pink petals!!!



I think that this bird must have been putting its bill into a hole made by a Diglossa. (I remember that I thought hummingbirds VIII might be using Diglossa holes a couple of months ago — and that this might help to explain why they don't fight with Diglossas.)

6:10. A few songs in distance which probably are uttered by Yellow-faced Whitestarts. NODWA

6:18. Hear what probably is Laf song — in very great distance. NODWA. Then silence. Then one more Yellow-face song. NODWA. Then silence again.

6:23. Then see single Ater. Silent. 12 ft up in second growth tree in scrub. Not very far from noisy (but invisible) Poecilothraup

is; but I can't tell if it is reacting with the tanagers or not.

Aha! There are still some dark red cup shaped flowers around. But certainly nothing like the number there were a couple of months ago.

6:40 a.m. Wind getting a little stronger.

6:42. Hear what probably are a few Cy Long phrases uphill. Again NODWA. Then some Yellowface Long downhill. NODWA. Then some Laf Long downhill. NODWA.

Cy Laf

7:40 a.m. Sun shining brightly now. Hear occasional brief su atches Laf Long in distance NODWA.

Laf

NOTE: I have yet to see a single Cinnamon Hummingbird here today. This would suggest that all or most individuals of the species are "migratory". Moving up and down the mountain according to the seasons.

Cinn

Apparently the hummingbirds VIII are not migratory. Could this be because they are "parasitic" on Diglonas — and thus can utilize a greater range of flowers than the Cinnamons???

VIII

8:15 a.m. Flight downhill. Near where Laf - Ater flight seen a couple of months ago. Hear lots of Diglossine Twitters. Phrase after phrase. All Twitters brief and formless. Not particularly "trilling". Many with trace of sub-terminal R. No Intro Notes. Singing bird is perched 4 ft up in bush, but unfortunately cannot be identified from where I stand because of intervening vegetation. But presumably Ater? (This certainly is within the known territory of an Ater, and quite close to where I saw the first Ater this morning.)

2

Ater?

This is the most vigorous burst of Diglossine song I have heard today. Don't tell me this individual is in breeding condition???

3 Eventually this bird flies away and shuts up. Then I hear some bird Laf long about 100 yards away. No overlap.

4 8:43. Some more Laf long. NODWA

Leaving 9:25 a.m.

COMMENT: I saw, and heard, surprisingly little of Cy this morning. Does this mean that the local Cys are "migratory," like the local Cinnamon Hummingbirds ??? If so, it means that the only nectarivorous birds left here, now, are the nectarivorous Diglossas (i.e. Laf and Alter) and the hummingbirds "parasitic" upon them (i.e. no VIII).

August 2, 1965
Ponape

Arrive area where Laf's and (probably) Cys were the only non commensal Diglossini seen and heard a few months ago 5:37 a.m. Cloudy. Still dark. Some wind. Cold. Everything silent.

There is a light sprinkle of rain 5:50 a.m.

A few miscellaneous bird sounds (not identifiable) 5:56.

Hear first Laf long 6:01 a.m. NODWA. Then silence. Then some Doubly long in distance. Then silence again.

Quite a lot of Doubly long 6:05. By at least 2 individuals. Probably more.

6:20 a.m. Hear first Yellow-face longs NODWA.

6:28. See a single hummingbird VIII perched left up in bush in scrub.

6:30 - 6:35. Quite a lot more Yellow-face longs. NODWA. But

the Yellowface songs do seem to overlap Firebell songs completely at (It is my general impression that none of the Whitestarts are inhibited by any Poecilotriorchis songs anywhere.)

laf 6:40. More Laf song. NODWA.

laf 6:55. I have now heard several more brief matches of both Laf and Yellowface song. No overlaps. And NODWA

& WW SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

COMMENT: I believe that I said — somewhere in my notes of observations at the finca "La Montaña" — that the amount of overt hostility between species of the Diglossine "vocal complex" probably is directly proportional to the amount of competition for food, between them. Of course, there probably are exceptions to this general rule. Particularly when one species is parasitic upon another. (E.g. see my discussion of hummingbird VIII in my notes of yesterday.)

Dgm

August 3, 1965
Region of Purace

Going to work where Albi seen a couple of months ago.
Arrive 5:50 a.m. Cloudy. Just getting light. Everything quiet

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

8:05 a.m. Hear what sounds like Cy songs in distance. The first today. NODWA

Cy

9:37. Catch very brief glimpse of Albi. Silent. Alone. 15 ft up in rather isolated tree in second growth area edge road. About 100 yds from where Albi seen a couple of months ago.

Albi 1

Ogm COMMENT: Apparently the Diglossini are not breeding anywhere in this region now!

August 4, 1965
Region of Pueraće

Going to work at a finca called "Canaan". Just above the town of Pueraće itself. Not very far from where Ater-Scan reactions were observed a couple of months ago.

Arrive base of road leading up to house 5:35 a.m. Moderately clear. Fairly warm. Altitude 2725 m., 8925 ft

Reach house. Working in garden. Full of the orange tubular flowers, growing in clusters, which are so common around Bogota'.

Cmm Also full of Cinnamon Hummingbirds. And at least one Black Diglossa, presumably Ater. SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS.

Cmm Cinnamons quite noisy. Then, 6:01, hear Yellow-faced Longs. Only a few phrases. NODWA.

Cmm Cinnamons fighting among themselves. Aerial chases.

This garden is not very close to any large patches of forest. Partly surrounded by sparse hedge. Next pasture

Ater 6:05. See Ater (again). Identification definite. Feeding orange flowers near hedge. Silent. Alone. Apparently not molested by Cinnamons. Actually, the part of the garden visited by the Ater does not seem to be visited by the Cinnamons very frequently.

See several single Sooty Thrushes alone.

Cmm Cinnamons are sticking their bills up into centers of the orange f

lowers. I.E. they are not using Diglossa holes.

Then Yellow-face Longs in distance 6:12 a.m. NODWA

Then see Ater in hedge across road from garden. Cinnamon comes and hovers near it. Ater doesn't react for some seconds. Then Ater flies away. Cinnamon flies after Ater. Apparently hostile chase. But chase is not very close. I.E. Cinnamon apparently reluctant to press home attack.

Ater flies up to perch in garden where Cinnamons are. Ater just supplants 2 Cinnamons! Silently. Cinnamons leave without resistance! Also silent.

Then hear some more R-Zazas 6:20. There are at least two Black Diglossas here. R-Zazas seem to be scattered during hostility among the Diglossas, rather than during Diglossa-hummingbird encounters! Then more R-Zazas 6:21

Both Black Diglossas here now are Aters. One supplants the other silently.

One Ater utters R (no Zaza) when flying over the other.

The Cinnamons seem to get out of the way when Aters approach. But they do this while Aters are still several feet away. And the "retreat" of the Cinnamons is not particularly hurried or "panicky" looking. Thus, these encounters can hardly be classified as "supplants". But it does seem to be correct to say that the Cinnamons show a tendency to avoid the Aters!

Thus, it would appear that the relations between Cinnamons and Aters here now may be somewhat different from the relations between the same two species in nearby areas a couple of months ago. (But I must check, in my earlier notes, to see exactly how many

Cinnamon - Ater encounters I saw a couple of months ago.)

Cinn (In any case, it must be stressed that the Cinnamons here now are very aggressive among themselves.)

Cinn Ater 6:30. See Cinnamon and Ater perched only a foot apart. Both silent. Then Cinnamon makes ambivalent movement toward Ater. Stops. Then Ater flies away.

6:37. Hear Dubuna song in distance.

Ater The two Aters here are not sticking close together. But they do sometimes occur only a few feet apart without overt hostility. And they seem to have largely (but not completely) overlapping "home ranges". I think that they must be mates - but obviously not in breeding condition.

Both Aters show a tendency to keep to the parts of the garden relatively near the surrounding hedges. I.E. near places of refuge. But the two individuals seem to prefer to remain near two different hedges. (Adjoining sides of this roughly square-shaped garden).

One Ater supplants the other 6:43. (It has been some considerable time since I have heard any R-Zaza patterns.) Again, another silent intra-specific supplant.

6:47. See Black Diglona feeding orange flowers near head. Looks quite carbonaria i.e. in shape, but definitely has humeral patches (of medium size). Presumably Laf. Or could it be Humeri ???? I certainly saw at least one undoubted Ater in same area earlier. But there is no Ater close by now.

Laf Ater Cinn Cinn Ater There is long & vigorous fight between Cinnamon and Black Diglona — apparently Ater. Both birds aggressive. Ater feeding on orange flowers. Cinnamon swoops at Ater at least 10 times. Two

ops vigorous. Pressed home. Cinnamon sometimes comes within a fraction of an inch of the Ater. Every once in a while, Ater stops feeding, to chase and/or supplant the Cinnamon. (Supplants occur when Cinnamon has perched between swoops.) Some of the chases accompanied by R. No Zazza. Other chases, and supplants, silent. Cinnamon silent throughout.

Ater

Then I see an adult Ater chasing a juvenile of same species (Identification of both disputed.) Silent

Ater Laf

Then, 6:55, see an adult Ater fly away when presumed Laf appears 5 ft away. Both birds silent

A few minutes later, see presumed Laf repeatedly supplant adult Ater in hedge. Both birds silent.

Ater Laf

7:10 a.m. See both presumed Laf and adult Ater perched quite 3-4 ft apart in same bush of hedge. Then presumed Laf supplants adult Ater. Both birds silent during supplant itself. But then adult Ater utters R as it flies away!

Ater Cinn

Then see another brief but vigorous Ater-Cinnamon dispute. More or less a "draw".

Ater

I shouldn't be surprised if there are 4 or 5 Aters here, in the general neighborhood!

Ater Laf Cinn

Certainly the territory or home range of the presumed Laf at least broadly overlaps the ranges of at least two Aters (the presumed mates).

Gen Laf

This group here might almost be called a "flock" of Diglossas — like the much larger group at the Prime Eucalypts near Bogota

7:25 a.m. I have now got several more glimpses of the "presumed" Laf. It is surely Laf-like in proportions. And the humeral

patches definitely are blends.

If this bird really is a Laf, it is interesting that it has not sung this morning. Probably it is the only Laf around here. And hostility toward Aters does not seem to be enough to provoke song by Lafs — at least here and now.

Both Aters and Laf definitely are feeding at the bases of the corollas of the orange flowers. And the Cinnamons definitely are not using Diglona holes. One wonders if the Cinnamons and Diglonas are getting nectar from different parts of the same flowers.

This is, I think, a remarkably low altitude for Laf. Presumably this individual comes here as a result of the attraction of a super abundant food source.

Incidentally, I have seen Cinnamons in all the areas where the Laf has been seen. But I have not yet seen any overt reaction between the 2 species. The Cinnamons probably are avoiding the Laf more consistently than they are avoiding the Aters.

NOTE: In spite of the Ater-Laf encounters cited above, the Aters certainly are avoiding the Laf most of the time.

Cinnamons still fighting among themselves 7:35 a.m.

One adult Ater repeatedly supplants another. Both birds silent

7:45. Go over to another side of the garden. This also is bordered by "hedge". But this "hedge" really is upper edge of a wooded ravine. Trees here fairly tall (20 ft) and thick

See apparently single Cy feeding in one of these trees right at the edge of the garden. 6 – 12 ft up. Apparently alone. (Altho I can hear B. migrocritatus not too far away.) Cy utters a number of long phrases. Long rapid Twitters with "Sit" Intro Notes. Feeds

Laf

Ater

Laf Ater Cinn

Laf

Laf Cinn Ater

Ater Laf Cinn Ater

Cy

NODWA

by picking insects off leaves. Also tries to eat some small green berries. But these seem to be too hard to cope with. Then Cy eventually moves off. Down ravine.

At no time did this Cy show any interest in the garden Cys apparently do not like their orange flowers. (This may also be further evidence that Cys do not cut into corollas of flowers. Perhaps they cannot ???)

Cy

After Cy leaves, a small green hummingbird appears in tree. Apparently smaller than VIII. Ericocnemis spp.?

?

There are several Cinnamons 6-10 ft away during whole period Cy and green hummingbird are present. But they make no attempt to attack either.

Cinn Cy ? !

A few minutes later, single Violet-back Hummingbird appears and feeds on tiny yellow flowers in adjacent tree. And one of the Cinnamons does make a couple of half-hearted swoops at the Violet-back. These swoops don't seem to bother the Violet-back at all. (As far as I can tell, the Violet-back here is identical with the one seen near Paramo Frontino.)

VB Cinn

Violet-back eventually moves on. Then, 8:06 a.m., a single adult Ater flies into same tree. Silent. Alone. Also feeds on small yellow flowers. Perhaps exactly the same individual flowers as the Violet-back earlier. (These flowers are far too small to be cut into. Bird just sticks bill into centers.)

VB Ater

So perhaps the Violet-back is like the Scan — insofar as it may be used as an "indicator" of the probable presence of carbonaria s.l. in the area.

VB Scass Ater Scan

Incidentally, I wonder why there are no Scans here now?

There certainly are some tall isolated and semi-isolated trees scattered about in the neighborhood. Presumably it is just that the right species of flowers are not present.

8:20 a.m. Violet-back back. Same tree. Supplanted by Cinnamon. Flies off without resistance. Cinnamon also leaves.

VB Cinn

Then Ater flies in (again). Feeds small yellow-flowers. Not attached by local Cinnamons.

Ater Cinn

Ranges or territories of Cy and Ater here are at least adjacent

Ater Cy

Then Violet back flies back into tree with small yellow flowers Ater still there. The two birds feed 5 ft apart. Apparently ignoring one another. Then Violet-back flies off. (Violet-back is much smaller than Ater. Perhaps it is too small to be intimating ???)

VB Ater

Then Ater also leaves.

A few minutes later, 8:31 a.m., hear Cy long phrases nearby. Twitters with Intro Notes. Lots and lots of phrases. Singing bird(s) invisible at first. But certainly in tree right next to the one with small yellow-flowers visited by Ater and Violet-back ("VB")

Ater

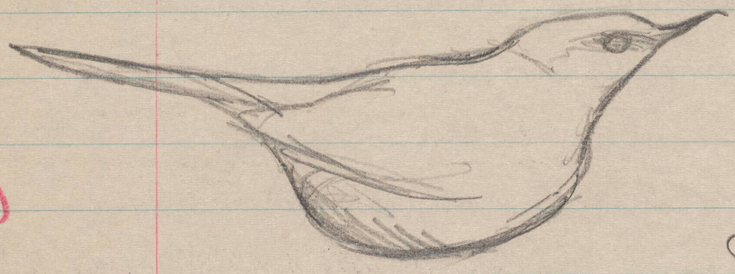
After the Cy songs have continued for a few rounds, Ater flies (back) into tree with small yellow-flowers. Silent. Hops around in an excited manner. At least some times, it must be within 5 ft of the Cy (s). At the same time, a single Cinnamon appears. Flits about the tree in which the Cys are. Does not attack Ater. Apparently does not try to deliver actual attack on Cys either. Then Ater flies away. Then VB flies into tree with yellow-flowers. VB and Cinnamon apparently ignore one another also. Then I see that there is a single Laf, 1 ft up, at the base of the tree from which the Cy songs are coming. (This must be a different individual from the one seen

Ater Cy

Cinn VB Laf

Lsf Cinn VB earlier today.) Silent. Apparently ignores, and is ignored by, both the Cinnamon and the VB. Lsf disappears again almost immediately. Cinnamon & VB apparently move off a few seconds later

Then, I see that there are 3 Cys present in the area!!! Cy All 3 fly into tree with small yellow flowers!!! Hopping about very actively indeed. Apparently disputing. Possibly a single bird "storming" a pair. Territorial boundary dispute? One or more birds singing furiously. (Interestingly enough, all or most songs with Intro Notes.) And one bird repeatedly does slight Belly-fluffing. More or less commences


Cy

I think that the bird that does this Belly-fluffing is the most aggressive individual. Gradually driving the other two in front of it.
I don't know if the Belly fluffing is accompanied by songs or not

Then all 3 Cys fly away.

Cy Ater VB Cinn Lsf Apparently back a few minutes later. Birds invisible. But lots of songs in neighborhood. And, immediately, Ater, VB, and Cinnamon all fly back into trees. Silent. Ignore one another. Then Cys apparently move off. And so do Ater, VB, and Cinnamon!!! (Probably scattering in different directions.)

Obviously, Ater, Lsf, VB and Cinnamon are "attracted" by sight and/or sound of Cys. And, although I did not see any actual fights during these particular "encounters", it seems quite probable that the "attraction" is essentially hostile.

Ater Laf Cy VB Cinn

Obviously, territories or ranges of Ater, Laf, VB and Cinna mon overlap that (or those) of the Cys at least partly.

And the Ater, Laf, and Cinnamon (and probably VB) approach the Cy(s) closely at least occasionally.

Ater

Ater back feeding in tree with yellow flowers 9:05 a.m. Silent. Apparently alone.

Then see Ater in tree where Cy seen first, earlier this morning. The territories of Ater and Cy(s) here must be at least fairly broadly overlapping.

Ater

Then see 2 Aters feeding clumps small white flowers slightly down hill. One adult. One juvenile. Only a foot or so apart. Silent. Then adult attacks juv. Furiously. Actually on top of juvenile. Pecking downward. Adult apparently silent. Juvenile responds to attack by spreading its wings and Q-ing them vigorously. At same time, utters lots of hoarse, harsh "Zraah" or "Zraaah" notes. Apart from the Wing-Q, the juvenile's postures and movements seem to be unritualized. (Actually, the poor thing is here trying to defend itself. Probably pecking back at adult.) Then frenzy stops. Juvenile probably has flown away.

This Wing-Q probably should be classed as "appeasement" rather than "food-begging"?

Ater

9:21. Hear Dubusia singing again in distance.

Juv. Ater back in same bush. Feeding on small white flowers. Adult seems to have gone now.

1,

Juv. ignores, and is ignored by, small green hummingbird with rufous tail feeding 6" – 1' away.

It is getting cloudy and cooler now. 9:25 a.m.

Ater 9:31. Hear one Ater R-Zaza in neighborhood. Then one Ater Twitter. Can't see circumstances. Then see single adult Ater, alone, perched no more than 6" from where (second) Laf seen earlier.

Cinn Laf Ater Cinn Ater Back to other side of garden 9:38 a.m. Cinnamons still around. Still fighting among themselves. But quieter now than earlier. See single Laf and single Ater about 5 ft apart in hedge. Both silent. No overt hostility.

See single Cinnamon hovering over head of feeding Ater. Then Cinnamon flies off without actually attacking.

9:48. Again see Cinnamon hovering over head of adult Ater. Repeatedly. Only 3"-4" above Ater. Also males inhibited attack movements. But Ater ignores it completely.

Light sprinkle of rain beginning 9:50 a.m.

Ater Probably only 1 or 2 Aters here now. Certainly no trace of any "flock".

NOTES:

The orange flowers here are Kniphofhora uvaria, Hook.

Ater All references to Aters, without qualifying adjectives, in the above pages, refer to apparently adult individuals (this is the general principal followed throughout all my field notes).

SUMMARY: On the basis of this morning's observations, the interspecific relations within the local "diglossini social complex" might be summarized as follows:

Laf Ater Laf x Ater. Territories at least broadly overlapping. Aters show a definite tendency to avoid Lafs. But individuals of the two species sometimes do occur fairly close together. Quite possibly, Lafs have no tendency to avoid Aters. If so, the occasion

al encounters between the two species must be due to "lapses" by Aters. Probably usually (not necessarily always) failures to move away "in time." Sometimes, Lafs and Aters seem to ignore one another when close together. At other times (more often?), Laf(s) supplants and/or chases Aters. Aters do not resist.

Laf × Cy. Territories at least partly overlapping. Laf apparently attracted by sight and/or sound of Cys. Attraction probably essentially hostile.

Laf × Cinnamon. Territories completely overlapping. But I have yet to see an overt reaction between individuals of the two species.

Laf × VB. Territories at least adjoining. No reaction seen between the two species.

Ater × Cy. Territories at least partly overlapping. Ater apparently attracted by sight and/or sound of Cys. Attraction probably essentially hostile.

Ater × Cinnamon. Territories completely overlapping. Lots of overt hostility between the two species. Sometimes Ater chases Cinnamon. Sometimes Cinnamon chases Ater. (It is my impression that the Cinnamon is the more "active" partner in this relationship. Probably more likely to avoid Ater than Ater is likely to avoid it. Probably usually the initiator of overt fights. Possibly Aters seldom or never attack Cinnamons unless the latter attack first.)

Ater × VB. Territories at least broadly overlapping. Apparently no hostility between the two species.

Cy × Cinnamon. Territories at least partly overlapping. Cinnamon apparently attracted by sight and/or sound of Cys. At

traction probably eventually hostile. (NOTE: Laf, Ater, and Cinnamon all seem to bear the same relationships to Cy.)

Cy VB — Cy x VB. Territories at least adjacent. VB's probably attracted by sight and/or sound of Cys.

Cinn VB — Cinnamon x VB. Territories at least partly overlapping. Cinnamons frequently aggressive toward VB's.

COMMENTS:

Cinn — Cinnamon may well be openly aggressive toward all other nectarivorous spp. that it can attack, or chase, with relative impunity.

Laf Ater Cinn — Laf, Ater, & Cinnamon all compete with one another for food. Probably competing very strongly now. Probably most individuals of all three spp. prefer, or depend upon, Kniphófhora more than any other food source, now.

Ater VB — Ater and VB also are competing for food (i.e. the small yellow flowers).

Some of the apparent absences in this region are very puzzling. Why are there no barituba s.l. ??? And why are there no Coers ???

Bari Coer — The absence of barituba s.l. is particularly remarkable. Much of the country side on this western side of Paraca' looks very suitable for it. Open scrub. And lots of suitable flowers (Remember that the Baris in Bogotá seem to specialize on Kniphófhora !!!). It has just occurred to me that I have never seen Bari in the same regions as Ater (i.e. the Central Cordillera of Colombia and Central Ecuador) but that I have seen it in all other regions where other forms of carbonaria s.l. occur, as we

Bari Ater

ll as where carbonaria s.l. seems to be absent. (baritula s. l. certainly occur in some of the same regions as Glors, Humer s, southern Bruns, and "Carbo" s.) Is baritula s.l. unsuccessful in competition with Ater, but successful in competition with all other forms of carbonaria s.l. ??? If so, why ???

I am quite baffled by the distribution of Coer. It also is absent from regions inhabited by Ater. But it does occur in one regions where baritula s.l. is absent (i.e. Munchique). And it is absent from some regions where baritula s.l. occurs (e.g. Northern Bolivia). Certainly, it cannot be competing with Ater directly. Its principal competitor must be Cy. (Actually, I cannot identify any ecological difference between the two species, yet. Except that Coers probably only occur in some of the more humid regions also inhabited by Cys??? But certainly the eastern parts of Pera ce' are very humid!!!

Perhaps the presence of Ater in a region alters the behavior and ecology of Cy in such a way that it becomes a more serious competitor of Coer than in other regions ???

I am almost being driven to the conclusion that Cy and Coer are morphs of the same species, rather than different species!

Certainly the absence of both Coers and baritula s.l. here is another point of resemblance between the diglossine faunas of this region and the Quito region.

I was surprised to see no CC's here today. The area looks fairly suitable for them. Certainly there are a couple of melastome bushes with lavender flowers on one side of the garden here. Is something driving CC's away from here ???

Coer Ater Baru

Cy

Ater vs Cy Coer

Coer Baru

CC

Certainly the Lafs and Ateres are not breeding here now. Probably the Amnamons and VB's aren't either. But the local Cys may be. (Another suggestion that Cys have two breeding seasons per year!)

Jgm

August 5, 1965
Furace!

Going to work in same place as yesterday. Across house itself 5:30 a.m. Still dark. Occasional light sprinkles of rain on way up; but sky looks largely clear.

Some miscellaneous bird sounds begin 5:40 a.m. Also some light rain! But rain almost stopped 5:46.

Working in the part of the garden where Cys were seen yesterday. Faint Cinnamon sounds 5:50 a.m. Then hear some Ateropeles Whistle Songs in distance. NODWA. (Actually, there have been more bird sounds around here this morning — especially down in the wooded ravine — than in adjacent areas on previous days — this trip. Perhaps some birds here are in breeding condition? Or may be these sounds are responses to the rain?)

Cinn

Lots of single Sooty Thrushes as usual.

Hear faint Yellow face Songs in distance 5:55 a.m. Apparently NODWA. Bird singing phrase after phrase. Then several Yellow faces singing. Still NODWA.

Now going over to area where faint Laf seen yesterday. Amnamons seem less active and noisy today than yesterday. See faint Black Diglossas feeding on orange flowers 6:03.

Cinn Black

More Yellow-face fongs in distance 6:05. NODWA

Ater Laf 6:06. Two Aters perched 2-3 ft up in bush which was particularly favored by Laf yesterday. Silent. One individual repeatedly supplants the other. Supplants also silent.

Cinn Ater Cinnamons somewhat noisier now.

One Ater (again) repeatedly supplants another in hedge. Supplants with R's and R-3a's.

Apparently, there are only two Aters (both adult) here now. Ater Laf Just like yesterday morning at the same time. This would suggest that the other Aters seen yesterday, and the Laf(s), spend the night some distance away from the garden.

Ater attacks Cinnamon feeding on orange flowers. Attack silent. Cinn Cinnamon flies off without resistance. Then Ater feeds on same orange flowers itself.

Wind coming up and it is getting colder now 6:21 a.m.

Cinn Ater Cinnamons fighting among themselves. But not very vigorously. Ater supplants Cinnamon. Supplant is silent. Cinnamon does not Cinn resist.

Laf back in favorite bush 6:27 a.m. Silent. Then feeds on orange Laf Ater flowers. Ignores, and is ignored by, single adult Ater perched in bush 8-10 ft away.

More Yellow-face fongs in distance. NODWA.

Ater One Ater repeatedly supplants another in bush. One supplant with R-3a3a. Others silent

Gen. There seem to be many fewer social (hostile) reactions between the nectarivorous birds in the garden today than yesterday. Presumably the birds are "depressed" by the bad weather today. They certainly are busy

feeding!

6:35 a.m. More Yellow-face songs in distance. NODWA. Then I also hear Dolbunia singing in distance.

Cinn Ater — Cinnamon hovers over head of Ater feeding on orange flowers. Ater quite ignores it. Then Cinnamon perches a few feet away. Then same Ater supplants group of 3 Cinnamons! Supplant is silent.

6:44. Ater feeding on orange flower. Cinnamon comes and hovers overhead. Ater ignores it. Cinnamon perches 2 ft away. Then, the same Cinnamon makes at least 3 vigorous, furious swoops at the Ater. Swoops pierced home. Perhaps actual contact(s) made! Ater responds to swoops by stretching wings out horizontally. These responses are brief. But undoubtedly a trace of "Butterfly Pattern". Wings apparently not quivered or waved. Whole dispute quite silent. Then Cinnamon flies away.

Laf. — Also Laf feeding quietly in distance. On orange flowers. All other birds seem to keep away from it.

Fine rain starting 6:45. Then some comes out (with rain bow). Wind still increasing.

Ater Cinn — Ater supplants Cinnamon. Both birds silent.

Back to area where Ays seen yesterday 7:00 a.m. Some Cinnamons around. Then VB appears and feeds on small yellow flowers. It is not attacked by Cinnamons.

Ays Cinn VB

Yellow-faces still singing in distance 7:12 a.m.

VB — One or more VB's back several times without being attacked.

Actually there may be up to three or four VB's here. Quite noisy. Uttering little "Broop" sounds. Apparently also fighting among themselves. Very rapid aerial chases — almost impossible to follow

VB Cy Lag

with the human eye.) In the course of these disputes, the VB's certainly pass through the tree in which Cys and Lafs were seen yesterday. Thus their territories or ranges do overlap those of the latter 2 species — at least partially.

Ater

Ater appears briefly in tree with small yellow flowers 7:20.

Ater VB

When VB's are absent.

Gen

There also seem to be several other species of small hummingbirds around here. All partly or largely green.

Cinn Ater

Back to other side of garden 7:40 Everything quiet. Then no one more disputes among the Cinnamons. They ignore an Ater feeding not very far away.

Observations interrupted while I get some coffee!

Back to Cy area 7:55.

VB Cinn

Single VB back feeding small yellow flowers. Gets involved in a dispute with another small hummingbird — I think of another species Latter flies off. VB back feeding. Ignores, and is ignored by, a Cinnam on about 10 ft away.

Ater

Adult Ater feeding in bush with clumps small white flowers. Silent and alone. Then flies off.

Sun coming out again 8:05 a.m.

Ater

8:10. Now there is a small green hummingbird feeding on clumps small white flowers. Ater certainly has a lot of competitors around here!

VB ? Lef Ater Cinn

8:22. VB back tree with small yellow flowers. Attacked and supplanted by small greenish hummingbird.

Back to other side of garden. One Laf, two Aters, and lots of Cinnamons around. All feeding orange flowers.

Laf Ater

8:44. Laf supplants and chases Ater at least three times in rapid succession. Both birds silent throughout. This dispute began when Laf flew to attack Ater approximately 8-10 ft away. As far as I could tell, the Ater did nothing "positive" to provoke the attack.

Cinn Laf Cinn Ater

Cinnamon flies into favorite Laf bush when Laf is not there. The Cinnamons seem to be very careful to avoid the Laf

Cinnamon swoops at Ater 8:58. Both birds silent

9:10. One Ater repeatedly supplants another. Supplants with R's, R-Zaza's, and R-Twitters!

Ater Ater

Back to Cyside garden. See both adult and juvenile Aters feeding in bush with small white flowers. But not simultaneously.

Cinn Ater

Cinnamon perches in tree with small yellow flowers. Then single Ater flies in. Feeds on flowers only a couple of feet from Cinnamon. The two birds ignore one another.

Ater

Then I see 2 juv. Aters feeding in bush with white flowers. And an adult also flies in and lands there. Then adult chases and supplants one of the juveniles. Both juvenile and adult fly away.

Ater

The behavior of the Aters here may tend to confirm one aspect of behavior which I thought I established near Quito. Juvs and adults of Ater seem to associate with, or encounter, one another more frequently than juvs and adults of any other form of Diglossa with which I am familiar.

Ater ?

Remaining juvenile Ater in bush with white flowers repeatedly ignores tiny greenish hummingbird feeding same flowers only a few inches away. I.E. small birds do not provoke the hostility of Aters.

Ater

9:35 a.m. Now a juv. and an adult Ater are both feeding in bush with white flowers. No sign of overt hostility. Then adult flies

away.

Ater ? Speak of the devil! Adult Ater repeatedly (at least 4 times) supplants and chases small green hummingbird. So Aters do not always refrain from attacking much smaller birds!

Ater Then hear outburst "Zraah" notes in bush with white flowers. Catch glimpse of two birds fluttering about. Adult Ater chasing juvenile of same species?

Ater Then see adult Ater feeding tree with yellow flowers. Silent and alone. Then single Turnbelly (?) flies into same tree. Lands about 6 ft from Ater. Silent. Turnbelly flies off, Ater does not follow.

VB Ater Then VB lands in same tree. Feeds yellow flowers 6-8 ft from Ater. The two birds ignore one another. Ater flies off in one direction. VB in another.

Light rain again 9:45.

Ater VB A few minutes later, both adult Ater and single VB back in tree with yellow flowers. Must have arrived almost or exactly simultaneously. Both silent. Again feeding 6-8 ft apart. Then VB flies away. Ater does not follow.

It has been my impression, both today and yesterday, that Ater and VB may have slight tendency to "synchronize" their visits to this tree. I.E. they are in the tree simultaneously somewhat more frequently than one might expect by chance alone — judging from the general amount of time they spend in the tree, compared with their time away from the tree. Possibly the sight of one feeding attracts the other. There is no reason to suppose that this attraction is hostile (although there is no reason to suppose that it could not be hostile either).

VB Ater 10:00 a.m. Now there are two Aters and two VB's in tree sim

ultaneously! All 4-6 ft apart from one another. Then one VB chases the other. The latter leaves.

Cy
Ater
VB

Then I hear 1 Cy long phrase not too far away. NODWA
Both Aters in tree with yellow flowers are adult.
One VB still in tree with both Aters 10:05.

I suppose that the VB may secure a certain amount of protection by "associating" with Aters. There are, for instance, several Cuitlacoans in the general area of this tree with yellow flowers. Some times perch in the tree itself or immediately adjacent to it. But they (usually) do not approach the tree very closely when the Aters, plus VB, are in it!

VB
Ater

Rain getting worse. Leaving 10:15 a.m.

COMMENT: Re the suggestion immediately above. Looking over my notes of yesterday and today in detail, I find that I have no evidence that Aters and VB's tend to synchronize their visits to the tree with yellow flowers. Nor do I have any evidence that VB's are more likely to join Aters than vice versa. But I do have evidence to suggest that VB's are more likely to be attacked when alone than when "associating" with Aters!

VB
Ater
Cuitl

VB
Carbonaria

This may help to explain why VB's tend to occur in the same general area as carbonaria s.l. — even if they do not show a tendency to join, or come close, to the latter.

All in all, my observations today would seem to support most of the tentative conclusions I reached yesterday. But they certainly do not lend any support to the hypothesis that the Diglossas here may form flocks.

Gen

Cy

The fact that Cys have been seen so rarely here is further

evidence that Ags have comparatively large territories. (Possibly the Ags at this particular locality also are associating with mixed flocks.)

August 6, 1965
Furnace

Going to work same place today. Arrive at house 5:31 a.m. Moderately clear. Cool. Little wind (as yet).

Going to try to concentrate on VB - Ater - Cinnamon relations this morning - if possible.

A moderate amount of bird noise 5:40 a.m. Lots of thrushes. Some hummingbird noises (thicket edge ravine. 5:46.

NOTE: In general, the bird noises around here seem to be less today than yesterday. I.E. some of yesterday's sounds probably were in response to the rain.

Cinn 5:48. First Cinnamon sounds.

First Yellow-face songs 5:51 a.m. NODWA.

Ater Then hear Ater R-3aza's on far side of garden.

Cinn Cinnamon fluttering about in the vicinity of (but not actually on) the tree with small yellow-flowers ("TI").

Still plenty of Sooty Thrushes alone.

VB 5:58. VB & TI. Alone. No Cinnamon ("Cinn"). Then Cinn Cinn appears, perches in nearby bush, and VB disappears, more or less simultaneously.

Sof 6:01. Single Sof appears in nearby small bush. Alone. Flies off into garden.

VB Cmm

6:04. VB back in T1. Alone. No Cmm nearby. Then Cmm comes, perches stalk orange flowers 10 ft away. VB doesn't react at all! Continues feeding. Cmm flies away. To garden. Then VB flies away. Into ravine thicket.

Ater Cy Cmm

Will! Will! Will! 6:07. Ater flies into T1. Alone. No Cmm nearby. Then Andean Sparrow j ——→ Ater! Then Cy suddenly appears. Cy j ——→ group. At one time, Ater & Cy only 3 ft (approx.) apart. No significant hostility. Then Cmm appears. Perches nearby in garden. No overt hostility. Then Ater, Cy, and Andean Sparrow all disappear more or less simultaneously. Then Cmm flies off.

C Ater VB Cmm

Then CC suddenly appears!!! Flies into T1. Alone. Silent. Feeds on small yellow flowers. Then Ater suddenly flies into T1. Also feeds on small yellow flowers! Ater and CC sometimes only 1-2 ft apart. No reaction between the two birds. Then Ater flies off. CC does not follow. Then VB flies into T1. Feeds yellow flowers 3-5 ft from CC. No reaction between species! Then Cmm appears. Perches garden 6 ft from T1. Shows no sign of hostility toward either VB or CC. VB flies off. CC does not follow. Cmm flies off. CC eventually moves off too. Not in same direction as Cmm. But more or less in the direction that both Ater and VB went (further into thicket).

CC VB Cmm Cy Ater Laf C Cmm

CC territory or range certainly overlaps those of VB, Cmm, Cy, Ater, and Laf.

A few minutes later, see CC feeding in adjacent tree. Apparently picking insects off leaves. (This is tree where Cy first seen a couple of days ago.) Cmm perched scrub 3-4 ft away. No reaction between the two birds. It is interesting that the CC has not been

attacked by Anni — especially as the two species are similar in color action.

Anni

Anni contacts are fighting among themselves.
More Yellow-face songs in distance. NODWA.
See single maroon crested montane cotinga. 15 ft up in tree edge nearby. Definitely alone.

6:20 et seq. VB visits T1 three times. Each time alone, at first. Once, small green hummingbird (with whitish breast — presumably ♀ or juv.) flies into tree after VB. Feeds small yellow flowers 5 ft from VB. No reaction between the two birds. Green hummingbird flies off. VB does not follow. Twice, Anni comes and perches garden and scrub 6–10 ft from VB. No reaction between the two species. (I am fairly certain that the Anni did not appear in these circumstances because it was hostile to VB, or wanted to "escort" the VB. It didn't even look at the VB.)

VB ? Anni

Then a single Cg flies into T1. VB immediately flies away into adjacent tree! Obviously a reaction to the Cg! Cg flies off. VB goes back into T1.

Cg VB

6:30. Look up to find both Ater and VB in T1. Feeding 4–6 ft apart. Then Anni appears. Attacks and chases Ater. Apparently ignores VB. Ater flies off. Anni in hot pursuit. VB continues to feed peacefully. Then flies off too.

Ater VB Anni

6:41. Small green hummingbird in T1. Flies away immediately when Ater flies in. Ater alone. Feeds. Flies off. Back a minute later. alone. Flies off. Anni attacks and chases Ater just as it takes off! Both birds disappear. Ater back again a minute later. Alone. Feeds. Flies off.

? Ater Anni

? 6:47. Small green hummingbird back TI. Alone. Flies off.
Cinn Back. Cinnamon appears. Lands in TI 8 ft from green hummingbird.
Latter flies away. Cinnamon flies off in opposite direction
Ater Ater flies into tree adjacent to TI. Selects. Alone. Flies off a gain.

Sun reaching this area 6:52 a.m.

VB VB back to TI. Then 2 Aters fly into tree. Apparently engaged
Cinn in hostile chase. Alight from tree 6-8 ft from VB. Cinnamon appears.
Ater Hovers over the Aters. Aters fly away. Cinn goes in another direction.
Perches. Then VB flies off in still a third direction.

VB 6:55. VB back TI. Feeds. Cinn appears. Also lands in TI.
Cinn 6 ft from VB. No overt reaction between the two species. Cinn flies
? off. VB continues to feed. Flies off. Small green hummingbird ("SG
H") appears in TI. Alone. Flies off.

Ater Ater feeding in adjacent tree. Exactly where CC seen earlier.
CC Apparently also pulling insects off leaves. 6:58. There is at least
Cinn 1 Cinn flitting about the area, also perching occasionally. Ca 10-
VB 15 ft from Ater. No reaction between the two birds. Then I see that
? the VB is back in TI. Feeding. The Cinn (s) is (are) just about
the same distance from the VB as from the Ater. But there are no
Cinn - VB reactions either! Then SGH flies into TI. VB and
VB SGH appear to ignore one another. Feeding 5-6 ft apart. Then
? gradually come closer together. Then there is a brief fight between
Ater VB and SGH. Can't see who is aggressor. Then the two birds separ
VB ate. Resume feeding 5-6 ft apart. Then an Ater flies into TI.
? Not the same individual as the one seen feeding in adjacent tree
(The latter is still there.) No reaction between Ater and either VB

Comm or SGH. Nor do any local Comms show any particular interest in the group in TI. Ater flees off. Nothing follows. Both VB and SGH disappear some minutes later.

NOTE: Comms apparently never feed on small yellow flowers of TI tree (or other trees of same species). Altho they are perfectly willing to perch in these trees.

Ater 7:15 a.m. Looks up to see single Ater in TI. Alone. Silent. Feeds. Flies off.

Dubonia singing in distance 7:18.

VB 7:19 a.m. VB back in TI. Feeds there steadily for a long time.

Comm There also are several Comms in the neighborhood. Very active. Frequently fighting among themselves. At last 5 times, Comms fly very close past the VB. These "approaches" do not seem to be responses to the VB itself. The Comms just "happen" to get very close to the VB "in the course of their normal activities." But twice the approaches are so close that they are "effectively" supplants. The VB is forced to retreat. 0" to 2"! And once 2 Comms land and fight on branch less than 1' from VB. This also "forces" VB to retreat.

? Ater VB Once an SGH lands in TI while VB is feeding. Oft away. No overt reaction between the two species. Then Ater lands. SGH flies away immediately. Apparently as response to Ater. Ater and VB feed 4-6 ft apart. No overt reaction between the two species. Then Ater flies off. VB does not follow.

Ater VB During next few minutes there is some disputing between 2 or more Aters all over general neighborhood. Lots of K-3a-3a's. One, one Ater chases another thru TI. Pass very close to VB. Thus also forces VB to retreat a little.

VB eventually flies off.

Alter — A few minutes later, single Alter, alone, lands in T1. Feeds. Flies off.

? — 7:38. Single SGH in T1. Alone. Feeds. Flies off.

Alter — Can hear more Alter disputes – lots more R Zazas — in scrub down ravine. Alters in this ravine and along edge seem to be very aggressive among themselves now!

? — 7:45. SGH back T1. Alone. Feeds. Flies off. Same thing again, a few minutes later.

Getting hot now, 7:55 a.m. And birds in general much less active than earlier.

VB Conn — Then VB back T1. Alone. Feeds. Immediately, a Conn comes. Perches in T1 3ft from VB. VB retreats a foot or so. Continues feeding. Conn apparently not looking at VB. Just perching quietly. Then Conn flies off. But, as it goes, it makes a small "detour" to fly right over head of VB. Possibly an intention movement of hovering, but not actual hovering. VB doesn't seem to react at all. And Conn then goes off. VB leaves a few seconds later (when dog appears).

VB Conn — NOTE: I am beginning to think that Conns approach T1 too frequently when VB is present for the reaction to be "coincidental". Even though Conns have not attacked VB's this morning, and even though the Conns do not seem to look at the VB's, I think that at least some of their approaches must be "escorting".

Alter — 8:01 a.m. Hear one unmistakable Alter twitter far side of garden. NODWA. A few seconds later, hear Yellowface songs not far off in ravine. NODWA.

Alter — Then see single Alter in T1. Alone. Preens and feeds. Flies off.

VB Ater

The VB(s) today certainly do not tend to go to T1 when Ater(s) is (are) there !!! (But I do have some indications that Aters may tend to go to T1 when VB is there !!!).

Cinn VB Ater VB ? Ater VB

Well! Well! Well! More complications. 8:14. There is a Cinn sitting in tree adjacent to T1. Then VB flies into T1. Feeds. No reaction between Cinn and VB. Not even anything which could be an intention movement of "escorting". (Cinn does dispute with other Cinns from time to time, however.) Then Ater flies into T1. Ater supplants VB!!! Both fly off. Then an SGH appears in T1. Feeds. Alone. Flies off just as Ater flies in. Ater feeds. Flies off. Immediately, the SGH comes back. Then the SGH is attacked and driven off by another humming bird — I think a VB. Both birds disappear.

Ater

8:25 a.m. Ater back in T1. Silent. Alone. Feeds. Flies off. Something happens again a few minutes later.

Cinn VB

8:36. Aha! VB flies into T1. Alone. Feeds. Then Cinn comes and definitely swoops at VB. Swoop pressed home. Both birds fly off.

Cinn Ater

A minute later, see Cinn chasing Ater in flight over garden. Cloud coming up 8:43 a.m.

Ater

Adult and juv. Ater feeding only 3 ft apart in bush with clusters small white flowers. No overt sign of hostility. Then adult flies off. Juv. does not follow

Ater VB Cinn Ater

8:47. Adult Ater flies into T1. Alone. Feeds. Flies off. Immediately a VB flies into T1. Alone. Feeds. A Cinn appears. Flies closely VB. VB doesn't appear to react. Cinn flies on. VB continues feeding. Then also flies on.

A few minutes later, Ater (re) appears in T1. Alone. Silent

Seeds. Flies on

Look up a few minutes later, to see both Ater and VB feeding in T1. At least 8 ft apart. VB flies off. Ater does not follow. Flies away a couple of minutes later, in opposite direction.

Ater VB

8:58 a.m. VB back in T1. Alone. Then Ater flies in. Lands at least 10 ft from VB. But VB flies off right away! Ater flies off a minute later.

VB Ater

Ater back almost immediately, silent. Alone. Cinn appears. Perches adjacent tree. Then SGH appears! Lands 6 ft from Ater. No overt reaction between the two birds! Then a second Ater appears in T1. The first chases the second. Long twisting aerial flight. Aters pass near SGH — which flies off immediately. All 3 birds disappear.

Ater Cinn ?

Leaving 9:05 a.m.

COMMENTS:

I. The relations of VB with Cinn and Ater might be summarized as follows:

Cinns do "attack" VB's. But not very frequently. And VB's show little or no reluctance to come to the feeding tree when Cinns are actually in the tree itself or very close nearby.

VB Cinn Ater

Aters may also "attack" VB's. But apparently even less frequently than Cinn's.

Nevertheless, VB's are reluctant to come to the feeding tree when an Ater is in it. (This would suggest that attacks by Aters, although less frequent, are apt to be more damaging than attacks by Cinn's.)

Aters certainly are not reluctant to come to the feeding

tree when a VB is present. (Probably Cinn's are similar to Aters in this respect.)

In spite of the fact that Aters compete with VB's, and may even attack them, VB's do derive some advantages from association with Aters. (1) VB's are not likely to be attacked by Cinn's when Aters are present. Many Cinn's probably are usually reluctant to approach the feeding tree if an Ater is present and, if they should approach in a hostile manner, they are more likely to direct their attack toward the Ater than toward the VB (2) Similarly, VB's are less likely to be "disturbed" by Cinn's in the "normal course of their (Cinn) activities" when Aters are present than when they are absent. (3) The presence of Aters may tend to inhibit, or prevent, approaches by SOH's — another important competitor of VB.

II. Re the frequency of overt inter-specific hostility in this area. On the whole, the area must be considered very open. At least the garden part of the area. The Kniphófias flowers are planted close together, but they are not very tall, and all the members of the "diglossine social complex" spend much of their time above the level of the flowers and/or at the tops of flowering sticks. They certainly can see one another very well, most of the time.

III. Many Diglossas often are garden birds in many areas. This may help to explain why they seldom or never are "integral" members of mixed flocks of tanagers, warblers, and finches. The latter are not garden birds.

IV. I am not sure that there is more than one Lof individual in this area. If there is only one, its territory or home range must

be relatively very large

ADDITION: Re point I above.

I have no real evidence to prove that VB's derive some benefit(s) from association with Cnns. Theoretically, this associati on might be advantageous if Aters were more likely to attack Cnns than VB's. But I have no evidence that Aters ever attack Cnns unless attacked first

Ater Cnns VB

(I am not sure that there was any Cnn very close by when the Ater supplanted the VB this morning. But there certainly were several Cnns not very far away!)