

"Quinnua"

"QUEÑUA"

7¹
FENUA

Polyleps

4,300 m. CHECAYANI
QUEÑUANI

in AZANGARO (PUNO)

Volcán CHACHANI - (Arequipa.)

✓ YURA

Valle de CHIQUIÁN - (Ancash)

RAVRA (Paellón)

XLLANGANUCO - por Yungay
Huaraz

5,100 m.

(9)

PHOTOGRAPHY SCHEDULE — ANDES

I Purace' — March 29, 1972

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

B. General area where first 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 (shot 6), 1 shot. 1 shot Blue & Red jiv.

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 Interdigitated low dense forest and páramo. Roll C, wide angle, B+W, 11-13 Roll B, telescopic, B+W, 16

E. General area "Wetmore's tanager" Roll C,
life size, B+W, thicket, 14-16. 17-Aglactis. Roll B, telescopic
B+W, Aglaectis, 17. Roll C, life size, B+W, thicket, 18+19
Roll D, life size, B+W, thicket detail, 1-2.

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

II. Paracá - March 31, 1942

A. Upper alpine scrub, just before Paracá.
Shots of birds, Red Woodpecker Roll D, telescopic, 11, 12.
Sitta. Dark red melanotus. Aglaectis. Hummer. Prothraupis

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

Munchique

Mr. Popayan / ~~Asa~~
Lafos



Marzo 2000 m.

Javalones Station = 1700 m

3500 m. end of forest



Mr. Nicolás (Nick) Ponomareff
Hacienda Barbasca
San Martín (meta)
Colombia

Lagothrix (Chayo)
Cebus (Nico Maicero)
Callicebus (Zocay)
Ootus (Tutonoro-dmitri)
Atles (Marimba)
Saimiri (Piti) (Carisueio)

ALTITUDES — SIERRA DE MÉRIDA

Hotel 5350 (Unconnected)

Road nr. Chonos de Mulla 5610

First stop - Teleferico Station itself 7750

(slightly above station 7850)

Second stop - Teleferico

(well below station 10,500)

Mucumbá

7500 - 7550

River near Caute 6550

Paríama La Negra 8475 - 9400 (edge of páramo)

Road to La Azulita 7600 - 7500

COLOMBIA

Boquerón (Mr. Medellín) 7500 - 7800 ft.

Laf area above Quasca 7700 - 9800 ft

Mixed flock area above Quasca 9500 ft

Humer area below Quasca 8600 ft.

Mts above Bogotá 8900 - 9100 ft

Hotel Bogotá 8150 ft.

- I. Maqueto 9050 ✓ 9100
- II. Cotacallas 8450 ✓ 8475
- III. S. Antonio 7550 (and below) ✓ 7525
- IV. Popofpatti above Nono 9450 ✓ 9525
- V. Nono (car park) 8950 ✓ 9000
- VI. Macaco 10850 ✓ 10750 ✓ 11,000
- VII. Lloa (town) 9500 ✓ 9575
- Lloa (patti 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 Nat. 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 Bogota 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 the 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 trouble 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 Christmas and the New Year,

Your friend, *Carlos*

F. C. Lehmann V.

* Another bird found in that area but with more yellow on the head is Chlorospingus nitellus.

Western Cordillera Colombia

Mixed Diglossini.

October 29, 1962

In 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 thru bushes. Bird usually keeps well hidden while singing.

Near 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 zeeeeee yoo". Also an occasional Albi song. Inserted in gaps of "carbonaria" songs.

If these were 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

"Zee zee zee zeeeeeee za-ya"

"carbonarias" about given up 5:45 just as it is starting to get light!! Albi continuing

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

Mixed Diglossini, Oct. 30, 1962, II

(4)

lots of typical Atlapetes. "3 eeeeeee 3 eeeeeee . . ." Notes in the same area now. And the "carbonaria" songs have quite stopped.

Barn Go! I finally see a bird uttering "carbonaria" songs. It is a Barn. 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 Grosbeak!! So I cannot recall on my records of "Albi"s here which were heard and not seen.

Barn 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.

Barn 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.

Albi 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.)

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

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

Albi? (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.)

Mixed Deciduous, Oct. 30, 1962, III.

(3)

Fog 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 unritualized 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. Sparquits 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 Sparquit R's, but probably not so "hard", possibly even faster, and perhaps a little softer. But I still wouldn't care to identify them by sound alone.

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

Mind Digiomni, Oct. 30, 1962, IV.

(4)

to ca 7600 ft.

Arrive same place (road, 4700 ft) 3:45 p.m.

Bari

Star and see ♂ Bari singing. Much as this morning, except that R component sometimes less conspicuous (a pure "frececece" or a "frececece" 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 posture 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!

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

Bari

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

Open
Bari

Thinking 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.

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

Albi

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

Mind Diglossini, Oct. 30, 1962, V

(5)

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

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

October 31, 1962
Boqueron de Tollo

Arrive usual place 5:30 a.m.

Bariis beginning to sing.

One bird singing "zee zee zee zee wa".

No Albi or Grangit song yet. Bariis usually alternating pretty well. Only occasional overlaps.

First Albi or Grangit song heard 5:33. Overlaps with Bari. Then some Bari songs overlapping one another. Then more Grangit 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 Grangit. Certainly in an area which was Grangit territory yesterday.) No overlap R's different birds (if more than one bird is uttering R's now).

Bari songs already decreasing in frequency 5:38.

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

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

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

Mixed Diglossini, Oct. 31, 1962, II.

(6)

Spung

All songs except those of single Grassquit over by 3:48.
Andean Sparrows here are not singing now (altho I have heard their songs lower down). So I can't tell how their songs fit into the Grassquit - Albi - Bari complex.

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

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

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

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

Going uphill 6:20 a.m.

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

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. 6:50 ft

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

Mixed Diglossini, Oct. 31, 1962, III.

(7)

all

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.

Born

I wonder if it is characteristic of *Bornis* (everywhere) that their territories do not overlap those of other diglossines (wide Venezuela?).?

November 3, 1962
Munchnique
Western Andes

SEE TODAY'S NOTES ON MIXED FLOCKS.

By
all

Ande from a few Ays 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
Munchnique

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

July 22-25, 1905

Western Cordillera Colombia

(8)

Mixed Diglossini, I
In Cali

March 2, 1965
Favallones
W. Andes

11:35 a.m. Ca. 6200 ft. Region scattered but not too young second growth. Hear what may be Cy singing. Song phrases rather peculiar. Some "seeee ta-seeee ta-seeee" Most with some Twitter near middle or before end. Eg. "seeee ta seeee urr seeee"
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 ad ♀ 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.

Western Cordillera Colombia

(9)

Mixed Diglossini

April 29, 1965
Munclique

Awoke 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 Fuchrias, roses, etc., with some Abus and Chorrillos 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 Fuchrias 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.

April 30, 1965
Munclique

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. Mostly Andean Sparrows

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

Mixed Diglossini, Apr. 30, 1965, II

(10)

Preumed Scans in Abu 5:47 a.m.

Audubon Sparrows 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 Bogota. 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 ???

6:21. See a queen hummingbird, which may be a juvenile Scan, feeding on Chorrillos. Hitting bill up tubes. I don't think I ever saw a Scan feeding on Chorrillos in Bogota.

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

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

Leaving this garden 6:41 a.m.

Then go on uphill.

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS.

(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.)

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

Mixed Diglossini, Apr. 30, 1965, III

(11)

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 Ateris 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 through most feeding. Fighting. Even "Singing". (Harsh notes or bursts of notes. The "songs" of this species are nothing like real Diglossini songs.)

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 variorii. At least, he called them "Azulitos" and his son called a variorii by the same name.

II. See this afternoon's notes on mixed flocks. It is quite possible that the "Glauc" 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.

Mixed Diglossini

May 1, 1965
Mundique

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

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

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

Albis may "take the place" of carbonaria s.l. and cafermayei 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 ???

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

May 2, 1965
Mundique

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

(fittis, 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 fittis or WCC's. This rea

Albi

Cy?

Albi
gen

Scam

fittis
wcc
Cy

Cy

ly is quite remarkable! I must see if they are equally gregarious in the other parts of the Western Cordillera (and in the Central Cordillera). Does the gregariousness of the Cys here suggest that they are almost exclusively nectarivorous (like *fittis*)? 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 advantages of joining mixed flocks may be, the advantages of joining a large flock presumably are larger than those of joining a small flock.

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

If the Cys 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 Diglossines are becoming clear. The commensal *fittis*, WCC's, and Cys probably range over the territories of the local resident, territorial, *albis* without coming into significant social contact with them. (This seems to be characteristic of the relations between commensals and territorial residents everywhere.) "Glauco"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 evidence, 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 behavior mechanisms (rather than "chance" alone).

fittis
WCC
Cys
albis

Mixed Diglossini

May 3, 1965
Munclique

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS.

Gloria?

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

Gen

In any case, it is obvious that the lafrenayeri-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 lafrenayeri 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 paramo' 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 Gloria. This is about as open vegetation as any I have seen inhabited by lafrenayeri s.l.

Gloria
Brun
Barn

If the bird seen today was a Gloria, 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 barbutula s.l., it must live in much more open areas than the dark bellied forms of the same species or species group.

Gen

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

Mixed Diglossini, May 3, 1965, II.

(15)

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

Leaving aside Cy, perhaps the habitat preferences of the 3 other presumed Diglossas here can be summarized as follows. Albi's range 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.) "Glaucis" seem to occur in much the same type of habitat as Albi's, in the lower part of the Albi range. Glaucis's (or whatever they are) occur in more open scrub than Albi's, in the medium part of the Albi altitudinal range.

As far as my observations go, Cys are completely arboreal here. 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 *Banus* near Antioquia. This would explain why *Banus* occur in the northern end, and why Glaucis's are more common (presumably) there than elsewhere.

1:35 pm. 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 Diglossines outside of Colombia? I surely couldn't have overlooked it if it was at all common.

Mixed Diglossini

May 4, 1965
Muncheque

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

Cy certainly are not obligate commensals. But today's observations would confirm the hypothesis that they are purely arboreal here. Also that they are not nest-associated here.

Albi
Cy The ecological separation between *Albi* and *Cy* here seems to be very wide. Possibly the ♂ *Albi* seen this morning fed as high in scrub as the lowest scrub visited by *Cy*. 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 *Cy* at quite such low elevations as *Albi*, but the *Cy* certainly come down to within a couple of hundred feet of the Finca 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
Cy (As I remember, I saw a number of contacts between *Albis* and *Cys* in the Sierra de Mérida in 1962. And certainly the *Cys* in the Eastern Cordillera come down into low scrub visited by *Albis*, at least occasionally. So the separation between *Albis* and *Cys* here must

Mixed Diglossini, May 4, 1965, II

(17)

be due to intrinsic behavioral factors — not just the absence of an intermediate "connecting" form, i.e. carbonaria s.l.)

Perhaps the explanation of the peculiar situation here is simply that there is "room" for only one typical, common, Diglossa here. This "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 "Couriostria".

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 Sitti (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 Sittis and Ruf in the Eastern Cordillera, and between Sittis and Blue + Chestnut Coucibells in Bolivia.)

all
by

Sitti
Wcc
Jan

May 5, 1965
Mundlucque

Arnie 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. Hear Attapetes Whistle song 5:43. Only one. No overlap with Laf-like. Laf-like continue.

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

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

Mixed Diglossini, May 5, 1965, II

(18)

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

See single Sooty Thrush alone 5:58.

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

See single Coturnia alone. Usual place.

Everything getting quiet 6:04 a.m.

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

91
6:24. See single Cy in tree, 30 ft above ground. Region of trees along edge of slide. Singing. Long formers twitters, without Intro Notes! Alternating with Laf-like songs!

160
~~160~~
Now see Cy split from tree to tree. Followed by large white-bearded woodcreeper, and a small green hummingbird!

Now hear Cy songs with "Tut tut" Intro Notes!

92
200
Oh Lord! 6:32. 8'400 ft. 2400 m. See "glauca". Sitting there very low scrub on top cliff edge road. Scrub open, obviously second-growth. Bird obviously Diglossa. Alone. Dark dull bluish, apparently some whiteish under wings. Apparently utters brief Albi-like R !!! My trouble is that I can't be absolutely sure that it isn't a ♂ Albi! But it certainly did look very blue-ish.

60
200
Social Cy territory must overlap that of this "glauca". 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.

93
Then see single cyanocephala fly away from tall tree in which there certainly are other birds. Not followed immediately.

See single Sooty Thrush alone.

Mixed Diglossini, May 5, 1965, III

(19)

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

8:50 - 2:50 m. Region mixed scrub, bamboo, and a few old trees festooned 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 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" ♂ on a ♀ 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 "songs". Vide. copulatory behavior of Glors. Incidentally, none of the Twitters during this incident were preceded by any kind of Intro Note

9:25 a.m. Watching mixed flock only 50 yds away from where the 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 "Int" Intro Notes.

Mixed Diglossini, May 5, 1965, IV

(20)

W 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 reverse and fly off into distance. The downward plunge was accompanied by Tutters without Intro-Notes. Another "Pounce" like incident! "Pounces" may be characteristic of Diglossa ???

NOTES:

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

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

W
W III. This morning's observation would suggest that the Cys 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 Cys bred twice a year.

IV. If glauca really is similar to albilateralis in ecology, habitat preference, etc., this might help to explain why albilateralis 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.)

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

W
W 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

Mixed Diglossini, May 5, 1965, V.

(21)

of the mountain really was uttered by a *Coccyz* ??????

NOTE: Looking over my notes made at the Boqueron de Tollo in 1962. I see that the territories of *Baris* and *Albis* 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.

Albis
Baris
gen

May 6, 1965
Munchnique

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

Cy 99

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

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

Sittis
wcc
Cy

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

gen

Obviously, some of my previous statements about the behavior of *Sittis* 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 *Albis*).

COMMENTS:

It is now resolved, to my satisfaction, that the "glauca" 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 competitors) are really quite simple (although possibly specialized). They are as follows:

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.

In their wanderings with flocks, both Sittis and WCC's pass over or 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 Couirostrum species.

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 Couirostrum species (except insofar as they all tend to occur in the "tree" sub-groups of flocks).

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.

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

Cys here 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 Albi without producing any contact between the species.

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

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

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 Finca).

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

Mixed Diglossini, May 6, 1965, IV

(24)

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 Coccyzium species (and all other species in mixed flocks?). Possibly they do not come into contact with Cys because the latter are essentially non-migratory here ??? But what do they do about Albis ??????

May 7, 1965
Mundique

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

(Albis, Scans, Coc.)

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.

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.

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

Western Cordillera Colombia

(23)

Mixed Diglossini

May 26, 1965
Farallones

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

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

Albis 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 s.l. utter Twitter during the non-breeding season; but carbonaria s.l. utter many R-Zazas, at least when the population is dense.

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

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 diglossini audible at the time.

Then general volume bird noises increases appreciably. Difficult to

Mixed Diglossini, May 27, 1965, II

(26)

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

(M) Near first Cy Song 5:38 a.m. Songs coming from same place as yesterday. Each phrase composed 2-4 "Tut" Intro Notes followed by long rapid Tutter. No other Diglossini or White-throat audible at the time. The bird utters a lot of phrases in rapid succession.

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

(M) 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.

(M) Immediately, I hear what sounds like Yellow-faced White-throat 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.)

(M) 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 sings. Yellow-face starts again. Partial overlap. Yellow-face shuts up. Cys continue singing.

(M) 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

Mixed Degeneri, May 27, 1965, III.

(27)

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.

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 at longer intervals now. But still frequent. Cys must be in breeding condition now.

See 1 Cy. In small tree above second growth scrub. 15-20 ft up.

Makes 1 "flycatching" flight!

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.

6:12. Cy singing again. See bird. In isolated tree. 40-50 ft up. All song phrases as before. Song posture rather low diagonal. Tail quivers mainly 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 Diglossini or Yellow-face songs audible at the time.

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

Reach edge of another pasture. More Yellowfaces singing in distance. Sun is shining brilliantly now 6:55. See Yellowface singing. Definitely alone. In various trees edge forest. 15-30 ft up.

4:05. Hear what might, conceivably, be Coer songs in distance. But can't see bird. In any case, it soon shuts up.

Then hear typical Cy song in distance. No other Diglossini or White-throat audible at the time. Shuts up. Then Yellowface 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). None overlapping!

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

COMMENT:

Cys certainly are largely arboreal here, just as in Munchique. The Cys seen today may even have ranged higher than the birds seen on Munchique (perhaps the trees here are higher on the average than the ones in many of the areas on Munchique 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.

7:59 a.m. Back at Korea Station. Cys at edge of clearing still singing frequently. No other Diglossines or Whitestarts audible.

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

I. Ennifera 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.

II. The ♂ WCC was seen to join and follow Cys. 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.

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

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.)

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

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 a greater development of lush temperate forest in the Western Cordillera. (Perhaps some extra food also is available to WCC's here because "Black Diglossas"

Cy
WCC
WCC
WCC
WCC
WCC
WCC
WCC
WCC
Black

Mixed Diglossini, May 27, 1965, VI

(30)

are comparatively rare here.)

May 28, 1965
Fauquieres.

Start out late, because of rain. Going up hill toward same place as yesterday afternoon. Reach upper edge Koea 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 insert 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.

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

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

(Cy - albis - fitti).

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 Murchique - 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 Murchique.)

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

Albi
gen Also note the attacks by 2 species of hummingbirds (I and II — not Ensifera) 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 (my comments in my Munclague Notes this year).

Ensifera Incidentally, I know that I have seen Ensifera in Quito region. Above Pono, 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 pm. Upper edge Koca station pastures. See "♀" Albi with mixed flock (this flock and behavior of the Albi are described in mixed flock 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 avi habitat preference differ from that (those) 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 lapemayeri s.l. !!!

Albi 3:45 pm. 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 Notes 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. Then R's stop. Cy continues. No Mutentarts audible at any time during this performance.

Albi 45 REMARKS: Just in case some of the preceding remarks are unclear. Territories Albi and Cy seem to overlap those of Plate-throats and

Mixed Diglossini, May 28, 1965, III.

(38)

Eurusia

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

The two Whitestarts 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 Korean 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 Cy is the "dominant singer" 5:45-5:55. I did not hear any overlaps between Slate-throats and Cys this morning. (This does not mean that none occurred. But they must have been at least relatively rare.)

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 Yellowface utter a few song phrases early in the morning, during the general period when Slate-throats were most vocal. But the Yellowface 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. I immediately Cy sings again. Then stops.

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

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

7:02. See group of 2 or 3 small birds high up in tree. Look blackish and diglossini! Ranging 40-60 ft up. Uttering diglossini type twitters. Possibly some phrases like "Ja taswee taswee yo". Could these be Albes ??? (Certainly not Cy. Possibly WCC, except that all - or both - looked dark.) When they first begin, no other diglossini (or R's) or Whittitarts audible. Then Yellowface sings. Complete overlap. Then problematical diglossini-types shut up. Yellowface shuts up.

More R's a few seconds later. I think these are Albes. Coming from areas where Albes were yesterday. R's stop. Another brief match of Yellowface song. Stops. Then Cy sings. Stops.

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

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

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 moments 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

Mixed Diglossini, May 29, 1965, III

(34)

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

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

Starting down hill 17:55 a.m.

Alba 7:41 Just as I go see single grayish Diglossa in scrub, 2 ft up "♀" alone (?), I think, but it looks more olive-gray than most - at least above (I did not get good view of underparts). Silent and alone.

Emyferia Ca 8900 ft. See single Emyferia feeding in tree. Apparently alone. SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

REMARKS:

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

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

TOTAL = 79 hrs

July 22, 1965
Valley Rio Urano

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 Bron 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 Bron 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 Bron 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 Brons here are (at least) not absolutely confined to relatively dry areas.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

(Bron, Cy, Litta, Scan, other hummingbirds.)

COMMENT: Bron would seem to be the dominant diglossine here!!! This does surprise me. Area obviously relatively very humid. I also am surprised to find Brons relatively frequently high in trees. And relatively frequently associated with mixed flocks!!! The Brons here would appear to be almost (or at least) "semi-commensals" (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" (partly including hummingbirds) have partly or completely overlapping territories - but do not show over-

Mixed Diglossini, July 22, 1965, II

(36)

+ 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!

July 23, 1965
Valley of Rio Urucó

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 Horn 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 Whitestart Song. 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 cyanocephalala songs!!!

Then see single Yellowbelly 4 ft up in scrub-edge forest. Apparently alone.

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

6:12. See single Yellowface alone 1 ft up in scrub-edge forest. Utters occasional song phrases. Cyanocephalala(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

(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 Twitter(s), without Intro Notes, as greeting or "Landing" patterns. Birds ranging 3-25 ft up. In trees and scrub along path.

8:05 a.m. 10,600 ft. Finally come across flowers. 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 their songs are "reedy" - quite like song notes of Laps 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.

The scrub here certainly is less dense than the vegetation which

Mixed Diglossini, July 23, 1965, II.

(38)

ted by Laps in some other areas.

I catch glimpses of one bird singing. Perched 3-4 ft up, in dead bare bush. Looking from side to side in apparently unritualized posture.

The birds do not look as much like the Browns 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.

Catch glimpse aerial chase uphill. One Glouin chasing another. Song stops ca. 8:25 a.m. Reviews briefly around 8:33. Then stops again.

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

NOTE: The Glouin's would seem to be separated from the Browns microgeographically. I have not (yet) seen any Browns here above ca 9,975 - 9,970 ft. Possibly the Glouin's also are separated from the local Laps in the same way. The highest I have seen Laps (so far) is only slightly above 10,000 ft.

8:45 a.m. A few feet further on, and up, hear Glouin(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 Spalathra

Mixed Diglossini, July 23, 1965, IV.

(39)

(Frailejón) Páramo

Everything dead quiet 8:55 a.m.

See a single Maroon-crested montane coltunga above, 10 ft up in top tree. Silent.

NOTE: I am not sure that there were ever more than 2 Glouss'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 Glouss area from another direction.

Making loop, come to sheltered side Glouss area 9:10. Some single sooty 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 Glouss. But this individual certainly does have extensive gray on sides.

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

9:35 a.m. 10,700 ft. Hear and see Brun (definite), singing. Edge alpine scrub and Páramo. Bird perched 15 ft up in small tree. Utters phrases after phrase, in unverticalized 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 (I definitely heard R's in both places). When Brun shuts up, immediately Glouss (several hundred yards away) begins to sing. No overlap. If Brun continues for some seconds, then shuts up. Immediately Brun begins to sing again. Again no overlap. When Brun shuts up. Heer off. A few moments later, I hear R-Zaza pattern same area.

So the Brunns and Glouss's here certainly are not separated

Mixed Diglossini, July 23, 1965, VI

(40)

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

So far, however, I have no evidence that the territories of individual Bruns and Gloris'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 Brun seen earlier. Also goes into Parámo. Perches on Spala tree!!!

Another outburst Brun songs, and R-Zazas, here at 9:55.

NOD.

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

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

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

Mixed Diglossini, July 23, 1965, VI

(41)

stops singing! During next few minutes, I hear a lot of Brown 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, Brown and Sitti are not always easy to tell apart. And I think that there may also be an other, second, Brown in the area.)

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

A few minutes later, no mixed flock in area!!! Group includes at least 2 Yellow-bellies, 1 White-headed, 2 Sittis, and 2 Pseudospingus. Brown j → group. But (now) shows no hostility to the Sittis! Group moves on. Yellow-bellies apparently in lead. Pseudospingus f → Yellow-bellies. Sittis f → group. Brown apparently does not follow.

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

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

Everything quiet now, 10:30 a.m.

Then a Brown sings again. 8 ft up in tree. Definitely alone. NOD. Then I see some chases with R. I am almost, but not quite, certain that there is one Brown chasing another.

Perhaps the songs of the Brown near Sitti were not provoked by the latter, but, rather, redirected upon it?

Stopping observation temporarily 10:40 a.m.

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

10,600 ft. 10:53. Hear another male's flower song. NOD.

Sitti
Brown

Brown

Brown

Brown

Brown
Sitti

Brown
flowers

Mixed Diglossini, July 23, 1965, VII

(42)

Area without alpine scrub. Quite like areas inhabited by *Breus*.

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

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

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

11:25 a.m. Just below 10,200 ft. Just inside "upper sub-tropical" 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. Jaw still Begging. Family now 3 ft up in dense scrub.

Oh! 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.

12:25 p.m. Ca. 9500 ft. See single *Breus* 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 Finca 12:45 p.m.

COMMENT: The higher altitude *Breus*, 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???

Ed they be two partly-isolated populations ??? (Certainly, it is my impression that Brunns 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! ✓ It is perched in scrub 1 1/2 - 3 ft up. Alone. Utters "Treet" 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 bluish because of the light ?????

Everything dead quiet 2:02 p.m. Sun shining at this spot, and it is hot. Going downhill into forest and shade.

Albi 3:00 p.m. Several hundred yards inside forest. Ca 8925 ft. 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 "Trit" notes. Then this Albi is repeatedly swooped at (and chased, I think) by a hummingbird XIII. Albi retreats a few inches each time hummingbird swoops. Swoops silent. Eventually Albi disappears. Hummingbird XIII remains behind.

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

Mixed Diglossini, July 23, 1965, IX

(44)

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 Brown Twitterers

They decide to walk up hill along scrub between forest and pasture. 3:45 p.m. See large mixed flock. Includes at least 1 ♂ WCC (possibly 2), 1 ♀ WCC (identification both sexes quite definite), 1 Cyanocephalus, 2 Cnemidophorus, 1 Yellowbelly, tree creepers, certainly others. Probably 20 birds in all. Flock quite coherent and moving rapidly downhill. 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 Cyanocephalus is → WCC's (both ♂ & ♀) at least once.

WCC's apparently picking insects off leaves.

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 Cnemidophorus.

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 downhill 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.

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

Mixed Diglossini

(45)
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 Bruin 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 downhill a little. To area where I know there are Glouin's on both side of road (altho not close) and where I saw the problematical individual yesterday which I said was probably Glouin's, but which I now think was probably Bruin.

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.

Swift Atlapetes Whistle songs heard 5:54 a.m. In distance. Presumably PL. Bird is singing fairly steadily.

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

Then hear what may be one brief snatch of Glouin's song 6:04. Then some more. In distance. All quite brief phrases. Then the bird shuts up. Then hear 1 brief Yellow-faced Whitestart song far down road. Then another brief phrase which may be Glouin's. Then silence. Then more Glouin's song 6:08. Identification of this song quite definite. But it is faraway. No other diglossine, whitestart or Atlapetes ("NO

Mixed Diglossini, July 24, 1965, II.

(46)

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

Lafresnayer

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

Wind increasing now.

Florus

This Glorus is singing in area of quite thick and tall, and obviously unburned, alpine scrub. Still NO DWA. Apparently only one Glorus within earshot of me. And the phrases of this Glorus song are not as long, on the average, as those of many other Lafresnayer s.l. individuals I have heard in other regions. Presumably this Glorus is not being stimulated by rivals.

Florus

Glorus silent 6:18 a.m. And now I hear what seems to be Atlapetes Whistle songs nearby! Several Atlapetes singing in different areas. Shut up 6:26. Immediately, there is a brief outbreak Glorus song! No overlap. Then Atlapetes and Glorus alternate phrases. Again no overlap. Glorus continues. Atlapetes 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. Atlapetes continues. Atlapetes stops. Glorus starts again. Shut up. Atlapetes starts again. No overlap. Shut up.

Florus

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

Florus

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

Mixed Diglossini, July 24, 1965, III

(47)

Glossin 6:42 a.m. Yellowface utters one long phrase between Atlapetes Whistle Song. No overlap. Glossin silent at the time.

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

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

Fog coming in again.

Glossin The Glossin's are really quite remarkably 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.

Glossin 7:04 a.m. Single Glossin flies over pasture, from patch of unburnt 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. This probably is not same individual seen yesterday. I was again struck by how different Glossin looks from Bruen. Little or no gray on side. Chestnut very dark and rich mahogany color. (The breast of Bruen is almost orange.)

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

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

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

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

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

Mixed Diglossini, July 24, 1965, IV

(48)

Glorias

Glorias is very much like that of Laf s.s.

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

Settis

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

Glorias

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

Glorias

I am trying to come out 7:40. Lots of Gloria song in distance. WODWA.

Bruin

Go up to area of highest Bruin 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. Then Bruin shuts up. Andean Sparrow continues. Then shuts up. A minute later, Bruin starts to sing again. Phrase after phrase in very rapid succession. Same types as yesterday.

Bruin

8:05. See two Bruins here. Kitting 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 Bruins here utters songs in response to songs by another Bruin some considerable distance away. I don't know if this distant bird is a "third" individual or not.

Bruin
Glorias

Going to a point a few feet above this Bruin area, I can hear snatches of Gloria song, very faint, downhill. So the Bruins probably are in earshot of the Glorias - if not vice versa. In any case, the Bruins

are quite silent while the Gloriss's are audible.

Scam

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 Scam!!! (Identification definite.) Scam then flies away over Paramo.

XIII?
Bram

A second later, see 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 Scam. Has particularly brilliant patch of green on upper back. (Probably no. XIII ????). Bram suddenly appears attacks hummingbird and drives it off. Then Bram feeds on flowers itself. I don't know if this Bram is one of the individuals I have been watching in the other patch of scrub or not.

Bram
Gloris

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

Bram

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

Gloris
Bram

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 Brams, while impeding the transmission of Bram sounds to the Gloriss's. Another significant factor probably is loudness. The Bram songs seem to be softer than those of Gloriss. (This difference seems to be characteristic of all forms of carbonaria s. l. and

Mixed Diglossini, July 24, 1965, VI.

(50)

lapusangii n.l.)

Bruin 8:30 a.m. One Bruin performs Song Flight over *Parámo* between the two patches of scrub.

Bruin
Scan I am gradually coming to the conclusion that there are only 2 Bruins here, occupying both patches of scrub and flying over the intervening stretch of *Parámo*. 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 Bruins. (NOTE: Perhaps significantly, I have not heard or seen any Scan displays here. Perhaps the local Scans are not breeding now.)

Everything very quiet. 8:50 a.m.

Bruin
Gloria Then Bruin 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 Bruin sings again. Shuts up. Then Glorias sings again. Shuts up. No overlap at any time.

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

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

Bruin It seems to me that these Bruins are uttering comparatively very many R's without Za-za. Also quite a number of R's with only brief single, "slurred" Za at the end. Was this characteristic of the Southern Bruins as well ??? (To my recollection, it is not characteristic of *Casbo*, or even *Aten* or *Humer*.)

Bruin Pair of PL^N *Atlapetes* flies into isolated patch scrub. Alone. Uttering "fret" notes. Apparently ignored by Bruins — although I can hear the Bruins uttering R patterns not far away. Bruins also seem to ignore a pair of *Ocethia* nearby.

Mixed Diglossini, July 24, 1965, VII.

(51)

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

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

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

Jan
It is obvious, nevertheless, that the population of Diglossas as a whole here (i.e. Gloria's and Brunns 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)

Everything 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.

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

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

Little
Brunns
XIII
10:45 a.m. Ca. 9950 ft. Near where flock with both Cy and Brun was seen a couple of days ago, see another mixed flock. Includes: 2^W White-bearded Flycatchers, 1 Ruddy, 2 Yellow-bellies, 2 Scittis, 1 Brun tree creeper. Probably others. Also lots of humming birds 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

Mixed Diglossini, July 24, 1945, VIII

(52)

as a whole quiet. Quite coherent, insofar as all birds close together, but not making progress in any particular direction. Yellowbellies eating mistletoe berries. Sittis and Brown picking insects off leaves. Sitta \rightarrow Brown.

Now see that flock also includes 2 B. nigrocrustatus (1 adult + 1 juv.), picking insects off leaves 3 ft up in scrub. And 1 Yellowface, flycatching 10 ft up. Also a third Sitta (apparently adult) going around in close association with the other two.

As far as I could tell, the Brown 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 partly same flock. 1 Ruddy, 1 Yellowface, 2 Whitebeards, and at least 3 Big Buttercups. All ranging 15-35 ft up. Buttercups eating fruit.

Now the Sittis, tree-creepers, Yellowbellies, and B. nigrocrustatus also have appeared here. Obviously following.

1 Sooty Thrush \rightarrow group. (Reaction quite definite)

Whitebeards fighting among themselves. Non-aerial chases.

Flock now is definitely going uphill. Buttercups have disappeared. They may be the leaders.

11:55 a.m. Ca 9500 ft. See pair Yellow-faces flycatching 3 ft up scrub-edge forest. Apparently alone. Then single Brown suddenly appears in bush 3 ft away. Obviously example of Brown \rightarrow Yellowface. Brown feeds on tubular red flowers. Then disappears.

Get back to Finca 12:05 p.m.

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

Mixed Diglossini, July 24, 1965, IX.

(53)

vocal. Range of Brum, as a "species", completely overlaps that of Gloriss. 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 Gloriss seem to inhibit Brum.

Brum
Gloriss

July 25, 1965
Valley Rio Uraco

Going to work in forest at approximate level of Juica 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.

Near fruit diglossini-type Twitter downhill, 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 "Tazee tazee tazee tazee..." cyanocephala ???

5:53. Hear a few soft R's in nearby scrub. Also ??? Partly overlapping the enigmatic Twitters. Then R's stop. Twitters continue. I think these Twitters must be cyanocephala.

Near fruit Yellowface songs 6:00 a.m. Slightly overlapping presumed cyanocephala Twitters. Only a couple of phrases. Then Yellowface and presumed cyanocephala alternate phrases without overlap! Then Yellowface shuts up. Presumed cyanocephala continues.

Mixed Diglossini, July 25, 1965, II

(54)

Then presumed cyanocephalus and Yellowface alternate more phrases without overlap. Then both shut up.

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

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 Yellowface songs in distance. I really can't tell if these R's are Albi, or Ruddy Flycatcher, or what. More R's 6:27. NODWA.

Going along path downhill 6:30 a.m.

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 Yellowfaces singing occasionally NODWA.

Everything very quiet 7:15 a.m.

7:31 a.m. Back up at upper border forest-scrub. Where Yellowface songs and R's were heard alternating earlier this morning. When I arrived here this time, the same sort of vocalizing is still in progress. More Yellowface 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 Yellowfaces 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 Cy, feeding on pink cup-shaped flowers in bush edge forest. 6 ft up. Silent. Alone. Then flies down into ad

Mixed Diglossini, July 25, 1965, III

(55)

Cy
Albi
Just low, thick scrub disappears from sight. This is exactly where
♀ *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

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

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

Leaving 8:35 a.m.

COMMENTS:

Brown
I. The Browns at relatively low altitudes seem to be playing
of the same social role as *Cy* in the southern part of the Western
Cordillera. Arboreal and "semi-communal".

Cy
II. This may help to explain why *Cy* 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 *Cy* here are playing somewhat the same role as carbonaria
a s.l. in many other parts of the Andes!!!

Brown
Albi
IV. All this would suggest that many or all *Diglossa* spp. ha-
ve "equal potential". I.E. they are capable of playing the same role
or occupying identical niches. Whichever species occupies a particular
low niche in a particular region may be largely a matter of "chance".
I.E. it may depend upon which species "happens" to develop suit-
able habits first. (Note also the Browns in *diviniqui* - which seem
to be occupying "typical" *Albi* habitat.)

Mixed Diglossini, July 25, 1965, IV

(56)

all
Bruns

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

Jim

VI. The Diglossini here are really quite surprisingly different
from the Diglossini of the southern part of the Western Cordillera.
In the final write-up of the diglossine 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.

Jim

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.

Sitta
WCC

VIII. Note that there are minor anomalies when different species
are compared in detail. Thus, for instance, Sittas 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 Diglossini, I

August 6, 1968
Munchique

Arrive at Juica 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 Mayor-domo, 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 Coldire around. All the individuals I have been able to see clearly have had violet cheeks and ear patches, and violet on center of breast and belly. For they are presumably definitely Scans (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.)

Scans feed on red Abu quite frequently. (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 Xylophora. I & the Scans here partly fill the niche of Anns at Juica Carpentaria!

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

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

Mixed Diglossini, Aug. 4, 1965, II

(58)

at the "SGH" seen at Canaan).

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

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.

Scan 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 Bogota!)

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

Stepping observation 5:45 p.m.

NOTE: According to my altimeters now, the altitude here is 14750 ft, 2350 m.

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

August 17, 1965
Munchique

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

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

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

Coer

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. I.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
Cy

NOTE: I heard three 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

17:45 Go up road a little. Then hear Coer singing. Phrase after phrase in very rapid succession. All phrases identical. Comme ca: seeeee-seeeee-seeeee ta-ta seee-wm-eyaa"

Coer



Songs usually uttered from posture comme ca:

Mixed Diglossini, Aug. 17, 1965, III.

(40)



Coer

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 song phrase (certainly raised during the "twittering" bit)

Tail moves in and out with notes - probably most conspicuously during the "twittering" bit.

NODWA during all phrases by the Coer. The bird sang from several perches in 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.

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

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

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

Coer

Mixed Diglossini, Aug. 7, 1965, IV

(61)

Coer suggest 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.

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

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

Fitti
WCC COMMENT: The relations between Fitti and WCC, here, are problematical in somewhat the same way as the relations between Cy and Coer. As far as I can tell, whenever Fitti 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 Fitti and WCC because the two species tend to associate with one another!

NOTES:

Albis I. This afternoon I panned 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 Juna). 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

Mixed Diglossini, Aug. 8, 1965, II

(62)

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 Juica. Still some Scans about. Also some smaller hummingbirds of other genera. But still no trace of Diglossa or Colibri thalassina.

August 9, 1965
Munichique

Going to work where I thought I may have seen a carbonaria s.l. or lafresnayeri 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 see ♂ Albi just below 8850 ft. I.E. the Albi 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.

August 10, 1965
Munichique

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

Mixed Diglossini, Aug. 10, 1965, I,

(63)

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 certainly 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 Panflora flowers (usual mountain 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 Panflora vine, 2-3 ft from the White-throat. This looked like a titer (altho I can't be absolutely sure, as I was very far away). Then both birds disappear.

A few minutes later, a single Violet-throat Hummingbird suddenly appears in same Panflora vine. Feeds on flowers. Also puts bill to base of long tubular corollas, i.e. also using Diglossa holes!!!!

Then White-throat (re) appears. Attacks Violet-throat. Both birds fly off and disappear. White-throat apparently in pursuit of the Violet-throat.

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

Mixed Diglossini, Aug. 10, 1965, II

(64)

Competition among nectarivorous birds here must be very intense!!!

17:00 a.m. Violet-throat back in Panflora. 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!

17:28. No one has visited the Panflora for some time now. And the Black Diglossa has not reappeared. This is very albicollis! (Incidentally, at no time this morning have I heard any unmistakable Diglossine vocalizations.)

Then go for a walk.

Nothing in Panflora 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 Panflora (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 bases of the long corollas!!!

9:00 a.m. White-throat back first Panflora plant. Alone. It sticks bill at bases of corollas of several flowers. Then flies off.

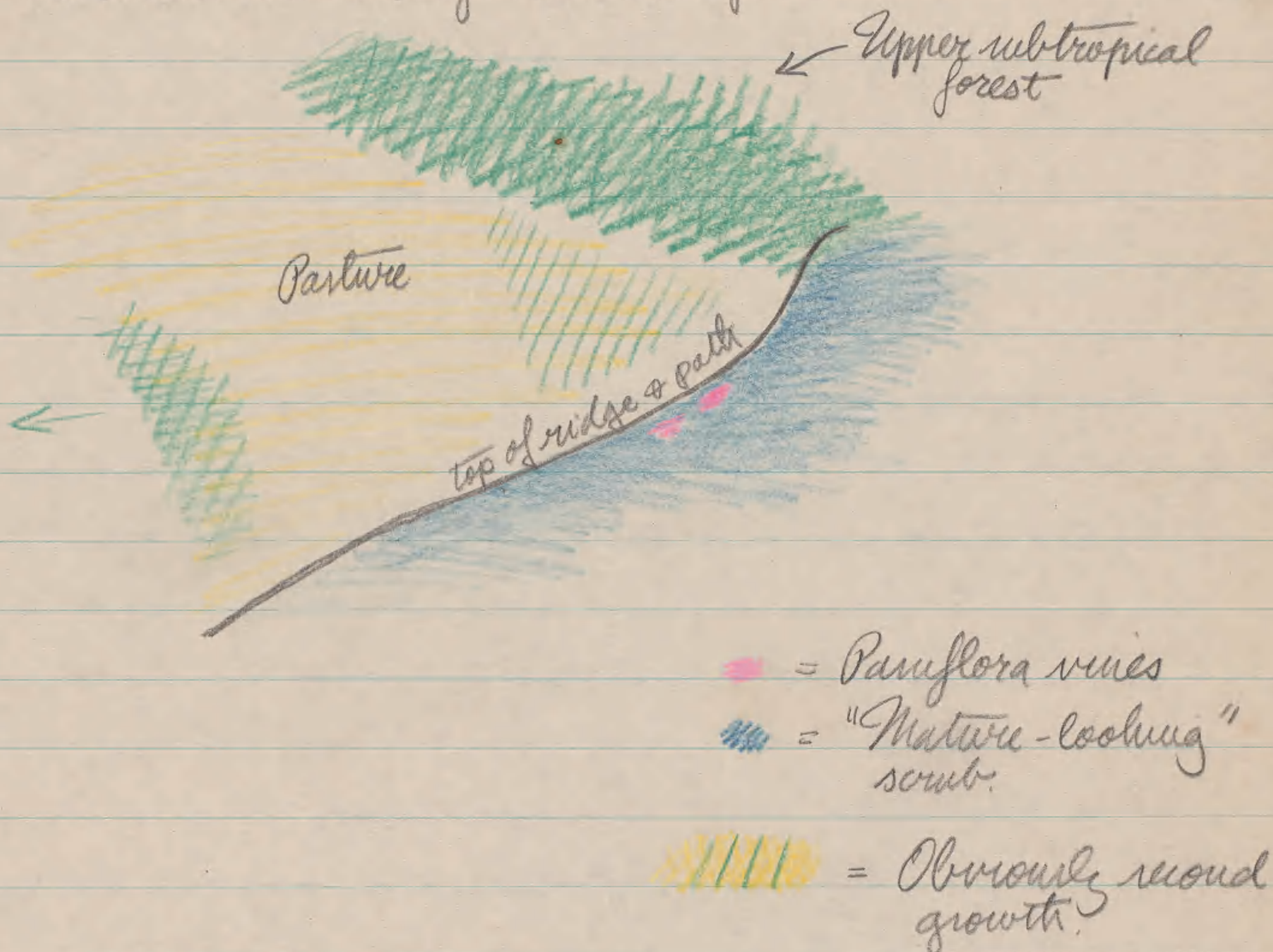
Fog coming close now.

Go a few yards down road. 9:12 a.m. See single White-throat feeding on another clump of Panfloras. 3 ft up in scrub-edge pasture. Bird definitely silent and alone. Also definitely putting bill to region of sepals at base of corolla. (I 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 Ater - as well as albicollis.)

Mixed Dipteris, Aug. 10, 1965, III

(65)

More complications set in!!! And how! In order to make them clear, I had better draw a diagrammatic map.



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 Pariflora 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 subtropical 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.

Mixed Diglossini, Aug. 10, 1965, IV

(46)

White throat
Coer

The complications began ca. 9:20. I was still watching Panfloras 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 Cys would sing in similar circumstances!!!).

Coer
Cys

Both Coers repeatedly come close to the Panfloras (within 1 or 2 ft.). But they show absolutely no tendency to visit their flowers. I.E., like the Cys, Coers probably do not cut into flowers. Possibly are not insectivorous either! **SEE ALSO BELOW**

PL
Coer

When I first see Coers, I also hear Atlapetes "seee" notes not far away. Atlapetes apparently gradually moving along ridge. Coers gradually moving in same direction. But at least 20 ft behind the Atlapetes. Then the Atlapetes turn around and start to move in opposite direction. Now I see that they are 3 PL's. (Probably saw 3 seen earlier this morning.) PL's j → Coer. All 3 birds hop about in the same clump 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 essentially "coincidental". No overt sign that one species is strongly attracted to the other.

PL
HO
Cys

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 Yellowfaces singing in same area. Quite a lot of phrasas

Mixed Diglossini, Aug. 10, 1965, VI

(67)

at irregular intervals. NODWA. Then Yellowface(s) shut(s) up. And then I hear definite Cy song phrases! Long rapid Twitters, probably with "Tut" 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 sub-tropical" forest.

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 picked 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.

The two groups of birds maintained themselves for some minutes. Then 2 of the PL's with the Coers flew across the ridge and joined the large mixed flock edge "upper sub-tropical" forest.

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" scrub. 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:

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

Mixed Diglossini, Aug. 10, 1965, VI

(68)

proyas) 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 Coen 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 Coens were present. But presumably its territory partly overlaps that of the Coens.

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 some Passifloras 10:35. But apparently getting insects off leaves. In any case, quite unmolested. Nothing 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 Coen and Cy. (Of course, Coens probably are not always purely non-nectarivorous in all regions. Viz the Coens in the Prime Eucalypts above Bogota a couple of months ago.)

The only thing I don't understand now is why Coens 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.)

Mixed Diglossini, Aug. 10, 1965, VII.

(69)

gem 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 social complex" — including hummingbirds — than I expected.)

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

This afternoon, going to work where first "Glauc" and the albi-scan 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 attacked. Disappears almost immediately 2:15 p.m.

Albi Arrive "Glauc" area 2:30 p.m. See ♂ Albi "escort" slate 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 Scans).

August 11, 1965
Manchique

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.

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

Going to watch Paupkora I (where Black Diglossa seen yet

Mixed Diglossini, Aug. 11, 1965, II

(70)

erday - and hummingbird disputes).

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

First hummingbird sounds heard 5:58

First Atlapetes Whistle songs heard 5:59. Overlapped completely by "DC", but NODWA.

First hummingbird visits Passiflora I 6:02. Not identified

Quite a lot of Atlapetes Whistle songs. Presumably PL. Are they breeding here too.

6:05. Violet Throat in Passiflora I ("PI"). Perches. Then feeds base corollas. Silent. Quite alone. Flies off. Then small green hummingbird (possibly same SGH seen in "Canaan") visits PI. Also feeds base corollas. Flies off.

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

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

13
14
PI doesn't seem to be very attractive this morning! Then, 6:25, Violet throat back. Feeds base corolla one flower. Flies off. Then single White throat flies into bush 4 ft from PI. alone. Flies off. Then catch glimpse single "Black" Diglossa 1 ft up in scrub near PI. Don't see 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.

16
Then, 6:35 a.m., see furious dispute between 2 ^W 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

Mixed Diglossini, Aug. 11, 1965, III.

(171)

moderately short, hoarse, very nasal "Huaap" Notes. Rather surpris-
ingly, the white flank patches were not visible on either bird. I & the
ey are not displayed in hostility. (But I am sure of my identifica-
on because both birds definitely 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
Glycisther, others. All birds seen are 4-12 ft up in small trees. Ru-
ddy utters R's. Can't tell who, if anyone, is leading.

Did the dispute between ♂ Albi 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 Panfloras near where Coors were seen yes-
terday ("PI") 6:50 am.

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

Nothing in Panflora, and no Coors visible in neighborhood.
Hear Yellowface song downhill. NODWA Again. NODWA.
Sun shining brightly now.

Then walk along ridge into patch of forest more or less transi-
tional between "mature-looking scrub" and "upper subtropical". See
single Chloropygus canicularis alone. 15 ft up in tree inside forest. It
utters "CN"s. Flies off.

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

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

Mixed Diglossini, Aug. 11, 1965, IV

(172)

(possibly same species seen on Guadalupe above Bogota) visits flowers briefly. Also puts bill to bases corollas!

20
Cy
Coer
Well! Well! Well! 4:25 a.m. Single Cy (definite) appears. Moving uphill thru "mature-looking scrub" (possibly coming from what looks like "upper sub-tropical forest" way down below. Panes thru some of the bushes visited by Coers yesterday. Silent. 3-6 ft up. Apparently does not feed. Then panes thru PII. Shows no interest in the flowers. Then panes over ridge and down into tall forest on the other side (where I can hear Barycolinus and/or Hemiprocne type R's and flowerlies). 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 forest, this does not mean that it does not occur in "dwarf" forest occasionally (viz also the top of Munchique itself).

Everything very quiet now 4:35 a.m.

21
Albi
Back to PI 4:49. Single Albi hops out of low scrub. (Identification definite - see both gray color 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.

22
Albi
So it definitely is the Albis that are being "parasitized" by hummingbirds!

23
Albi
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

Mixed Diglossini, Aug. 11, 1965, V

(73)

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

Albi 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 ???

No hummingbirds come to PI after the ♂ Albi.

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

Hear some more Yellowface songs downhill. NODWA.

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

26 9:03. See single Pipreda rufescens 6 ft up in bushes region "upper sub-tropical" forest. This is not far from where "Barred" Pipreda seen yesterday. There certainly are a variety of furnariids in the general neighborhood at the time, but the rufescens doesn't seem to be paying any attention to their sounds. I think that the rufescens must be classified as "alone".

9:10. See single Violet-throat. Silent & alone. Upper edge "mat wee-looking scrub" ("MLS").

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

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

Nothing in PI. No sign of Coers around.

Albi! 9:34 a.m. see Coers, 3 ft up in one of the bushes visited

CW 29

Mixed Diglossini, Aug. 11, 1965, VI.

(174)

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

Coer

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 PT. Lengua. Is that because the mates keep together.

Coer

In general, it is my impression that almost all Coers being relatively rare. The species certainly appears to be "less" vocal than carbonaria, id. n. l., lafresnayeri, or cyanea. Almost as quiet as albulatena! Why??

Working along highway, in "permanent fog zone" this afternoon. SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS. Ca. 3:30 p.m.

Settis

see pair of Settis with mixed flock. At 8140 ft.! Surely this is the lowest altitude at which I have ever seen Settis???. Do they come down to unusually low altitudes in very humid, foggy areas???

Settis
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 Settis less apt to associate with one another at relatively low altitudes than at relatively high altitudes???

Cy

Cy
also

Considerably later, see another mixed flock which includes a 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 perfectly typical Albi habitat. Unfortunately, I have never seen a Cy

Mixed Diglossini, Aug. 11, 1965, VII

(75)

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" stratification on at such altitudes.

August 12, 1965
Munclique

Going to work on top of Munclique 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 song phrases down hill from site where bird seen singing a few days ago. NODWA

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

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

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

Mixed Diglossini, Aug 12, 1965, II.

(76)

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

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

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

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. 2 1/2 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.

8:50 a.m. et seq. See mixed flock, with Cy, Fetti (s), and WC c's. (This is described in my mixed flock notes). A single Albi twice appears to escort flock. Once low in scrub, once fairly high in tree. The Cy and Fetti (s) with flock also ranged high to low. Thus, in this area, now, ranges of Cy and Fetti at least partly overlaps the range or territory 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???

9:57 a.m. See single Cy. Apparently alone. 2 ft up in scrub-be 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 past the town of Ur

Mixed Diglossini, Aug. 13, 1965, I

(177)

(lie) 5:42 a.m. 8400 ft. 2550 m. This area is facing more or less due West. Clear. Fairly warm. Everything quiet

5:53. Near Diglossini-type Twitterers up hill. NODWA.

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS.

8:30 a.m. Near what might be Albi Trills down hill in distance can't see bird. Then I do see bird. It is a Ruddy Flycatcher. 6 ft up isolated tree in middle of rock slide. Definitely alone

(M) 9:55. See single Cy. Definitely alone. Uttering lots of song phrases in rapid succession. All phrases perfectly typical "Northern Cy" type. Rapid Twitterers preceded by 2-4 "Isit" Intro Notes. Bird sitting in perfectly unutilized 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 "zee", "Ja-zee" and/or "leeet" Intro Notes. Are Intro Notes of this type related to "PN"s? Phrases of the 2 Cys frequently overlap broadly.

Leaving 10:07 a.m.

(M) COMMENTS: The birds here this morning seem to have behaved exactly like the birds on and near Munchique. The Albi here seem to be very skulking. The Cys here are alloquacious, and also show a surprising tendency to come very low in scrub.

(C) I was pleased, in a way, not to see Coers 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 lapresnayeri s.l. Can de Schauensee's reference to Gloria's in the mountains west of

Mixed Diglossini, Aug. 13, 1965, II.

(178)

Popayan be correct? Could the species have become extinct on the
remainder itself (viz also the Pico de Espejo) ???

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 due
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 ???

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

Open

Carbonaria's

Central Cordillera Colombia

Mixed Diglossini

W. M. M. M.

October 21, 1962

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 Diglossini - a Cy - the only Diglossini seen all morning!

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

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) small tubular yellow flowers.

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

Mixed Dufrenoyi, I.

November 1, 1962
Santa Elena
Central Andes

Arrive one site 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 Brunners. No luck. Watching mixed flocks in areas which looked suitable for some subspecies carbonaria (even had pink tubular flowers around). Brunner's 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.

My

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.

Central Cordillera Colombia

(3)

Mixed Diglossini, I

May 8, 1965
Region of Purace'

Going up Purace', Road to Monopín, Nueva, 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 common in mixed flocks.

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

IV
III
I certainly heard Cys singing this morning. And I think I heard both Otters and Laps 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 Purace'

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

Mixed Diglossini, May 7, 1965, I

(4)

fairly dark. 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.

VIII
Laf
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 from which Cy songs are coming also is only 20 ft from where hummer VIII was seen feeding earlier. Cy phrases with "Tut" Intro Notes.

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

Black
Cy
108
Now in Black Dogwood, bush, 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.

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

Laf
Cy shuts up. Laf (uphill) sings. No overlap. Then hear several Lafs singing. Overlapping one another. Also overlapping some Poecilothraupis

Laf
is "songs". Then Laf (s) shut up. Poecilothraupis continues. Then more Laf. Overlapping tanager.

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 Whitertart. Probably the latter.

Laf

6:25. Can hear what is obviously real Laf singing. After Whitertart shuts up! Now Laf uttering long indeterminate phrases. Then shuts up. Incidentally, I now think that it was a Whitertart which overlapped the Poecilothraupis 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.

110
Cinnamon

Now long phrases overlap completely with twittering songs uttered by wren lower 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 swoop. When the Cinnamon flies away, Cy stops singing. Hops in to my sight. Definitely adult Cy. Very alarmed. Lots of hopping about with many WF's & TF's & "Trit" Notes.

Cy

Finally flies away to more distant bush. Utters a few more song phrases, as before. 6:43. NOD. Shuts up.

Clouds obscuring sun now.

Laf

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

111
Cinnamon

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
Cy

Laf singing again. No other diglossine audible.

Slightly up hill. Cy singing. No other diglossine audible.

112
Laf

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 dump

Mixed Diglossini, May 7, 1965, III

Cy
Laf

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

V
113

7:20 a.m. Whitestart singing in distance. Fluts up. Then Laf near me begins to sing. No overlap. Perched exposed left up. In posture common



Wind 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

Cy

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

Laf
Cy

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

Cy 114

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

Laf
Cy

Bird moving about from perch to perch within tree, singing at each perch.

Cy

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-

Mixed Diglossini, May 9, 1965, IV

(7)

Cy
Laf
Cy
116
a mous are particularly like to show overt hostility toward *Cy* when the latter are singing. (Because they are more conspicuous than?). Both *Cy* and *Laf* continue singing with complete overlap. Then a pair of Whitetails, 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. Whitetails utter a few more phrases. Then shut up too.

All this quite reminiscent Eastern Cordillera!

Incidentally, the Whitetails were quite alone at the time.

Hear Dulcinea in distance 17:50.

Cy
Cy
117
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 *Cy* 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
Laf
118
During next few minutes, hear quite a lot more *Cy* and *Laf* phrases. Not overlapping. But then, 17:58, there is another complete overlap. *Cy* begins to sing after *Laf* has started.

Laf
Aten?
119
Oh God! 8:01 a.m. See one Black Diglossa repeatedly attack, chase, and supplant 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 Aten! All very Eastern Cordillera-like!

Cy
Cy
119
Go on up hill. *Laf*s singing various places 8:30 a.m. Then shut up going down hill 8:50. Hear some more *Cy* songs as before. No other diglossini audible. *Cy* shuts up. Whitetail sings. Shuts up. See single *Cy* alone. Apparently juv. seen yesterday. Feeding dusters sm

Mixed Diglossini, May 7, 1965, V

(8)

all white flowers in small tree 15 ft up

Cy 120
Ater 121

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

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

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

CC 122
Cy
Ater

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

W?

A few minutes later, hear some song phrases which might conceivably be uttered by this bird. Swithering "Tuh-uh-sreeseee-uh-yuh". 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 Diglossini or White-tail while the CC was visible. There was a single White-tail, alone, about 30 ft away while the song phrases by the unseen bird were being uttered. But it didn't seem to pay any attention to them.

Ater 123
Zon
Cy
Cinn
Ater
Cinn

9:20. About 30 yds away. See single Ater (definite). Low thick scrub. Feeding on cup-shaped dark red flowers. Same species which the hummingbirds favor here, and the Cyp 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 flees 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 flees away a few feet. Cinnamon flies away. Ater comes back, again, to feed as before. Eventually moves off and disappears from view.

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

Laf
Ater

now I am quite certain that dispute was Laf - Ater.

CC
CC
Ater

It is interesting that CC should appear in same general area as Ater. Altho this area certainly is not drier, 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 Conurostrum spp.)

Laf
Cy
CC

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

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

Laf still singing down by 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~~
Laf
Cy
Ater

II. A thought has just occurred to me. Possibly the absence of Caroliniana 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 ????

Mixed Diglossini, May 7, 1965, VII

(10)

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.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

May 10, 1965
Region of Purace'

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 seen yesterday 5:50 a.m. Front (leaf) match Leaf song (in distance) 5:53. No other diglossini or Whitestart audible.

5:56 a.m. Hear what might be Albi R uphill!

Front Whitestart song 5:58. No diglossini audible. Apparently coming from tree where Cy seen yesterday and where CC may have sung. The Whitestart utters several phrases. Overlap completely with Andean Sparrow songs, but nothing else.

Now Whitestart sings uphill. See the bird. In small tree 10 ft up.

Definitely alone. Whitestart shuts up. Hear front 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 species. Then these stop. More Whitestart songs

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

Mixed Diglossini, May 10, 1965, II.

(11)

6:15 a.m. Hear some more formless, faint, high pitched Twitterers. Single phrases No Intro Notes. Then silence. Then some more Whitestart songs. Then hear some Twitterers "Duh-duh-duh duh-duh-duh"

Cy 1214 Apparently uttered by Blue Diglossa, presumably Cy. At least, I see Blue Diglossa a same area just after Twitterers stop. Are these the very lowest intensity Cy song. When this bird first began to sing, nothing else was audible. Then this bird stopped. Whitestart began. Then this bird and Whitestart alternated phrases. Then this bird shut up again. Whitestart continued for a while.

Cy Now a different bird in same bush as Blue Diglossa utters (more) song phrases. Quite similar to "Duh-duh-duh..." 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 Wren. Then this bird shuts up, seems to disappear 6:23. 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 Whitestarts singing in distance.

Blue 127
Laf 130 6:45. 2 Blue Diglossas fly by. Silent and alone. Land in scrub 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
131 This would certainly suggest that there is some Laf-Cy hostility here!!
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

Cy 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.

Laf 161 Single *Foubelly* flies into tree where there is a *Whitetail*. *Foubelly* feeds about 10 ft up. *Whitetail* feeds 20 ft up. Fly catching *Foubelly* silent. *Whitetail* sings immediately, single *Laf* appears, hopping up to top of all bush 30 ft away! Just sits there silent. Then *Foubelly* and *Whitetail* disappear. *Laf* flies back down into bush and disappears too 7:01 a.m.

Whitetail sings in distance. No diglossini audible before or after. It looks as if these *Whitetails* do not stimulate *Foubelly* Diglossini, at least now, to any appreciable extent.

Large green hummingbird with blue wings feeds in tree where I have recently seen *Laf*, *Atter*, and *Cy* have been seen. No diglossini appears to excite it. (This hummingbird is species I have seen elsewhere in Andes. Eastern Cordillera? I have never seen it react with Diglossini anywhere.)

Atter *Laf* 132 7:13. See single *Atter* 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* *Atter* 130 Obviously, *Cy* territories here overlap both *Laf* and *Atter* territories.

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

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

Mixed Diglossini, May 10, 1965, IV

(13)

Cy
Laf
Ater 135

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

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 Diglossini in origin?

Cy
Laf
Laf 137

Going uphill 7:47. Hear Cy singing in distance. Flutters up. Then Laf sings. No overlap. Then Lafs shut up.

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 100ft away. Much bigger. Region sparse scattered second growth scrub.

Ater 138
Cy

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 Ater's repeatedly pass very close to the Cy. Without paying any attention to it. Or it to them. Eventually the 2 Ater's 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 Ater's feeding on flowers same bush! All within a few inches of

one another. No obvious hostility between species. Cy sings typical song phrases. But looking 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.

Neither 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.

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 Diglossine complex!

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.

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 100ft away.

8:20. Good god! See single C (definite) perched 2ft up low open scrub only 4ft from where Laf seen earlier !!! NO D. C feeds by picking insects off blades leaves. Utters a couple of "Tut" notes. Flies off.

8:30. Adult Ater still chasing and supplanting juv. thru bushes. One supplant accompanied by R (no Za Za). Cys not around.

Queen VII 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.

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

Mixed Diglossini, May 10, 1965, VI.

(15)

NOD. Then 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 Panicum) Repeatedly puts bill to bare corolla! When I check the flowers, there were no holes in the corollas. But was this bird looking

for Diglossa 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 "Tut". But this bird is definitely alone. Could its songs be reactions to the mixed flock only several hundred yards away ??? Yes!

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS.

Sitta

Mixed flock with pair of Sitta pairs by. Once, when one Sitta was over the other, in low bush, one of the birds uttered "greeting" Twitter. I heard it quite well. Could be transcribed as "Duh-duh duh-die duh-duh

Cy

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

Laf

Hear more Laf song down hill 10:02. No other diglossini audible at same time. Then Laf shuts up. Whitestart song.

Laf

Cy

143

10:12. Good God. Reach area where Cy and Atter's were feeding together earlier. Nothing there now. But then, 100 ft away, where single Laf was earlier, see 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

Mixed Diglossini, May 10, 1965, VII

(16)

Cy f *Laf* *Cum* *Laf*
Itorning lots of loud hard "Tut" notes. Obviously SHN's. Laf flies away.
Cy f → *Laf* !!! Both disappear temporarily. Then Laf reappears in an
other bush same species. Feeds. *Cy j* → *Laf* ! Both hop about. Laf
supplants *Cy* (can't tell if this supplant "intentional" or not). *Cy* retreats.
Then flies off. Laf continues feeding. Then a Cinnamon appears. Makes
a couple of inhibited swoops at Laf. Laf moves off gradually and disappears.
10:23. Laf back alone, feeding in front bush. Sudden a Cinnamon
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 Diglossine situation here wo-
uld be as follows:

Laf *Cy* *at* *cc* *Sitta* *Cum* *VIII*
I Laf are common here, although not as numerous or as crowd-
ed together as in some areas other parts of the Andes. Similarly, *Cy* 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. *Aters* are relatively rare. *CC*'s
are relatively very rare. *Sittis* 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 Whitetails may be approximately as common as Laps or Cys. (It is my impression that the population density of this species — and the representative species in other parts of the Andes — does not vary greatly from place to place.)

II. The relations between songs of 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 Whitetail 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 Whitetail is the only "outside" member of the Diglossine song complex here.

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

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

R, do the territories of Yellow-faced Whitestarts.

IV As usual, Fittis do not seem to be really part of the Diglossini 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 Fittis "Song" 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-commensal Diglossini. But they certainly are not associated with mixed flocks as frequently as in Munchique (or the northern part of the Central Cordillera, for that matter). They seem to be more consistently territorial here than in Munchique.

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

Laps and Cys sometimes come close together. In such circumstances, Laps 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 Laps. Surprisingly enough (if they really are adult ♂'s of the same species as the Cinnamons), Green VIII Hummingbirds do not seem to show any hostility toward any of the Diglossini.

Fittis

R

Laps
Cys
Aters

W

Cinnam
Cys
Aters
VIII

Mixed Diglossini, May 10, 1965, ~~IX~~

(19)

Cinn
VIII
open

(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 Whitetails come into contact, i.e. face to face, with Diglossini only "randomly". Neither the Whitetails 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 BO, Scan, and (possibly) CC near Popayan itself

May 11, 1965
Region of Purace

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

5:48. Hear what sound like Attapetes Whistle songs. No Diglossini or Whitetail singing at the time. Then hear a couple of R's which might be by albi (same general area where Ateri and CC first seen, and where Laf and G also occur). Overlapping Attapetes completely. Then bird uttering R's shuts up. Attapetes continues.

Attapetes starts to stop. Songs coming in irregular bursts. Then hear 4 first Whitetail songs. Partial overlaps with Attapetes 5:52 a.m. 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 sings. Stops. No overlap at all in these last phrases

Mixed Diglossini, May 11, 1965, II

(20)

Laf
albi

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

Then see group 3 Whitestarts chasing one another. Alone. Some song and SHN's during encounter. No diglossini audible or visible at the time.

Cy
Laf

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

More Whitestart songs. No diglossini audible. Whitestarts singing in tree, 15-25 ft up. Same tree where Cy has been seen. Also very close to where Albi, Laf, and CC have been seen. Then the Whitestarts move thru low scrub. Fly over area where Albi-type R's have been heard. Into area where CC has been seen.

gen

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

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

Albi?
Laf
Cy
151103
XVII
Laf
Cy

6:43 Whitestarts now singing alone. Whitestart shuts up. Then hear Albi-type R's. They stop. Then I see Black Diglossa fly by. Then hear Laf song. 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 Atter has been seen. Definitely alone. Then it flies up into adjacent tree, joining a Laf there! This is exact same tree where 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 pursuit. Disappear. Then, a minute or so later, see them both in scrub. Blue + Orange still pursuing. Both birds still silent. Incidentally, the scrub thicket which the 2 birds passed is where I have heard Albi-type R's

W
W?

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

Laf

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

Laf


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

Laf
Atter
154

7:27. See pair Lafs supplant Atter. In small tree, 12 ft up. Probably silent. Atter makes no resistance. Disappears. The Atter 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 Ater and Cys, seen together yesterday 8:00 a.m. Nothing visible now, except a single small green hummingbird (not VIII, possibly Erpinnensis species) feeding flowers Ater-Cy bush.

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

Ater ¹⁵⁷ Then see juv. Ater feeding same bush as yesterday. Adult Cy \rightarrow Ater! Both feed. A few feet apart. Then fly in different directions.

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

Laf Ater 8:16. Juv. Ater back feeding same bush. It also is cutting into bases of flowers. Then suddenly supplanted and chased by adult Ater.

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

Cy ¹⁶⁰ Laf Just as I start to go, hear Cy songs. With Intro Notes. Then 2 Cys (adult and presumed juv.) fly into bush where Laf seen feeding earlier. Feed on dark red cup-shaped flowers. These birds do not cut into the bases 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 Ater 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 as above.

~~VIII~~ *Fog* Then see Queen VIII Hummingbird feeding flowers same bush where *Cy* and *Laf* fed earlier. Striking bill into cups.
Fog *Laf* singing 8:42. NOD.

Fog Fog definitely coming in now. Still very thin.

Fog Going down hill 9:20 *Laf*s and Whitestarts still singing occasionally. No overlaps. Rain starting.

101 See peculiar "juv *Agelaius*"-type alone. On pasture ground, running between patches low scrub.

~~VIII~~ *Fog* *106* Rain stopped 9:39. See pair Whitestarts in isolated bush where both *Cy* and *Aten* seen (at different times) on previous days. Utter occasional songs. Then see *Laf* in bush 10 yds away. Identification definite. But the is certainly in bush where I saw *Aten* a couple of days ago. *Aten* apparently not around now. Was *Laf*-*Aten* boundary shifted (this is region where chase occurred)???

170 *B. microcristatus*???. Whitestarts \rightarrow *Laf*. Then *Laf* and olive yellow bird disappear. Whitestarts remain behind.

Cinnamon *Fog* Incidentally, just before Whitestarts joined, a single Cinnamon appeared and made one inhibited sweep at *Laf*. *Laf* didn't react visibly and the Cinnamon flew away again.

~~VIII~~ *Cy* *113* *172* Down by road. See pair Whitestarts 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*. Noisy. Lots of "CN"s. *Cy* also sings repeatedly. All phrases long Twitter.

Mixed Diglossini, May 11, 1963, VI.

(24)

115^s, preceded by 3-4 Intro "Tsit" Notes. ^W No Whittants fly on. Not followed by anything else. A minute later fly off, opposite direction. All ~~not~~ followed. Feeds some more in small trees across road. A single Dubuna j → G. fly on. Dubuna 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 social 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 Quasca, Guadalupe, 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 front Teleférico station on Pico de Espejo, an area of relatively dense forest and (occasional) patches dense scrub. Territories of different species overlap, and individuals of different species come into contact with one another without fighting. (2). Paramó La Negra Reg

Mixed Diglossini, May 11, 1963, VII

(25)

son of fairly thick scrub, scattered trees. Territories of different species overlap, but no contact between individuals different species. (3). Chon
as de Milla. Scattered trees and scrub in pasture. Individuals of different
t 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). Paramo de Guasca. Thick scrub. Territories of most (not
all) species overlap. Occasional overt fights between individuals different
species. (2) Guadalupe. Thick scrub with occasional open areas. Ter
ritories of most species overlap. Fights between individuals different spe
cies sometimes frequent. Certainly more common than at the Paramo de Gu
asca. (3). University Gardens in Bogota. Territories different species
overlap. Fights between species very common indeed (at least at some ti
mes of the year).

III. The Western Cordillera of Colombia. Two different areas. (1). Up on Munchique. Thick forest and scrub. Territories different sp
ecies overlap. But no fights between individuals different species. (2).
Near the Finca "Carpenteria". Open gardens and isolated patches wood
and scrub in pasture. Territories different species not usually overlapp
ing. 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 (?)

Mixed Diglossini, May 11, 1965, VIII.

(26)

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 Coucorostomus 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 is 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 repel all possible competitors in open areas than in areas of dense vegetation. Or, possibly, the poor visibility in areas of dense vegetation favors aggregation of individuals as protection against predators (vide my earlier 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 densities, and if the differing social organizations of tanagers, finches, whistlers, etc., are correlated with frontier conditions and/or ability to "hop" between islands, then this would certainly be

Mixed Diglossini, May 11, 1965, IX.

(27)

Jan plainly the variations in social 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

Jan COMMENT: Some new thoughts have occurred to me. A general rule which may explain the differences between the social organization of (non-commensal) Diglossini in different regions of the Andes. It may be stated as follows:

Jan In large regions, there is a relatively large amount of non-hostile contact and/or overlapping between species. (Example: Quito region). In small regions, different species tend to be segregated ecologically and/or to be overtly hostile to one another. (Examples. Northern 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 work out very nicely, even in detail. Thus, for instance, there may be relatively less overt fighting between species in the Sierra de Mérida - a ra

Mixed Diglossini, May 12, 1965, II.

(28)

Jem other small region - than in the Eastern Cordillera of Colombia - an apparently larger region. But it is characteristic of the Sierra de Mérida that some species are extremely rare, e.g. Lafresnayeri, 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).

Jem (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.)

Jem 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. time "wasted" in disputes.

Jem 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"

Mixed Diglossini, May 12, 1965, III.

(29)

even after a very large number of disputes.

The whole subject of the variations in social organization of (non-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 Sierra de Merida 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!

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

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

7:50 a.m. Laf(s) still singing down by road when everything else qui
Laf et.

8:05 a.m. Walking along road. See Laf supplant another bird. In small
Laf 1077 tree alpine scrub. 15-20 ft up. Unfortunately can't identify supplanted bird.
But the aggressive Laf sings for a minute or so immediately after the supplant.

A minute later, see another Laf feeding dark red cup shaped flowers right
Laf 1078 at edge of road. Silent. 3-4 ft up.

8:35 Hear what is either Laf or later singing in distance. No other dig
later? glossini or Whitetail singing at the time. Bird utters about 4 phrases. Then sh
uts up.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

COMMENT: The difference between the diglossine fauna of the ar
ea 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 tanager and finch faunas of the two areas also differ, but
much less than the diglossine faunas.)

All in all, I am gradually coming to the conclusion that the soci
al organization of the birds here is almost perfectly intermediate between tha
t 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
gen

Mixed Diglossini, May 15, 1965, I.

(31)

also intermediate, in many respects, between those of the Quito 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 Puzac

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.

First Whitestart Song (brief) 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.

Whitestarts and wrens both singing 5:56. But not overlapping. Whitestart songs seem to be composed, essentially, of "restuplets," something like: "Tuh-tuh-tuh-tuh tuh-ta." Sometimes repeated.

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

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

170 See Whitestart singing 6:08. With mate. In title. 20 ft up. Alone.

170 Now Whitestart singing alone. Low in scrub. Only 3 1/2 ft up. Laf has been silent for some minutes. Whitestart shuts up. Cy sings typical phrase in distance. Cy shuts up. Whitestart sings. Shuts up. Cy sings several phrases.

Ater
Laf

1771 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. I.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 Lafs and Ater's 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 Whitestart songs. Then Whitestart and Cy alternate phrases.

Laf
Cy

Rain stopped 6:26 a.m.

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

1772

See single Whitestart alone. In scrub. 3ft up.

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

Laf

1773 From car, see single Laf feeding dark red cup shaped flowers 3-6 ft up. Quite ignores a single *Psittacus* 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

1774 Laf sings. NOD. Then see another Laf feeding alone on red and white flowers.

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

Cy

1775 See single Cy alone in bush, 6-12 ft up. Uttering lots of single "Tut"

Cinn
1470

Notes. A Cinnamon comes and perches in another bush, 10 ft away, but does not attack and eventually flies away.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

Cinn
After
1470

(Again) see Cinnamon swoop at single sooty Thrush going from bush to bush. Thrushes perches. Cinnamon perches 5 ft away. Single After → Thrush - Cinnamon group. Then all 3 fly away in different directions

After
1477

7:59. Near what sounds like After song without R in area where At and Laf territories apparently overlap partially. Then see 1 Black Diglossa repeatedly supplant another in scrub. Presumed After 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 Whitestart audible. Continues for a long time. Then see bird. In small tree, 8 ft up. Apparently alone.

Laf

8:18. Going uphill. Lafs and Whitestarts still singing occasionally without overlaps.

Laf
Cinn
1476

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. Retreats 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 occurs 5 or 6 times. Once, I think Cinnamon made actual physical contact!!! After about a minute, Laf flies away. Down into low thick scrub. Cinnamon does not follow.

Cinn
Open

The presence of Cinnamons here must make the area much less optimal 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 sings alternating repeatedly with what are either Cy or Alter songs. Then there is one complete overlap. Then Cy or Alter shuts up. Laf continues.

8:40. Arrive area where Cys were "associating" with Laf and Alters 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.

180 Laf Cy Alter
Will, Will! See single Laf flitting thru scrub not far from large bush with dark red cup shaped flowers in which Alters and Cys fed a few days ago. I 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 of corollas through 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).

182 C
A few seconds later, single C 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 Diglossini having put in an appearance.

VIII
9:14 a.m. See green VIII hummingbird feeding in bush A. No diglo

some audible or visible at the time. Hummingbird soon flies on.

What has happened to the adult and juv. Atter here?

Atter 183
Laf

Speak of the devil! 9:18. Single Atter, adult, appears moving thru low scrub only a few ft from where I am sitting. This is well within area in which Laf has been seen to range. Atter is silent and alone. Laf not visible or audible at the time. So it would appear that the territories of this Atter and Laf also overlap, partially, and/or that Atter may range into Laf territory when the owner is "away" (presumably at opposite end of territory).

Atter
Laf

A few minutes later, see what is undoubtedly same individual Atter feeding in adjacent bushes 5-10 ft above ground. Silent and alone. Apparently looking for insects on leaves. Flies off in direction Laf went earlier.

VIII

9:40 a.m. Queen VIII Hummingbirds feeding bush A (again)

Going downhill again 10:00 a.m.

Whitetails still singing occasionally. Then shut up. Then hear one

Laf

Laf song

Rain starting. Very light. 10:15 a.m.

Laf

184

See single Laf alone. 4 ft up in dense scrub.

184

10:20. See Black Diglossa chasing a Blue in flight. In area where I know both Cy and Laf live. The Blue, in fact, was almost certainly a Cy which had been associated with nearby mixed flock a minute earlier. This flock dispersed when I arrived. Probably the Cy, in its panic at my appearance, flew into bush too near to Laf.

Cy
Laf?

Laf

187

See undoubted Laf same area a few seconds later. It is repeatedly swooped at by Cinnamon.

Atter

189

10:40. Now see 2 Black Diglossas engaged in chase same area. One of them definitely a Laf (seen afterwards). But chasing also is accompanied

Mixed Diglossini, May 16, 1965, VI

(36)

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 seen 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 Merida. 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 low areas is largely a matter of "chance". I.E. when two closely related species (e.g. the Cy and the Coer, or the Firebelly and the Yellow-belly) 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

Mixed Diglossini, May 14, 1965, VII

(34)

Lam
BS diglossine social complex are likely to be found. And the Scans and BS's here don't seem to come into any sort of contact at all. Possibly even the territories are non-overlapping.

Barn
CC II I now doubt that either Barns or CC's occur in this area near Popayán itself.

Jen III There is one important piece of evidence which supports the theory that the selection factors involved in (i.e. the advantages reaped by) the evolution of different social reactions in different regions are not quite the same as those involved in the evolution of different reactions in different 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 separation of species in open areas is an adaptation to disperse individuals. 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 ecologically 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.

Jed Hear first Whitestart song 5:43. Only one phrase. Then Laf sings briefly. No overlap. Laf sings again. Shuts up.

Going to look at area where Black Diglossa was seen to chase Blue

and where R-Zazas were heard yesterday

It is cold this morning!

Laf

More Whitetail song. Then silence. More Whitetail again. Whitetail shuts up. Laf sings. Shuts up.

190

Cy

Cy sings 6:06 a.m. Short twitters, preceded by 3 or 4 "Tut" Intro Notes. 4 ft up in scrub. NOD. Then, this Cy is supplanted by another bird (unidentified). Flies away.

Laf
Cy

Whitetail sings. seem to stimulate Laf in distance. Partial overlap. Both shut up. Cy sings again. No overlap. Cy sings phrase after phrase.

191

All just as before. Also feeds from time to time. Feeds on red and white flowers on which Laps have been seen to feed. Cy 2-4 ft up in scrub. Then Laf (definite) appears low in scrub, about 10 ft from Cy. Gradually advances, hopping, toward Cy. Cy gradually retreats before Laf. Cy continues singing during retreat. Laf quite silent. During advance, Laf pokes thru some of the bushes in which Cy sang earlier. Both birds pass out of my sight, Laf still advancing after Cy. Cy eventually shuts up.

Laf
Laf
Cy

6:13 Hear Laf song. No other diglossini audible at time.

It is obvious that Laps are dominant over Cys here and (at the very least) have no hesitation about advancing toward them.

Laf

Everything quiet 6:17 a.m. Then Whitetail sings. Again this seems to start Laf singing! Partial overlap. Whitetail stops. Laf continues for a few seconds. Stops.

192

Cy seems to have flown up hill. Catch glimpse Laf feeding silently from time to time.

More Whitetail song. No diglossini audible at the time. Again. Again.

Laf
Cy
Laf

Incidentally, the Whitestart territory here certainly overlaps that of the Laf. Almost certainly also that of the Cy. But I have yet to see a Whitestart close to a Diglossa at this particular site.

Laf sings briefly. Shuts up. Immediately Whitestart begins to sing. No overlap. Then Whitestart also shuts up.

6:41. More Whitestart songs in distance. No diglossine audible at the time.

Going up hill 6:45 a.m.

Still more Whitestart song when no diglossine is audible.

Laf 193

See a single Laf alone, feeding 3 ft up thick scrub

Reach A bush area 6:57 a.m. Nothing audible or visible at the time

Cinn
VIII

Whitestarts singing down hill. Then single Cinnamon feeds on flowers A bush 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
Ater
193

7:14. Single Cy appears in bush same species only a few feet from me. Apparently the juv. which lives in this area. Feeds on flowers. Sticking bill in to caps. Quiet. Utters only occasional soft "Tut." Then Ater (definite) flies in, supplants Cy. This apparently is the adult Ater. Supplant is silent. Ater perches quietly in bush for a few seconds. Cy apparently has retreated in to scrub a few yards away. Ater flies off. But apparently it has caught sight of Cy again. A second later see Black Diglossa furiously chasing Blue. Presumably same Ater chasing same Cy.

Cy
Ater
Laf

A few seconds later, Laf begins to sing near A bush. No other di

Mixed Diglossini, May 17, 1965, V

(41)

After
202

10:10. Another area. Edge large patch fairly low second growth. See 2
Atens 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
Jan

NOTE: It was nice to see CC's associated with a flock in the
second area visited today. Thus, their behavior toward mixed flocks wo
uld 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 an
d inhibition" reactions - like all the species near Quito.

Laf
Jan

COMMENT: One aspect of diglossine "social complex" behavior
was not particularly evident today or yesterday, but was fairly conspic
uous during some earlier days. Yellow-faced Whitestarts start singi
ng shortly after dawn, and their songs quickly reach a peak of frequency.
Then they decline, very irregularly, during later periods of the morning.
Lafs, by contrast, sometimes (perhaps usually) do not begin to sing ver
y frequently until after the frequency of Whitestart songs has already beg
un 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 lufrenoyi s.l. populations in other parts of the
Andes. In many or all areas it (also) helps to reduce overlaps with carbo
narua s.l. songs.)

Important I have found that some "greeting" "Twitter" of PRA

Mixed Diglossini, May 17, 1965, VI.

(42)

Jem
Jaf tlapetes here are very diglossine-like. Particularly reminiscent of Jaf songs in tone and loudness. I am not sure that some of the "brief Jaf songs" recorded in my notes were not actually uttered by PR's. Especially the "Jaf songs" overlapping Whitestart songs at dawn. Overlapping often makes it impossible to analyze individual songs very precisely. In any case, if my account is wrong, it over-emphasizes rather than under-emphasizes the frequency of overlaps between Jaf and Whitestart songs.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

Worked along edge Cauca River near Popayan this afternoon

COMMENTS:

Thalain?
Scam? I. I am not sure that all the "Scams" I have seen at the altitude of Popayan are not Hummingbird IX (presumably another species of Colibri.)

Jem II. The area where I worked this afternoon looked almost ideal for Baris. Large patches thick second growth scrub, some with many trees of moderate size, scattered among pastures. It also looked good for BQ'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.

Jem At the same time, I noticed that hummingbirds were very common throughout the scrub part of the area. About as common as I have ever seen them anywhere.

Jem This area (between the Eastern and Western Cordilleras) probably 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. Vg Bolivia where populations of Diglossini seem to be dense, and hum

Mixed Diglossini, May 17, 1965, VII

(44)

ming birds probably are not unusually abundant, but different species of Diglossini still are segregated.)

May 18, 1965
Region of Parac

Around 5:56 a.m. Clear and warm. Already light.

Hear what sound like Ater twitters

Scan The Colibri here definitely seems to be Scan (see purple mountaineer stripe) Displaying and vocalizing actively.

Diglossini-type twitters stopped by 6:03 a.m.

Scan See another Colibri which is definitely Scan. (Incidentally, bills of these birds are almost straight. So probably hummingbird IX belongs to an other genus.) Another Scan, definite.

Scans seem to be very common here.

They are quite ignoring the numerous footy Thrushes in the neighborhood.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

Ater 204 7:20 a.m. Area of low but very thick scrub, with lots of unusual alpine type Passifloras, slightly below road. Two Ater's flitting about. Feeding on Passifloras and other flowers. Usually not together. Once, one lands one foot from the other. The approached bird does TV (no trace BU). Apparently silent. The other bird flies off.

Scan Ater U 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 Ater's. Then it followed the Ater for some

appreciable distance. Did not actually attack. I couldn't tell if following was coincidental or not. Scam eventually stopped following and performed display flight (which may be territorial and/or hostile).

Scam
Ater 203
Ater CC
Ater
Scams still vocalizing and displaying vigorously 7:33. They would appear to be in breeding condition here now!

7:35. Single Ater perches exposed, 4 ft up, and utters several song phrases. Rapid Twitters. NOID.

Songs of Ater and CC's seem to be as similar here as in Quito region.

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.

Eventually flies off.



Are these Aters coming in to breed in condition?

Scam
Ater
Ater 204
Ater
Song postures of this bird apparently unritualized. No belly-fluffing. Scams seem to be ignoring Panefloras. (I think this may be true throughout the Andes.)

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.

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.

Mixed Diglossini, May 18, 1965, III

(46)

Scam
Ater

Altho one of the Scams here visits small trees and scrubs with Ater territory quite frequently, it does not seem to favor the same trees and bushes.

Scam 2017
Ater

7:57. Aha! Scam appears, just above low scrub. Ater flies to it coming from site 30-40 ft away. Lands on branch about 1 ft - 9 inches away from Scam. Scam immediately hovers right above Ater's head. Scam may make a few slight forward movements, i.e. inhibited attack movements; but, if so, they are very slight indeed. But Ater also makes a few forward movements toward Scam. Singing forward with head & bill. Wings once slightly spread (apparently unritualized). Then Ater flies up toward Scam. Brief aerial dispute. Ater perches again. Scam hovers over its head again. Then Scam 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 individual) back singing usual perch. Now, its song phrases seem to have slight trace terminal R or, at least, hoarse "slur".

Scam
Ater

Apart from the incidents described above, the local Scam(s) are not in the Ater territory very frequently when Ater is visible. It is quite possible that the Scam(s) is (are) avoiding the Ater(s) — when not actually fighting with them. If so, the Ater-Scam situation here may be comparable to the Cy-Saf situation at higher altitudes in this region.

Going to walk on a little further 8:10 a.m.

Scam
Ater

NOTE: It has just occurred to me that I paid no attention to temporal patterning of vocalizations during observations recorded above. But, as far as I am aware, Ater and Scam vocalizations overlapped at random.

8:19. Near Whitestart singing. Obviously Yellow-faced. No Diglossini audible at the time.

Ater 206

8:31. Back to area of singing Ater. Bird perched usual place. Utters

Mixed Diglossini, May 18, 1965, IV

(47)

Ater
Scam
4 or 5 song phrases. All phrases rapid twitters, definitely without R. Then the bird flies away into low scrub. There were no Scams audible during the period Ater sang. All Scam(s) vocalized immediately before and after! (Scam vocalizations both cases long indeterminate series harsh "chuk" or "chup" Notes.) Was this just coincidence ???

Ater
Scam
8:38. Again Ater back usual place. Uttering songs without R's. NOD. Again, Scams are silent at the time! But songs of Ater do overlap one brief White-tail phrase in distance.

Ater shuts up. A few seconds later, hear Scam "twitter". (These "twitters" are the rapid series of notes which Scams seem to give in ave when changing one another.) Scam sounds coming from area far away from singing Ater. Then I hear brief series harsh "chuk" Notes. (These series may be the Scam equivalent of territorial "song".) Then everything is silent for a while.

Ater
Scam
Then Ater sings a couple of phrases. Stops. Immediately a nearby Scam utters a few "song" "chuk" Notes. Stops. Immediately Ater utters a few more phrases. Stops. Immediately Scam utters more "chuk"s. Stops. Immediately Ater sings again. Stops. General quiet.

So it does look as if mutual inhibition song is effective in the Scam - Ater relationship !!!!!

8:45. Ater sings a few more phrases. NOD. And no Scam audible at the time! But Ater song does overlap Catamena song in distance.

It looks as if this may be (another) area where Scam is a full fledged member of the Diglossini social complex.

Ater
Scam
Now one or more Aters are uttering "chuk"s in distance. Ater sings nearby. This time, there seems to be complete overlap!

Ater 209 8:52. Another area a little further along road. See another Ater

Mixed Diglossini, May 18, 1965, I.

Ater
Scan
 Sing and alone. Region fairly tall thick second growth. Bird feeding white cup shaped flowers. Then it sings. All phrases short Twitter's without R's. NO D. No Whitetail or Scan audible. Then bird flies away. Sings again a few minutes later. This time songs overlap Scan "chuk"s in distance. Then Ater shuts up. Immediately Scan begins to utter "chuk"s nearby. Shuts up. Ater sings again. At first, nothing else audible. Then Scan begins to utter "chuk"s not too far away. Long overlap. Then Ater shuts up. Scan continues. Then during next minute or so, Ater utters a few more phrases at irregular intervals. While Scan continues. Complete overlaps. So Scan can begin singing while Ater is singing - and Ater can begin while Scan is singing.

9:00 a.m. It is getting very warm here.

Again, Ater sings while Scan, 100 yds away, is uttering "chuk" Notes

9:18. Several Scans singing vigorously. No Aters audible (altho I know that there is at least one present in neighborhood).

9:35. See several Scans feeding same species of white flower that Ater fed on earlier.

9:45. See pair ^W C's in hedge. This is area where C's have been seen with rufinchas. But now the C are definitely alone. 4-6 ft up. The 2 birds do not stay close together. Usually at least 20 ft apart. One utters Twitter when landing by itself. One Twitter might be transcribed as:

"Ja-ta-see ta-ta-see-ee-yoo" Uttered very rapidly.

~~XXXII~~ 1577
 Go on uphill in direction in which C's are moving. See Yellow-
 faced Whitetail. 2 ft up in hedge. Now see it is pair of Whitetails. Don't see C's, but they must have joined and paired Whitetails earlier. Then
 153 see 3 rufinchas in low scrub 40 ft away. Whitetails join and follow rufinchas. Group goes downhill thru low scrub. Then I see that there is at

Mixed Diglossini, May 18, 1965, VI

(49)

185 least 1 CC 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 untamed! 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 Whitetails 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 close by; (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 -

Mixed Diglossini, May 18, 1965, VII.

(50)

and overlapping occurs. At very low intensities of motivation, the species grow "cascades" — and (again) overlapping occurs.

III This afternoon I worked in area on banks of Cauca near Popayán. I saw a Scam there (definite). This means that the presumed Scams I saw a few days ago in scrub and trees along small stream near Popayán probably (almost certainly) were identified correctly.

In spite of the fact that hummingbirds in general are very common in scrubby areas around Popayán, Scams certainly are rare. The behavior (s) of Scams do, in fact, seem to be much more similar to those of most Diglossini than to those of most other hummingbirds.

I have yet to see a BG along banks of Cauca. This would support the hypothesis that territories BG's and Scams 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.)

May 19, 1965
Region of Puracé

Arrive same place as yesterday morning 5:20 a.m. Still quite dark & sky half cloudy.

Various sub-oscine and thrush sounds. Then one burst of what may be Scam song 5:27. Stops up immediately. Then I hear lots of Atter songs. From several areas. Neighbors overlapping.

Atter song phrases fairly short — altho probably slightly longer on the average than late yesterday morning. Without R components.

The Atters 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 Whittart Song uttered while Aters are in full chorus. Complete overlap. Aters continue. Then Whittarts sing again, twice. Again complete overlaps. Then Ater shuts up. Whittart sings again. No overlap. Shuts up. Ater sings again. Shuts up. Whittart sings. Ater sings again. Partial overlap. Then both Ater and Whittart 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 w/ a w/ 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 Whittarts singing different areas. Presumably 2 or 3 pairs.

5:44. I have yet to hear any songs which I recognized as C. Or any allii type phrases.

Scam
Ater

Near forest Scam-type Twitter 5:46. Overlapping both Aters and Whittarts. Then hear Scam song (i.e. indeterminate notes "cluck" notes) in distance. Overlapping both Ater and Whittart songs. Then both Ater and Whittart shut up. Scam continues for a few seconds. Then shuts up. Then another Scam begins to sing. Alone for some seconds. Then Whittart utters one phrase. Complete overlap. Whittart shuts up. Scam continues.

Scam

First Scam aerial display 5:49.

First Atlapetes Whistle Song 5:50.

Absolutely no Ater song now. But I do hear one R-Zaza

5:51. Atlapetes Whistle songs. No Ater, Whittart, or Scam song

Mixed Diglossini, May 19, 1965, III.

(52)

Scam goes 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-Whitetail relationship!

Birds in general getting much quieter 5:55 a.m.

Ater Scam 212
See single Ater feeding alone on usual white flowers.

6:01. Now only Scans are audible.

It is a lot colder today than yesterday!

Scam
Scans about 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, Whitetail sings a couple of phrases. Shuts up. Then Whitetail sings again. Shuts up. Then Attapetes sings a number of Whistle songs. Shuts up. Whitetail sings. Shuts up. Attapetes sings again. Then Whitetail and Attapetes alternate phrases in quite regular fashion. They certainly are being very scrupulous toward one another. Then both shut up.

Scam 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!

Scam Ater 214
Reach area where Ater-Scan dispute seen yesterday 6:15 a.m.

Scan singing and performing aerial displays. Don't see Aters. Scan shuts up. Then I see Ater flitting thru scrub. Then Ater sings usual place! Then Scan sings again. Large overlap. Scan shuts up. Ater continues. Shuts up.

Cloud cover increasing 6:22.

Scam 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

Mixed Diglossini, May 19, 1965, IV

(53)

ges" of the Aters and Scan here have not overlapped!)

Scan 215
Ater

Scan still singing quite steadily @ 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 @ 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 harsh twitters going to move on down road @ 40 am.

Lots of Scans still singing all over the place @ 46

Scan 17:00. 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 Whittart utter two song phrases, separately, just in intervals when Scans are silent. Again. This time, the Whittart began while Scan was still singing. But Scan shut up immediately. Little overlap. Then Whittart shut up. Scan resumed singing immediately.

Ater 217
Scan

17:15 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, 17:35.

Everything except Scans very quiet now.

Ater 219

17:50. Reach area where *C. rufinucha* flock seen every day. See 2 Aters flitting about. Lots of R's, with more or less distinct terminal Zaza's.

Mixed Diglossini, May 19, 1965, VI

(54)



Bill closed or opened only very slightly.

After

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 utters 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.

After 187
CC
194
XXIII
HO

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 Audubon Sparrow. Moving down hill, thru 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 anybody. 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

Mixed Diglossini, May 19, 1965, VI

(55)

Jen
This is undoubtedly same flock I have been seeing in this area every day. It seems to be at least semi-permanent. (Coincidentally, I have now seen three 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.)

It is highly significant that these are the exact same species which occur in the Quito area — where they do not form flocks!!!

U
While with flock, the CC picked insects off leaves, and also got nectar from lavender melastomae flowers (very common here — but I have not seen either Ateris or Scans feed on them)

Scam
There were lots of Scans 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 foraging and aerial displays as usual.

8:40. Sun shining brightly and weather beautiful in general

Ateris 222
Ateris still foraging and displaying vigorously.

Ateris
Scam
It is now obvious, I think, that Ateris and Scans 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 Ateris-Scan relations here are not very greatly different from their relations in the Quito area.

CC 224
8:44. Just slightly down hill. Come across 2 *W*'s. Feeding in scattered bushes of the melastomae with lavender flowers. 2-4 ft up. Feeding on flowers themselves and picking insects off leaves. These 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-tā-see tā-tā-see tā-tā-see tā-tā-see-yoo".

"Ja-ta-see ta-ta-see ta-ta-see" "Ja-ta-see ta-ta-see ta-ta-see-ee-^{pr}-yoo"
I.E. basically composed of triplets.

CC
Scan
Ater

There was nothing else audible while these phrases were uttered. Then the CC'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 Whitestart 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

7:05. Whitestart sings while all other birds are silent. Then shuts up. Then both Scan & Ater sing. Complete overlap. Shut up. Whitestart 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 Whitestart territories all seem to be completely overlapping here.

196
197
199
200

196 9:15 a.m. See mixed flock. Probably partly same as before. 2 Yellow-faced Whitestarts 5-15 ft up in trees of "hedge". Cyanocphala j →
197 Whitestarts. 2 Aters also j → Whitestarts. 1 Ater f → Whi
199 testarts. 1 Sooty Thrush (!) j → group.

Ater

Aters stay with group for some time. Feeding quite close to one another, at times, with no obvious sign of hostility. But once one implants the other with R-Zaza.

Incidentally, all the Aters I have seen in this area have been in adult

Mixed Diglossini, May 17, 1965, IX.

(58)

Jem common there; and there seem to be only 1 species (*Laf*) at slightly higher altitudes, and 1 other (*Ater*) at lower altitudes.

Jem III. Again and again, I have been struck by how perfectly intermediate this area is! Intermediate between Eastern Cordillera, Western Cordillera, and Quito region!

May 20, 1965
Region of Purace'

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
Purace' - 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, 9275 ft, 5:55 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

Jem 7:12 Near unmistakable *Laf* song area of low second growth scrub, interspersed with marsh-pasture. Not far from where mixed flock seen earlier. No other diglossine or Whitestart audible at the time.

Jem 19 Back to area where first mixed flock seen 8:20. Light rain.
See mixed *Laf* alone. Low in isolated patch scrub

Mixed Diglossini, May 19, 1965, VIII

(57)

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.

W 226 9:35 a.m. Another area. Low scrub edge highway. See ridge C above. Mexci joined by an elaenia. Joining probably coincidental. C flies on. Elaenia does not follow.

Slight rain starting 9:40. Leaving 9:45 a.m.

NOTES AND COMMENTS:

Ater 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.s. 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 disreputable, 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 at 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 Diglossini (Laf, Cy, Ater) in the area I worked in front; but only 2 (Laf & Cy) are

Mixed Diglossini, May 21, 1965, II

(40)

lapped.

May 22, 1965
Tijeras

Going to work in area where Agelaius - Pyrrolo - Tanager
a nigro-viridis seen yesterday morning. Arrive 5:30 a.m. Just getting
light. Cloudy.

Hear faint song which may be Yellow-faced Warbler 5:43. No di-
glossini audible at the time.

SEE TODAY'S NOTES GENERAL MIXED FLOCKS

Arrive area where last big mixed flock (with Laf, Pitts, and Cy) se-
en yesterday. Cloudy. No rain. Just below fog level. 9:30 a.m.

Then see ♂ Albi with flock. Obviously largely same flock seen yest-
erday, in almost exactly same place, but it does not, apparently, include
Laf, Cy, or Pitts.

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 in-
dicate 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 Albi in same area and environment.

Incidentally, the area in which this Albi was seen was very
similar to some of the environments inhabited by Albi on Muncieque
and elsewhere. Scrub under or very near large trees. Tree "cover" would
appear to be indispensable for Albi. Why? They do not seem to
make much obvious use of trees. Probably no more than carbonaria s.

Albi

Albi
Laf
Cy
Laf
Albi

Albi

Mixed Diglossini, May 22, 1965, II

(61)

C. or capemayeri s.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.)

Cys
Jm Note that Cys were the only Diglossini seen near Tijeras. Apparently quite common there. More evidence than 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 Cys alone. Viz my 1962 notes in the northern part of this cordillera.)

May 23, 1965
Purace - Tijeras

Going to work same place where ♂ 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. Near first burst what may be Atlapetes 5:38. Brief. Then perhaps a brief match of H. atropideus 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.

21 Near first match Whitestart song 5:58. Brief. No diglossini audible. Then another phrase a few minutes later. Again no diglossini audible. Then more Whitestart song. See birds 20-25 ft up in isolated tree. Two Whitestarts. Alone. Both fly off. One attacks the other in flight. I shouldn't be

Mixed Diglossini, May 23, 1965, II

(62)

surprised if the Whitestarts here are breeding now.

Rain getting lighter 6:03

Whitestarts sing some more. Then shut up. Their songs do overlap at least some Altapetes Whistle song-type vocalizations not far away. Also some wren songs. But there are so many birds vocalizing around here that the Whitestarts could hardly "help" overlapping.

6:19. Hear what sound like Cy songs in distance. No other Diglossini or Whitestart audible at the time (Whitestarts have been "ruled" out of the area with enormous mixed flock.) Cy sings only a few phrases. Then shuts up.

6:22. 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 Albi's less likely to join flocks than Cy or Laps here?

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

May 24, 1965
Purace - 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 Twitter in distance. Sort of "teli-teli-teli-see-eeee-ee-ee-yoo". Possibly diglossini? (This is area where Cy seen yesterday) Or possibly wren ??? Only a few phrases. No (other) diglossini, Whitestart, or Altapetes audible at the time.

Then hear first Whitestart songs 6:12. No overlap. Again only a couple of phrases.

Then several Whitestarts singing simultaneously. See one, apparently a lone, 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 uphill. Nothing else audible at time so there are at least 2 Laps in this area. (See also below).

Laf
Litti
Laf
Cy

Then see large mixed flock, including Littis, Laf, and Cy (described in mixed flock notes).

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 diglomni - 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 been 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.

Litti

Littis probably are relatively common (for Littis).

gem

II. Littis ranges (with flocks) certainly overlaps those of all 3 Dyloma spp.

Litti
Laf
Cy
Albi
gem

III. Today's observations prove conclusively that Littis 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 Littis being largely arboreal.

IV. It is interesting that the Dyloma 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).

Gen V. Granted that the Diglossa spp. are resident, it still is very difficult to determine exactly how many individuals are present.

I certainly have seen only 1 Albi. A ♂.

There may be either 1 or 2 individuals of both Laf and Cy.

Laf
Cy
Albi 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 Certainly the territories of Laf(s) and Cy(s) overlap to an appreciable extent, at least.

Gen VI. None of the 4 species seems to encounter any other face to face. (Probably 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 White-tailed

Mixed Diglossini, May 24, 1965, IV

(65)

ts, is singing frequently now. Perhaps the ♂ albi and the fittis are not singing at all at this time of year. The songs of Laf (s), Cy (s), and Wh testants apparently are not overlapping at all.

y 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
Papayán

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.

BQ Hear first twitters which may be by BQ 5:45 a.m. Coming from 2 sites. Overlapping. Then birds shut up.

Small hummingbirds feeding on Quavo flowers. Also fighting among themselves.

Scan? 6:12. Hear what may be Scan song in distance. No diglossini audible at the time. Song is very brief.

BQ See single BQ singing, 15-20 ft up in small tree. Phrases extremely variable in length. Shortest something like "Ja ta ta ta zee-uh". 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.

Nevertheless are some (other) paramees feeding on Quavo flowers.

Mixed Diglossini, May 25, 1965, II

(16)

but I haven't been able to identify most of them yet.

6:47. Hear what probably are more BQ phrases in distance. Not overlapping anything of interest.

6:55. See single Scam alone. Perched exposed, silent, top dead tree. Preening. Then feeds on adjacent Guava flowers. This is about 150 yds from where a Scam was seen a couple of weeks ago. I have not seen BQ's in this particular area. Scam eventually flies away.

7:16. See a pair of CYR's, definitely alone, definitely feeding on Guava flowers. There must be a lot of competition for these flowers!

7:30. See what may, possibly be a Scam flying and perching in tree about 50 yds from where BQ'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 BQ sang earlier this morning. NOD. Bird disappears almost immediately.

7:58. See BQ singing exposed top tree quite near where presumed Scam seen a couple of weeks ago. Short phrases. NOD. No hummingbirds near.

Leaving 8:05 a.m.

This morning's observations would suggest that BQ's and Scams (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 parudakii).

NOTE: According to Lehmann, the generic name of the "Quave"
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 native.

Hear what sound like Albi R's in distance.

26
17?
Then see and hear songs by Blue Diglossa. All song phrases essentially similar "see see see wryoo". Singing bird perched exposed 20 ft up top conifer. Ordinary diagonal posture. Tail depressed conspicuously beginning each "see". Intro Note. Bird apparently is Coer. Apparently none of its phrases overlap with Albi-type R's.

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 Whitestart or Diglossa. 2 or 3 phrases.

29
Then hear Coer type phrases again. 2 or 3 phrases. Overlapping hummingbirds, but nothing else.

Then general quiet 6:32 a.m.

Then see and hear Coer again. Identification definite. Single bird alone flitting thru scrub 3-6 ft above ground. Eating red berries. In "ordinary" ways, i.e. chewing — not piercing and sucking like Cyp on Pico de Espino near Merida. Uttering song phrases in intervals. Songs more or less as before. But somewhat more variable. Many with only 2 Intro Notes "seeee seeeee". The succeeding two then variable in length and complexity, but all comparatively short. Overlapping hummingbird sounds at random, but nothing else. Then bird shuts up. Flies away.

Mixed Diglossini, July 17, 1965, II

(68)

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 \rightarrow Albi flies from one side of road to the other, silent and alone. Vegetation here essentially identical with that of areas where Coer seen.

31

Then see single Atlapetes rufinucha same type scrub, 50 ft 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 appears to be Colibri displays. Species not identified.

Also see lots and lots of single footy Thornbills, 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 whitest out in distance. Presumably White-faced or White-spectacled or related type. Laf-like songs. No diglossini audible or visible at the time.

Then everything very quiet.

33

7:30. Flush a pair of Basileuterus-types from low bamboo.

Mixed Diglossini, July 17, 1965, III

(69)

scrub edge of road. Possibly microcristatus 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 with the Bankswallow-types.

Very cold and windy now.

Then go on at least 5 miles further down road. Reach area

8100 ft 8:15 a.m.

35 Catch glimpse of what is probably Blue Diglossa, probably Cy, 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.

36 Alvarez catches glimpse of ♀ Albi in thick scrub. About 15 yards from where Coer seen earlier. Silent and alone.

Hummingbirds still vocalizing.

37 9:30 a.m. see single ♀ Albi. Silent and alone in bush 2 ft up. Between 2 sites where Coer (certainly same individual Coer) seen earlier this morning. I.E. There is at least some territorial overlap of the two species here. NOT while the Albi is visible. Albi flies away almost immediately.

38 Sun 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.

Albis seem to be quite common here.

39 Then Albis fall silent. A few minutes later, hear single Coer plus one in distance. Then Coer shuts up.

40 Then see single ♀ Albi, 1 1/2 ft up in thick scrub. Silent and alone.

Albi

NOTE: The Albi 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
Coer

Similarly — although the Coer(s) has (have) been seen in fairly high trees — they certainly are not separated from Albi by complete or perfect stratification. The Coer 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
Coer

To my recollection, this is the only area I have visited where the combination of Albi and Coer is dominant.

The vegetation here is rather distinctive. Mostly thick scrub of moderate height. Perhaps not as thick as some scrub-junt 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 Albi and Coers 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

Mixed Diglossini, July 17, 1965, V

(71)

s.l. is rare here (as well as in the southern part of the Western Cordillera). But, if so, why is it that brunneiventris is the local subspecies ??? Merely an historical accident ??? (The range of D. Lafresnayeri gloriosissima may also be relevant in this connection - altho I don't see exactly how.)

Gen The general situation in the first area visited this morning may be summarized as follows. Only 2 species present. Albi and Coer. Albi common. Coers less common (population much less dense). At least partial overlap territories of the 2 species. No indications of inter specific hostility. Mutual inhibition of song apparently perfect. (The local Whitestart almost certainly involved in this mutual song inhibition. As far as I could tell this morning, its songs 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. Apparently largely Audubon Sparrows

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

(Single Albi alone, several Cys in mixed flocks).

Albi
Cys
Gen The assemblage of Diglossas here is very reminiscent of the corresponding assemblage at Munchique. In both regions, Albi and Cys are comparatively common (the Albi 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 Cafresnayeri 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.

Jen

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).

Concepcion Carbonaria - Cafresnayeri

Probably such species as carbonaria s.l. and Cafresnayeri 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 Cafresnayeri 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.

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) Concepcion

Mixed Diglossini, July 18, 1965, III

(73)

sp. The case of the WCC probably is particularly significant. The absence or rarity of the "commensal" *Couros* here presumably is correlated with the almost complete absence of (native) forest.

July 19, 1965
Boquerón de Palmitas

Arrive area 71750 ft 5:35 a.m. Just getting light. Miscellaneous scrub around. Some loud noise. Largely Andean Sparrows.

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

(Cys as "obligate" commensals of mixed flocks)

July 20, 1965
Finca "La Montaña"

Arrive 5:35 a.m. 7900 ft.

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

(Cys, Albi(s), and Scars.)

Cys
Albi
Scars

Central Cordillera Colombia

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 Dylaniini or Scans.

Scan?
Scan
Scan

Hear what may be first Scan "chuk" song, in distance, 5:48

Move to Scan on nearby perch (the same one favored last week)
uttering "chuk" song 5:52 a.m. Long sustained. Overlapping distant
Scans at random.

First Scan aerial displays 5:55

Scan
Albi?

5:57. First R's. Approximate area where Albi seen last week.
R's certainly uttered by Albi or Jivarus. Then more R's. All completely
overlapped by "chuk" songs of several Scans in neighborhood. Then
R's stop 5:59. Then start again. All R's quite far off. Downhill in
patch second growth woods. Then R's apparently stopped again.
Several Scans continue, full blast.

Scan

Scans here obviously prefer fairly high perches, in more or less
isolated trees or clumps of trees, with relatively wide view of surroundings
or 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 Frontuno?

Scan
Albi?

Scans still continuing to sing frequently 6:21 a.m. NDWA.

Then I hear another R in distance. Again completely overlapped
by Scan "chuk" song.

Cy
Albi

6:30 a.m. At least 2 Cys suddenly appear edge of scrubby

Mixed Diglossini, July 27, 1965, III.

(76)

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, these R's are not overlapped. But this absence of overlapping seems to be "accidental."

Then, suddenly, a ♂ Albi appears in bush quite close to me. Feeding on usual 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!

Then the hummingbird suddenly flies away. Immediately a ♀ Albi appears in area. Hops about in bushes silent. 4-8 ft up.

Then the ♂ Albi reappears. Supplants the ♀ !!! Obviously aggressive. This supplant also silent. ♀ flies away and disappears. ♂ apparently follows.

Mixed Diglossini, July 27, 1965, IV

(717)

170
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 Cy do not attack it. Then Cy moves off - quite gradually. I also lose sight of hummingbird.

Cy
Alb
MSGH

During their various appearances here, the Cy, Alb, 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. Faint white spot behind eye. Adult ♀ or juvenile? Amazilia spp. ???

173
Cy
Alb
MSGH

7:28. Three Cy (re) appear in bushes of scrub some 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 Alb 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 Alb and the medium small green hummingbird. Two of these Cy are quite bright, while the third is dull. Obviously a family group. All three birds staying quite close together.

Uttering lots of "Tut" 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

Cy
Alb

Mixed Diglossini, July 27, 1965, VI.

(78)

letely overlapped by Scam "chuck" song.

NOTE: At no time, when the Albi, Cys, or medium small green hummingbird have been here, have there been any Scams close by. All Scams up on perches isolated trees 50-100 yds away. I am not sure that the Scams have even been able to see the other birds.

17:48. More Cys songs overlapped by Scam "chuck" songs.

Cys gradually come closer. Then I see the ♂ Albi 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 ♂ Albi. But somewhat closer to Cys.

Cys continue to advance. And ♂ Albi moves off. Apparently retreating before Cys (altho they have shown no obvious, overt hostility toward it).

Dominance hierarchy here presumably is Cys > Albi > medium-small green hummingbird.

Then I lose sight of the medium-small green hummingbird. A few seconds later, another hummingbird, apparently Scam, flees through area. Very rapidly. Does not feed. Ignores Cys approximately 5-10 ft away.

Cys continue to sing from time to time. Also Scams. Complete overlap. Then Scams shut up. Cys utter a few more phrases. Then move off and fall silent.

Overlaps Cys and Scam songs here probably is completely random.

It also looks as if the Scams here are not members of the local Diglossini complex in any way.

Scams singing "chuck" songs again 8:06 a.m. NDWA

Albi
Cys
MSGH

Cys
Scam
17:48

Cys
Albi
MSGH

Cys
Albi
Scam
MSGH

Cys
Scam
om.

Scam
om
Scam

Mixed Diglossini, July 27, 1965, VI

(79)

Albi
MSGH 175

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 C, Cy (s) begin to sing again. About 20-30 ft away. And ♀ Albi's out 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

Cy
Scan

All three Cy songs were completely overlapped by Scan "chuck" songs in distance.

Albi

8:27 a.m. ♂ Albi back for brief visit. Feeding on purple flowers 8-10 ft up. Quite silent.

Albis here certainly do not seem to be in breeding (or at least courtship) mood now!

Albi
MSGH

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.

Scan
Albi 276

Scans still singing 8:38 a.m.

♂ Albi back again a few minutes later. Alone and still silent feeding purple flowers usual bushes.

Albi
C

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.

Mixed Diglossini, July 27, 1965, VII.

(80)

Albi
Cys

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.)

Scam
Albi
MSGH

Well! well! well! 8:45 a.m. Single Scam (identification definite) appears very close by. No diglossini or other hummingbird around at the time. Scam spends at least a minute, definitely feeding on purple flowers, same species favored by Albi 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
Scam

Then MSGH suddenly appears. swoops at, and chases, Scam. Attack is silent. Scam leaves without resistance!!! (Altho the MSGH is very appreciable than it is).

Scam

Are the Scams less aggressive here than in some other parts of the Audes ??? Or is this particular area "marginal" for the local Scam ???

Scam

Scam songs becoming increasingly brief, and separated by increasingly long periods of silence 8:55 a.m. Probably the Scams also are past the peak of display now.

I wonder why there are no White-tails 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 8 ft 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

Mixed Diglossini, July 27, 1965, VIII

(81)

off and disappears.

Leaving myself 9:20 a.m.

Some Scans still uttering "chuk" songs in distance.

COMMENTS:

There certainly is some hostility between members of the diglossine complex here — although not between species of Diglossa itself!

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 MSGH tends to feed on the purple flowers favored by Albus more frequently than do the Cys; and, therefore, it fights with the Albus more frequently than do the Cys.

July 28, 1965
Region of Belmora

Working around area called El Herbal ca. 8400 ft.

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

(Both Brown 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 song phrases. In scattered mature-looking trees above scrub. Usually 15-30 ft up. All phrases composed of "Tut" Intro Notes followed by long, rapid, formless Twitters. Bird definitely alone. Songs uttered from unritualized semi-

Mixed Diglossini, July 28, 1965, II

(82)

horizontal postures. Every once in a while, one or more Yellow faces in distance also utter (s) song phrases. Between phrases of Cy. No overlap.

9:55 a.m. Slightly below fruit flock area. Catch glimpse Colibri sp. feeding pink flowers in scrub. Also hear brief snatches "chuk" song. Sound as like Scan.

Scan

10:00 a.m. Down by Finca. Ca. 8400 ft. Can hear presumed Scan "chuk" song. Bird perched high in isolated tree in pasture. Leaving 10:05 a.m.

Scan

July 29, 1965
Region of Belmura

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 Yellowface songs heard 5:55 a.m. Below where fruit flock seen yesterday. NODWA

No singing where fruit presumed Scan seen and heard yesterday. Arrive area fruit flock 5:58 a.m. Cy singing in bush 6 ft up.

Cy 7/26

Long phrases. Twitters with "Tut" Intro Notes. Yellowface (s) also singing in distance. Song phrases of the two species generally alternate, but there are at least 2 or 3 partial overlaps. Cy beginning a phrase before Yellowface is completely through. Also Yellowface (s) beginning phrases before Cy is completely through.

Then Cy shuts up. Flies away. Yellowfaces continue.

One Atlapetes Mistle song inserted between Yellowface phrases.

Cy

Mixed Diglossini, July 29, 1965, II.

(83)

es. No overlap. Then Yellowfaces shut up.

W Then one more Cy phrase in distance. NODWA. Then more Yellowface NODWA. Then more Atlapetes Whistle songs NODWA. Then more Yellowface. NODWA. Then silence 6:05 a.m. Then more Yellowface songs at irregular intervals. NODWA.

W 6:30 a.m. Once second flock. Can hear Cy singing in distance. NODWA. Utters only 3 or 4 phrases, then shuts up.

W 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.

A few yards further on, uphill. 6:40. More Yellowfaces singing NODWA.

Brown 179 Considerably further on, 8000 ft. 7:05 a.m. See single Brown. Get particularly good view of it. Looks just like Browns near Paramo Frontino, except that mountaintops are smaller, thinner — perhaps even partially interrupted. (Also notice that when the bird faces me directly, its rufous breast is "framed" by a stripe of light gray on either side.) This bird cannot be same individual seen yesterday. When first seen, it was sitting 3 ft up, on exposed perch, in scrub. Looking from side to side. Also uttering "Trit" Notes at quite regular, rapid, intervals. 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.

Ally I wonder why there are no Albis here ??? The general form of the vegetation here (with its patches of apparently natural forest) looks more suitable for Albis than does the vegetation at "La Montaña", for instance. (But I must admit that I have not seen any of the purple tubular flowers favored by Albis here so far.)

Mixed Diglossini, July 29, 1965, III

Brown
Alba

Are Brown and Alba mutually exclusive ??? Viz both Frontiers
or and the southern Andes.

80

NOTE: The diglossini population as a whole seems to be relatively very sparse here. Even less dense than near Pucallpa-Frontiers.

81

9:23. About 20 yds further on. Hear Cy uttering typical songs, with Intro Notes, in distance. NODWA about 3 phrases. Then silence.

81

Then some Yellowface songs same general area. NODWA.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS —

Cy
Brown

Cy attacking and probably chasing Brown!!!

82

8:50 a.m. On way back down hill. Area where second flock seen yesterday. Hear Cy singing in distance. NODWA.

83

Further down, I notice that none of the presumed deans is singing

wig

Leaving 9:18 a.m.

Central Cordillera Colombia

85

Mixed Diglossini, I

August 1, 1965
Paraná

Going to work this morning in the first place I worked a few months ago - i.e. the place where Ay, 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 Mesopará.

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 Paniflora (usual 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 Whitetails. NODWA

6:18. Hear what probably is Laf song - in very great distance. NODWA. Then silence. Then one more Yellowface 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 mossy (but invisible) Pseidothraupis

Mixed Diglossini, Aug 1, 1965, II.

(86)

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 ay song phrases up hill. Again NODWA. Then some Yellowface song downhill. NODWA. Then some Laf song downhill. NODWA.

7:40 a.m. Sun shining brightly now. Hear occasional brief snatches of Laf song in distance NODWA.

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.

Apparently the hummingbirds VIII are not migratory. Could this be because they are "parasitic" on Diglossas — and thus can utilize a greater range of flowers than the Cinnamons ???

8:15 a.m. Slightly downhill. Near where Laf-After fight seen a couple of months ago. Hear lots of Diglossine Tweets. Phrase after phrase. All Tweets 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 After (this certainly is within the known territory of an After. And quite close to where I saw the first After this morning.)

This is the most vigorous burst of Diglossine song I have heard today. Don't tell me this individual is in breeding condition ???

Mixed Diglossini, Aug 1, 1965, III.

87

3 ✓ Eventually this bird flies away and shuts up. Then I hear some brief Laf song about 100 yards away. No overlap.

4 ✓ 8:43. Some more Laf song. NODWA

Leaving 9:25 a.m.

COMMENT: I saw, and heard, surprisingly little of *Cy* this morning. Does this mean that the local *Cy*s 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 Aler) and the hummingbirds "parasitic" upon them (i.e. no VIII).

August 2, 1965
Paraisé'

Arrive area where Lafs and (probably) *Cy*s 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.

7 ✓ Near fruit Laf song 6:01 a.m. NODWA. Then silence. Then some Towbelly song in distance. Then silence again.

Quite a lot of Towbelly song 6:05. By at least 2 individuals. Probably more.

6:20 a.m. Near fruit Yellow-face songs NODWA.

8 ✓ 6:28. See a single hummingbird VIII perched soft up in bush in scrub.

6:30-6:35. Quite a lot more Yellow-face songs. NODWA. But

the Yellowface songs do seem to overlap Towhees songs completely at
(It is my general impression that none of the Whitestarts are inhibited
by any Poocillothraupis songs anywhere.)

sf

6:40. More Lsf song. NODWA.

sf

6:55. I have now heard several more brief matches of both
Lsf and Yellowface song. No overlaps. And NODWA

of WW

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

sym

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 Diglossini "social com-
plex" 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.)

August 3, 1965
Region of Puracé

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

Cy

8:05 a.m. Hear what sounds like Cy songs in distance. The first

to today. NODWA

Albi!

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.

Mixed Diglossini, Aug. 3, 1965, II

(89)

Open COMMENT: Apparently the Diglossini are not breeding any where in this region now!

August 4, 1965
Region of Purace'

Going to work at a Finca called "Canaan", just above the town of Purace' itself. Not very far from where Ater - Scan reactions were observed a couple of months ago.

Crossed bar 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',

Cinn Also full of Annamou Hummingbirds. And at least one Black Diglossa, presumably Ater. SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS.

Cinn Annamou quite noisy. Then, 6:01, hear Yellow face songs. Only a few phrases. NODWA.

Cinn Annamou fighting among themselves. Aerial chases. This garden is not very close to any large patches of forest. Partly surrounded by sparse hedge. Then pasture

Ater 6:05. See Ater (again). Identification definite. Feeding orange flowers near hedge. Silent. Alone. Apparently not molested by Annamou. Actually, the part of the garden visited by the Ater does not seem to be visited by the Annamou very frequently.

See several single footy Thrushes alone.

Cinn Annamou are sticking their bills up into centers of the orange f

lowers. I.E. they are not using Diglossa holes.

More Yellowface songs in distance 6:12 a.m. NODWA

Ater
Cinn 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
Cinn Ater flies up to part of garden where Cinnamons are thickest. Supplants 2 Cinnamons! silently. Cinnamons leave without resistance! Also silent.

Ater Then hear some more R-Zazas 6:20. There are at least two Black Diglossas here. R-Zazas seem to be uttered 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.

Cinn
Ater 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!

Cinn
Ater Thus, it would appear that the relations between Cinnamon and Ater 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.)

(In any case, it must be stressed that the Cinnamons here now are very aggressive among themselves.)

Cinn

6:30. See Cinnamon and Ater perched only a foot apart. Both silent. Then Cinnamon makes inhibited movement toward Ater. Stops. Then Ater flies away.

Cinn
Ater

6:37. Hear Dubana 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 Diglossa feeding orange flowers near hedge. Looks quite carbonaria s.l. in shape, but definitely has humeral patches (of medium size). Presumably Laf. Orc could it be Hummer ??? I certainly saw at least one undoubted Ater in same area earlier.

Laf
Ater
Cinn

But there is no Ater close by now.

Then see long & vigorous fight between Cinnamon and Black Diglossa - apparently Ater. Both birds aggressive. Ater feeding on orange flowers. Cinnamon swoops at Ater at least 10 times. Swo

Cinn
Ater

Mixed Diglossini, Aug. 4, 1965, IV.

(92)

ops vigorous. Preened home. Annamou 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 Annamou. (Supplants occur when Annamou has perched between swoops.) Some of the chases accompanied by R. No Za za. Other chases, and supplants, silent. Annamou silent throughout.

Then I see an adult Ater chasing a juvenile of same species (identification of both definite.) Silent

Then, 6:55, see an adult Ater fly away when presumed Laf appears 3 ft away. Both birds silent

A few minutes later, see presumed Laf repeatedly supplant a adult Ater in hedge. Both birds silent.

7:10 a.m. see both presumed Laf and adult Ater perched quite close 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!

Then see another brief but vigorous Ater - Annamou dispute. More or less a "draw".

I shouldn't be surprised if there are 4 or 5 Aters here, in the general neighborhood!

Certainly the territory, or home range of the presumed Laf at least broadly overlaps the ranges of at least two Aters (the presumed mates).

This group here might almost be called a "flock" of Diglossini - 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 fairly Laf-like in proportions. And the humeral

Ater
Ater
Laf

Ater
Laf

Ater
Cumm

Ater

Ater
Laf
Cumm

gen
Laf

patches definitely are blue.

Laf
Ater

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.

Laf
Ater
Cinn

Both Aters and Lafs definitely are feeding at the bases of the corollas of the orange flowers. And the Cinnamons definitely are not using Diglossa holes. One wonders if the Cinnamons and Diglossas are getting nectar from different parts of the same flowers.

Laf

This is, I think, a remarkably low altitude for Laf. Presumably this individual occurs here as a result of the attraction of a super-abundant food source.

Laf
Cinn
Ater

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 constantly than they are avoiding the Aters.

Ater
Laf
Cinn
Ater

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.

Cy
NOBWA

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. microcrinitus not too far away) Cy utters a number of song phrases. Long rapid Twitters with "Tut" Intro Notes. Feeds

by picking insects off leaves. Also tries to eat some small green berries. But there 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 ???)

After Cy leaves, a small green hummingbird appears in tree. Apparently smaller than VIII. Eriocnemis 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.

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 near Paramo Frontino.)

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.)

So perhaps the Violet-back is like the Scan - insofar as it may be used as an "indicator" of the probable presence of Caribonaria s.l. in the area.

Incidentally, I wonder why there are no Scans here now?

Mixed Diglossini, Aug. 4, 1965, VII

(95)

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 on. Flies off without resistance. Cinnamon also leaves.

Then Ater flies in (again). Feeds small yellow flowers. Not attacked by local Cinnamons.

Ranges or territories of Cy and Ater here are at least adjacent. 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 intruding ???)

Then Ater also leaves.

A few minutes later, 8:31 a.m., hear Cy song phrases nearby. Switters 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").

After the Cy songs have continued for a few seconds, Ater flies (back) into tree with small yellow flowers. Silent. Flaps 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

VB
Cinn

Ater
Cinn

Ater
Cy

VB
Ater

Ater

Ater
Cy

Cinn
VB
Laf

Mixed Diglossini, Aug. 4, 1965, VIII

(96)

Faj
Cinn
VB

earlier today.) Silent. Apparently ignores, and is ignored by, both the Cinnamon and the VB. Laf 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 "pursuing" a pair. Territorial boundary dispute? One or more birds singing furiously. (Interestingly enough, all or most songs with a Intro Note.) And one bird repeatedly does slight Belly-fluffing. More or less comme ça



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
Faj

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, Laf, 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.

Mixed Diglossini, Aug. 4, 1965, TX

(917)

After
Laf
Cy
VB

Obviously, territories or ranges of After, Laf, VB and Anna
mon overlap that (or those) of the Cys at least partly.

And the After, Laf, and Annamon (and probably VB) approach the Cy(s) closely at least occasionally.

After

After back feeding in tree with yellow flowers 9:05 a.m. Silent
Apparently alone.

Then see After in tree where Cy seen first, earlier this morning.
The territories of After and Cy(s) here must be at least fairly broadly overlapping.

After

Then see 2 Afters 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 "Zraah" notes. Apart from the Wing-Q, the juvenile's postures and movements seem to be unritualized. (Actually, the poor thing is busy trying to defend itself. Probably pecking back at adult.) Then fight stops. Juvenile probably has flown away.

This Wing-Q probably should be classified as "Appeasement" rather than "Food-begging".

After

9:21. Near Dubonia singing again in distance.

Juv. After back in same bush. Feeding on small white flowers. Adult seems to have gone now.

?

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. Near 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

Back to other side of garden 9:38 a.m. Cinnamons still around. Still fighting among themselves. But quieter now than earlier.

Laf

See single Laf and single Ater about 5 ft apart in hedge.

Ater

Both silent. No overt hostility.

Cinn

See single Cinnamon hovering over head of feeding Ater. Then Cinnamon flies off without actually attacking.

Ater

9:48. Again see Cinnamon hovering over head of adult Ater. Repeatedly. Only 3"-4" above Ater. Also makes inhibited attack movements. But Ater ignores it completely.

Ater

Light sprinkle of rain beginning 9:50 a.m.

Probably only 1 or 2 Aters here now. Certainly no trace of any "flock".

NOTES:

Ater

The orange flowers here are Xanthophora uvaria, Hook.

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 "diglossine social complex" might be summarized as follows:

Laf

Laf x Ater. Territories at least broadly overlapping. At times 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

Ater

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 x Cy. Territories at least partly overlapping. Laf apparently attracted by sight and/or sound of Cys. Attraction probably essentially hostile.

Laf x Cinnamon. Territories completely overlapping. But I have yet to see an overt reaction between individuals of the two species.

Laf x VB. Territories at least adjoining. No reaction seen between the two species.

Ater x Cy. Territories at least partly overlapping. Ater apparently attracted by sight and/or sound of Cys. Attraction probably essentially hostile.

Ater x 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 x VB. Territories at least broadly overlapping. Apparently no hostility between the two species.

Cy x Cinnamon. Territories at least partly overlapping. Cinnamon apparently attracted by sight and/or sound of Cys. At

Mixed Diglossini, Aug. 4, 1965, XII

(100)

traction probably essentially hostile. (NOTE: Laf, Ater, and Cinnamon all seem to bear the same relationship to Cy.)

Cy x VB. Territories at least adjacent. VB's probably attracted by sight and/or sound of Cys.

Cinnamon x VB. Territories at least partly overlapping. Cinnamons frequently aggressive toward VB's.

COMMENTS:

Cinnamon may well be openly aggressive toward all other nectarivorous species that it can attack, or chase, with relative impunity.

Laf, Ater, & Cinnamon all compete with one another for food. Probably competing very strongly now. Probably most individuals of all three species prefer, or depend upon, Kuiphophora more than any other food source, now.

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 baritula s.l. ??? And why are there no Coers ???

The absence of baritula s.l. is particularly remarkable. Much of the countryside on this western side of Purace' looks very suitable for it. Open scrub. And lots of suitable flowers (Remember that the Baris in Bogota' seem to specialize on Kuiphophora !!!). It has just occurred to me that I have never seen Baris 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

ll as where carbonaria s.l. seems to be absent. (baritula s.l. certainly occur in some of the same regions as flors, Hummer s., southern Brams, 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 region 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 Pura 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 melantoni bushes with lavender flowers on one side of the garden here. Is something driving CC's away from here ???

Mixed Diglossini, Aug. 4, 1965, XIV

(102)

gem Certainly the Laps and Alters are not breeding here now. Probably the Annamons and VB's aren't either. But the local Cys may be. (Another suggestion that Cys have two breeding seasons per year!)

August 5, 1965
Parace'

Going to work in same place as yesterday. Arrive house itself at 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.

Cinn Working in the part of the garden where Cys were seen yesterday. First Cinnamon sounds 5:50 a.m. Then hear some Attapetes 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 maybe their sounds are responses to the rain?)

Lots of single sooty Thrushes as usual.

Near first 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 first Laf seen yesterday.

Cinn Black Annamons seem less active and noisy today than yesterday. See first Black Diglossas feeding on orange flowers 6:03.

Mixed Diglossini, Aug. 5, 1965, II

(103)

More Yellowface songs in distance 6:05. NODWA

Ater
Laf

6:06. Two Aters perched 2-3ft up in bush which was particular
only favored by Laf yesterday. Silent. One individual repeatedly suppl
ants the other. Supplants also silent.

Cinn

Cinnamons somewhat noisier now.

Ater

One Ater (again) repeatedly supplants another in hedge. Suppla
nts with R's and R-Za's.

Ater
Laf

Apparently, there are only two Aters (both adult) here now.
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 dis
tance away from the garden.

Ater
Cinn

Ater attacks Cinnamon feeding on orange flowers. Attack silent.
Cinnamon flees off without resistance. Then Ater feeds on same orange flo
wers itself.

Cinn
Ater
Cinn

Mud coming up and it is getting colder now 6:21 a.m.

Cinnamons fighting among themselves. But not very vigorously.
Ater supplants Cinnamon. Supplant is silent. Cinnamon doesn't
resist.

Laf
Ater

Laf back in favorite bush 6:27 a.m. Silent. Then feeds on orange
flowers. Ignores, and is ignored by, single adult Ater perched in bush
8-10ft away.

Ater

More Yellowface songs in distance. NODWA

One Ater repeatedly supplants another in bush. One supplant
with R-Za's. Others silent.

Jim

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

Mixed Diglossini, Aug. 5, 1965, III.

(104)

feeding!

6:35 a.m. More Yellowface songs in distance. NODWA. Then I also hear Dulburia singing in distance.

Cinn
Ater
Cinnamon hovers over head of Ater feeding on orange flower. 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 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 proved 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.

Fof
Also see 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 now). Wind still increasing.

Ater
Cinn
Ater supplants Cinnamon. Both birds silent.

Cy
Cinn
VB
Back to area where Cy seen yesterday 7:00 a.m. Some Cinnamons around. Then VB appears and feeds on small yellow flowers.

It is not attacked by Cinnamons.

VB
Yellowfaces still singing in distance 7:12 a.m.

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 "Browp" sounds. Apparently also fighting among themselves. Very rapid aerial chases - almost impossible to follow.

Mixed Diglossini, Aug. 5, 1965, IV.

(105)

VB
Cys
Laf

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.

Atter
VB

Atter appears briefly in tree with small yellow flowers 7:20. When VB's are absent.

Jun

There also seem to be several other species of small hummingbird birds around here. All partly or largely green.

Comm
Atter

Back to other side of garden 7:40 Everything quiet. Then some more disputes among the Annamons. They ignore an Atter feeding not very far away.

Observations interrupted while I get some coffee!

Back to Cy area 7:55.

VB
Comm

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 Comm on about 10 ft away.

Atter

Adult Atter feeding in bush with clumps small white flowers. Silent and alone. Then flies off.

Sun coming out again 8:05 a.m.

Atter

8:10. Now there is a small green hummingbird feeding on clumps small white flowers. Atter certainly has a lot of competitors around here!

VB
Laf

8:22. VB back tree with small yellow flowers. Attacked and supplanted by small greenish hummingbird.

Laf
Atter
Comm

Back to other side of garden. One Laf, two Atters, and lots of Annamons around. All feeding orange flowers.

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 "posture" to provoke the attack.

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!

Back to Cynde garden. See both adult and juvenile Aters feeding in bush with small white flowers. But not simultaneously.

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.

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.

The behavior of the Aters here may tend to conform 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.

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.

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

Mixed Diglossini, Aug. 5, 1965, VI

(107)

away.

Aster?

Speak of the devil! Adult Aster repeatedly (at least 4 times) supplants and chases small green hummingbird. So Asters do not always refrain from attacking much smaller birds!

Aster

Then hear outburst "Zraah" Notes in bush with white flowers. Catch glimpse of two birds flitting about. Adult Aster chasing juvenile of same species?

Aster

Then see adult Aster feeding tree with yellow flowers. Silent and alone. Then single Forkbills (!) flies into same tree. Lands about 6 ft from Aster. Silent. Forkbills flies off. Aster does not follow.

VB Aster

Then VB lands in same tree. Feeds yellow flowers 6-8 ft from Aster. The two birds ignore one another. Aster flies off in one direction. VB in another.

Light rain again 9:45.

Aster VB

A few minutes later, both adult Aster 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. Aster does not follow.

VB Aster

It has been my impression, both today and yesterday, that Aster 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 Aster

10:00 a.m. Now there are two Asters and two VB's in tree sim

ultimately! All 4-6 ft apart from one another. Then one VB chases the other. The latter leaves.

Then I hear 1 Cy song phrase not too far away. NODWA
Both Ates in tree with yellow flowers are adult.
One VB still in tree with both Ates 10:05.

I suppose that the VB may secure a certain amount of protection by "associating" with Ates. There are, for instance, several Cinnamoms 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 Ates, plus VB, are in it!

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 Ates 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 Ates 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 Ates!

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 Diglossini here may form flocks.

The fact that Cys have been seen so rarely here is further

Mixed Diglossini, Aug. 5, 1965 VII

(109)

evidence that Cys have comparatively large territories. (Probably the Cys at this particular locality also are associating with mixed flocks.)

August 6, 1965
Purace'

Going to work same place today. Awoke at house 5:31 a.m. Moderately clear. Cool. Little wind (as yet).

Going to try to concentrate on VB - Atter - Cinnamon relations this morning - if possible.

A moderate amount of bird noise 5:40 a.m. Lots of thrushes. Some humming bird 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 Yellowface songs 5:51 a.m. NODWA

Then hear Atter R-Zaza's on far side of garden.

Cinnamon flitting about in the vicinity of (but not actually in) the tree with small yellow flowers ("T1").

Still plenty of sooty thrushes alone.

VB
Cinn

5:58. VB in T1. Alone. No Cinnamon ("Cinn"). Then Cinn appears, perches in nearby bush, and VB disappears, more or less simultaneously.

Jay

6:01. Single Jay appears in nearby small bush. Alone. Flies off into garden.

VB
Cunn

6:04. VB back in T1. Alone. No Cunn nearby. Then Cunn comes, perches stalk orange flowers 10 ft away. VB doesn't react at all! Cunn is feeding. Cunn flies away. To garden. Then VB flies away. Into ravine thicket.

Ater
Cy
Cunn

Will! Will! Will! 6:07. Ater flies into T1. Alone. No Cunn nearby. Then Audubon sparrow j → Ater! Then Cy suddenly appears. Cy j → group. At one time, Ater & Cy only 3 ft (approx.) apart. No sign overt hostility. Then Cunn appears. Perches nearby in garden. No overt hostility. Then Ater, Cy, and Audubon sparrow all disappear more or less simultaneously. Then Cunn flies off.

CC
Ater
VB
Cunn

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 Cunn appears. Perches garden 6 ft from T1. Shows no sign of hostility toward either VB or CC. VB flies off. CC does not follow. Cunn flies off. CC eventually moves off too. Not in same direction as Cunn. But more or less in the direction that both Ater and VB went (further into thicket).

CC
VB
Cunn
Cy
Ater
Laf

CC territory or range certainly overlaps those of VB, Cunn, Cy, Ater, and Laf.

CC
Cunn

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.) Cunn perched scrub 3-4 ft away. No reaction between the two birds. It is interesting that the CC has not been

attached by Ann — especially, as the two species are similar in coloration.

Ann

Ann's certainly are fighting among themselves.

More Yellowface songs in distance. NODWA.

See single maroon crested montane cotinga. 15 ft up in tree edge ravine. Definitely alone.

VB

?

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, Ann comes and perches garden and scrub 6-10 ft from VB. No reaction between the two species. (I am fairly certain that the Ann 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.)

Ann

Then a single Cy flies into T1. VB immediately flies away into adjacent tree! Obviously a reaction to the Cy! Cy flies off. VB goes back into T1.

VB

After VB

6:30. Look up to find both After and VB in T1. Feeding 4-6 ft apart. Then Ann appears. Attacks and chases After. Apparently ignores VB. After flies off. Ann in hot pursuit. VB continues to feed peacefully. Then flies off too.

Ann

?

After Ann

6:41. Small green hummingbird in T1. Flies away immediately when After flies in. After alone. Feeds. Flies off. Back a minute later alone. Flies off. Ann attacks and chases After just as it takes off! Both birds disappear. After back again a minute later alone. Feeds. Flies off.

?
Cinn
Ater

6:47. Small green hummingbird back T1. Alone. Flies off. Back. Cinnamon appears. Lands in T1 8 ft from green hummingbird. Latter flies away. Cinnamon flies off in opposite direction. Ater flies into tree adjacent to T1. Feeds. Alone. Flies off a gain.

VB
Cinn
Ater

Sun reaching this area 6:52 a.m.
VB back to T1. Then 2 Aters fly into tree. Apparently engaged in hostile chase. Flit thru tree ca 8 ft from VB. Cinnamon appears. Flies over the Ater. Ater fly away. Cinn goes in another direction. Perches. Then VB flies off in still a third direction.

VB
Cinn
?

6:55. VB back T1. Feeds. Cinn appears. Also lands in T1. ca ft from VB. No overt reaction between the two species. Cinn flies off. VB continues to feed. Flies off. Small green hummingbird ("SGH") appears in T1. Alone. Flies off.

Ater
Cinn
VB

Ater feeding in adjacent tree. Exactly where C seen earlier. Apparently also picking insects off leaves. 6:58. There is at least 1 Cinn flitting about the area, also picking occasionally. Ca 10-15 ft from Ater. No reaction between the two birds. Then I see that the VB is back in T1. 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 T1. VB and

?
VB
?
Ater
VB
?

SGH appear to ignore one another, feeding 5-6 ft apart. Then gradually come closer together. Then there is a brief flight between VB and SGH. Can't see who is aggressor. Then the two birds separate. Resume feeding 5-6 ft apart. Then an Ater flies into T1. Not the same individual as the one seen feeding in adjacent tree (The latter is still there.) No reaction between Ater and either VB

Mixed Diglossini, Aug. 6, 1965, VI

(113)

Cinn or SGH. Nor do any local *Cinn*s show any particular interest in the group in T1. Ater flies off. Nothing follows. Both VB and SGH disappear some minutes later.

Cinn NOTE: *Cinn*s apparently never feed on small yellow flowers of T1 tree (or other trees of same species). Altho they are perfectly willing to perch in these trees.

Ater 7:15 a.m. Look up to see single Ater in T1. Alone. Silent. Feeds. Flies off.

Dubonia feeding in distance 7:18.

7:19 a.m. VB back in T1. Feeds there steadily for a long time.

VB *Cinn* There also are several *Cinn*s in the neighborhood. Very active. Frequently fighting among themselves. At least 5 times, *Cinn*s fly very close to pass the VB. These "approaches" do not seem to be responses to the VB itself. The *Cinn*s 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 6" to 2'. And once 2 *Cinn*s land and fight on branch less than 1' from VB. This also "forces" VB to retreat.

Ater *VB* Once an SGH lands in T1 while VB is feeding. 6 ft 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 R-Za Za's. Once, one Ater chases another thru T1. Pass very close to VB. This also forces VB to retreat a little.

Mixed Diglossini, Aug. 6, 1965, VI

(114)

VB eventually flies off.

Atter
A few minutes later, single Atter, alone, lands in T1. Feeds. Flies off.

?
7:38. Single SGT in T1. Alone. Feeds. Flies off.

Atter
Can hear more Atter disputes - lots more R Zazas - in scrub & down ravine. Atters in this ravine and along edge seem to be very aggressive among themselves now!

?
7:45. SGT 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
Cinn
Then VB back T1. Alone. Feeds. Immediately, a Cinn comes. Perches in T1 3ft from VB. VB retreats a foot or so. Continues feeding. Cinn apparently not looking at VB. Just perching quietly. Then Cinn 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 Cinn then goes off. VB leaves a few moments later (when dog appears).

VB
Cinn
NOTE: I am beginning to think that Cinns approach T1 too frequently when VB is present for the reaction to be "coincidental". Even though Cinns have not attacked VB's this morning, and even though the Cinns do not seem to look at the VB's, I think that at least some of their approaches must be "excusing".

Atter
8:01 a.m. Hear one unmistakable Atter Twitter far side of garden. NODWA. A few moments later, hear Yellowface songs not far off in ravine. NODWA.

Atter
Then see single Atter 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 Ater(s) may tend to go to T1 when VB is there !!!).

Cum
VB
Ater
VB
?
Ater
VB

Well! Well! Well! More complications: 8:14. There is a Cum sitting in tree adjacent to T1. Then VB flies into T1. Feeds. No reaction between Cum and VB. Not even anything which could be an intention movement of "excortung". (Cum does dispute with other Cums 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 hummingbird — I think a VB. Both birds disappear.

Ater

8:25 am. Ater back in T1. Silent. Alone. Feeds. Flies off. Same thing happens again a few minutes later.

Cum
VB

8:36. Aha! VB flies into T1. Alone. Feeds. Then Cum comes and definitely swoops at VB. Swoop missed home. Both birds fly off.

Cum
Ater
Ater

A minute later, see Cum chasing Ater in flight over garden. Cloud coming up 8:43 am.

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
Cum
Ater

8:47. Adult Ater flies into T1. Alone. Feeds. Flies off. Immediately a VB flies into T1. Alone. Feeds. A Cum appears. Flies close by VB. VB doesn't appear to react. Cum flies on. VB continues feeding. Then also flies on.

A few minutes later, Ater (re) appears in T1. Alone. Silent.

Mixed Diglossini, Aug. 2, 1965, VIII

(116)

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.

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.

Ater back almost immediately. Silent. Alone. Cinn appears. Perches adjacent tree. Then SGT 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. Ater passes near SGT - which flies off immediately. All 3 birds disappear.

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.

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 Ater's in this respect.)

In spite of the fact that Ater's compete with VB's, and may even attack them, VB's do derive some advantages from association with Ater's. (1) VB's are not likely to be attacked by Cinn's when Ater's 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 Ater's are present than when they are absent. (3) The presence of Ater's may tend to inhibit, or prevent, approaches by SGT's - another important competitor of VB.

II. Re the frequency of overt inter-specific hostility in the area. On the whole, the area must be considered very open.

Open At least the garden part of the area. The *Kniphofia* 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 flower stalks. They certainly can see one another very well, most of the time.

Open 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.

Leaf 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

Mixed Diglossini, Aug. 6, 1965, ~~A~~

(118)

be relatively very large

ADDITION: Re point I above.

Ater
Cum
VB
I have no real evidence to prove that VB's derive some benefit(s) from association with Cum. Theoretically, this association might be advantageous if Aters were more likely to attack Cum than VB's. But I have no evidence that Aters ever attack Cum unless attacked first.

(I am not sure that there was any Cum very close by when the Ater supplanted the VB this morning. But there certainly were several Cum not very far away!)