"Quinua"

"QUEÑUA"

Kéñua

Polylepis

4,300 — CHECAYANI in AZANGARO (PUNO)
QUEÑUANI

Volcán CHACHANI - (Arequipa.)

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

PHOTOGRAPHY SCHEDULE — ARIES

I Pierce — March 29, 1942

A. First traverse above Camp of Pierce: (As I remember, the site of Alt-Jeau at corner of Butte, Little else.) 7 shots, end of Roll A Black and white & Some color

B. General area where first traverse intersects AS Ordovician outcrop. 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, Trace out syncline, several quartz and fossils. Roll B telescopic - B+W, 2 shots trees, epiphytes, and bromeliads Roll C, wide angle. B+W (shots), 1 shot. 1 shot Blue + Red jaw.

CORRECTION! A little ahead of myself. Real area is Y4 on position on (KM 160). Took much color scene Roll B, B+W, telescopic, 7-10 AS - South Also 11 & 12 telescopic

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

D Considerably further on. Intending to turn down forest and pasture Roll C, wide angle, B&W, 11-13 Roll B, telescopic, B&W, 16

E. Ground: a Volcanic ash ... Roll C
Lfs sty B+W Hunter, 14-16 17-Autun tc Roll B tthesp pc
B+W; Atlantis, 17 Ant Lfs sty B+W Hunter, 18+19
Roll D, Lfs sty B+W Hunter Antarctic 1-2.

F Hexagonal-mineral fields seen Roll D, Lfs sty
B+W, alpine forest. Bare snow Lots birds mineral fields
Newspringer, Hillestad) (Birds Roll B-tthesp pc). Mem
Roll D, tthesp pc. Single scenic + barbs 69+8

II. Puracé — March 31, 1972

A. Upper Cave scenic just before Puracé.
Shots Rhyolite, Rd Woodpeckers Roll D, tthesp pc 11, 12
Light Dark rind on Cortaderia Agriculture. Flames. Mountains

B. Lower down, general area first wooded volcanic
Montane Paramos

In. Paraguay

Mares 2000 m.

Tandilense Station - 1700 m.

3500 m. end of forest

Mr. Nicolas (Nick) Barrancos

Hacienda Barbascal

San Martin (Meta)

Colombia

Lagothrix (Chuyo)

Cebus (Micos Machicero)

Callicebus (Zocay)

Aotus (Tutumono - dmuikis)

Ateles (Marimba)

Saimiri (Titi) (Cairuco)

ALTITUDES — SIERRA DE MERIDA

Hotel 5350 (Uncorrected)
Road nr. Chorros de Milla 5010
Joint stop - Teleferico Station only 7750
(Slightly above station 7850

Second stop - Teleferico
(with deformation 10,500

Maruma 7500 - 7550

Rio Chiquito Cacute 6550

Paramo de Mucuy 8475 — 9400 (edge of páramo)

Road to La Azulita 7400 — 7500

COLOMBIA

Boquerón (Nr. Medellin)	7500 - 7800 ft.
Laj area above Quesca	7700 - 7800 ft
Mixed flock area above Quesca	9500 ft
Humer area below Quesca	8000 ft.
Alto above Bogota	8700 - 7100 ft
Hotel Bogota	8150 ft

I. Iñaquito 9050 ✓ 9100

II Cotocollao 8450 ✓ 8475

III S. Antonio 7550 (and below) ✓ 7525

IV Bonsfoata alone Hoco 9450 ✓ 9525

V Hoco (comp.) 8950 ✓ 9000

VI Otavo 10850 ✓ 10750 ✓ 11,000

VII Hoco (Hoco + Otavo) 9500 ✓ 9575
Hoco (pattaloco Otavo) 9955 10,055

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

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

Cali. Dec. 7th. 1962

Dr. Martin A. Moynihan
Resident Naturalist
Smitnsonian Institution
Drawer C
Balboa, Canal Zone

Deur 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 Padco Lozano, and to some private groups. now I am back in Cali.

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

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

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

The interesting papers which you sent arrivedsafely 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-slitter from bis Bates for me, so I don't need to trouble you with that now. May be I will be able to order bis titles from the States later on. Thank you for getting the Screen, which I hope will arrive someday here. Did you sent it via air mail or regular mail ? . To thi moment I have had no news from the air mail in 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 Armand -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.

* Swallow bird (Hirundinidae) ? Chlorophanes spiza ?

Western Cordillera Colombia

Heard of Jerrico
for Antioquia

Detroit 27, 1962
Bogotá de Sollo
Western Andes

4.30 pm 6700 ft Region of thistle, bare, dry. Cooler, more humid, taller woody. Long 30-yard burned expanse, 200 meters. Also cattle on both sides of road. Flattens from Andes. Road usually drops well before ridge crest. Near another Alt 7,000 ft

Detroit 28, 1962

Drive same place as yesterday. Flowers (6000 ft) 5:30 a.m. Still fresh. Look.

Near temp that may be 45° at Bucaramanga 7:30 a.m. Might be transcribed as "Bucaramanga 3 hours ago." Also wrong. Invented in place of "Bucaramanga" wrong.

If this is true from the Bucaramanga area [illegible]

common bird

Also have a word for "no" wrong. Not quite right with "no hay" [illegible] Might mean "no hay" [illegible] Might be "no hay" wrong. Might be "no hay" wrong. Might be "no hay" wrong.

"Buenos días" about 6 pm 5.45 Just as it starts to get light. Also wrong.

6:30 a.m. Have a word for "no" wrong. Not the "no hay" wrong. Heard this morning was uttered by an Indian. Almost [illegible]

Lots of typical Alfaretes. 3 species 3 species Notes on
the same area now. And the "carbonarius" songs have quite stopped.
No! I finally see a bird uttering "carbonarius" songs. It is a
Boru. Sitting moderately exposed. About 5 ft. above ground.
Note plumage very fluffed, especially underparts; preening madly between long phrases

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

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

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

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

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

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

6:30 a.m. So what is almost certainly a Q or four Alfr Js, out of a bush in which a Grosquet sang a few minutes earlier.

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

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

Going up by 7:45 a.m.

Just as I start, finally, see a ♂ Alba singing Perched in low, exposed branch about 3 ft above ground. In unbalanced pose as Alba diagonal posture. Did does not use during song. Song perfect, good R's. No apparent pitch runs, or terminal notes

Then I may be noticing at R's now. Grasquits utter both low-pitched and high-pitched R's (or /KK's). High-pitched are sometimes (not always) drawn than low-pitched. R's of Bares are most like low-pitched Grasquit R's, but probably not so hard, perhaps even softer, and perhaps a little softer. But I still wouldn't care to count by them by normal alone.

There were several particularly interesting aspects of Alba singing & Alba-Bare-Grasquit performance. The first that there were no overlaps between Bare songs and R's of other species means that the Grasquits were also refraining from singing while the Bares sang. There were also few or no overlaps between R's. I don't think Alba R's overlap very frequently. But the Grasquits must also have been refraining from singing while the Albas sang. And of course both Bares and Albas refrained from singing while the Grasquits sang. Also all the Grasquits here would appear to be in typical non-breeding song. !!!

The Alba seen singing today was almost exactly the same spot as the Alba glimpsed yesterday.

Leaving at 7:25 a.m.

8:20 See single ♀ or juv (KK's) (Resultant direction) Kept of road into low wet spot 71/75 ft

9:30 a.m. Hey what seems like Alba in unusual double

to ca 7600 ft.

Came same place (Coral, c 7600 ft) 3:45 pm.

Heard and saw 2 Bare ougens. Much as this morning, except that R component sometimes has consonances (a pure "treeeee" or a "treeeee" with very slight initial overtone being substituted for the more extreme R). Also had 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. Has in almost certainly not the same bird) did normal singing and preening this morning. Bird perched about 2 ft off ground in low, thick concealed vegetation

Many songs of this form are really quite incredibly reminiscent of carbonara!

Some of the song phrases of this bird appeared to include more notes than the songs transcribed this morning. During the preamble to carbonara

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

During over this morning's observations, I almost mention that this is by far the most extreme concentration of Barns I have ever seen. But the population seems to be far less crowded than certain areas and last populations at lower peaks

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

4:40 pm. A male of Collared hops from bushes near me, and then flies across road. White side feathers apparently standing out horizontally. Display? I might add that the white side feathers of the bird

Alb. seen singing this morning near campground, middle, but not spread.

The Albs have seem to be completely non-migratory, like the Birds near Bogota.

October 31, 1962
Bosques de Pekin

Arrive woods place 5:30 a.m.
Birds beginning to sing
Our bird singing "Sol ya se va, Sol ya se va."
The Alb. a typical song yet Birds usually alternate parts with Only occasional Couplets.
Final Alb. of Group 1 song heard 5:33. Overlaps with Birds. The same Birds songs overlapping one another. Then more typical Alb. songs overlapping & the fragments at first. Then tending to alternate with Birds songs. Then overlapping Birds songs by the Alb. alternating again. Other Alb. & Birds singing altogether now, a single Alb. part Couplets, with each Bird's parts (group of thirty yesterday.) The two Alb.'s different birds (of more than one bird in between R's next).
Birds very clearly already singing full chorus 5:38
Two-Alb. mix continuing, several birds offering R's. Overlap and overlaps (last at last fragments). Birds quite stopped
One pair Couplets Birds songs & R's usually separated entirely, but scattered R after Birds had begun to sing. Perhaps finally not last result to Birds songs now, Alb's, after all
5:42 Alb. nearly gone, several Birds singing R's, but more

Mount Dyfatwr, Oct. 21 1902 II.

Morning

All rough except tops of single Spruce which are very smooth

Yellow Spruces here are not unique now (Oct 21st) branches and their sprays brown down) so) can't tell how their sprays fit into the Spruce - Alb - Bare complex.

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

6:05 Sun) to bear now Chaffinch songs 6:05 Alb singing actively with Spruce songs!

As far as I can tell, titmice (or how many) of Spruces, Albs, and Bares have overlap ranges & little Bares extend down hill from road and 20-40 ft above road. Albs extend above road Spruces 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 unfortunately, there do not seem to be any Albs in the patch of wet forest, just above the road, that which I have passed every day here But there are quite a number in the edges

6:40. See an Alb flying from tree to tree along edge Around 10 to 20 ft above ground. Singing in each tree. Picking insects off leaves between songs Apparently insects hunting birds in same trees 6:50 ft

7:20. Seem Quiet, in one place. Rather silent Only one occasional song Here I might find American warblers feeding into dawn tree. Near bird almost certainly a Brg-breast in Eclipse plumage) Keeps all from tree, apparently looking for insects. Alb does not approach it Alb is to the in front; but does utter about 10 songs, more or less on right above the other, with some irregular pauses, until everything leaves (Around 7:30

Mixed Inglemus, Oct. 31, 1962. I.

ed to ignore Alle throughout. Left of (as observed) Thereafter became quite agrun. Alle started to move around and feed, taking nectar from clusters of tiny green flowers.

I wonder if it is characteristic of Bees (Genus Melipona) that their territories do not overlap those of other Meliponines (as in Venezuela?).

November 3, 1962
Mozambique
Western Lowlands

SEE TODAY'S NOTES ON MIXED FLOCKS.

Aside from a few Alys seen around 8000 ft., I saw and heard a meeting of any Inglemus today, with the possible exception of a very few R's which may have been Alle seen ca 8400 ft and slightly above.

November 4, 1962
Mozambique

SEE TODAY'S NOTES ON MIXED FLOCKS
(Vic's and Lettis.)

West-central Cordillera Colombia

(3)

Mixed Dyl. w/ I
in Calc

March 2, 1965
Jaramillo
W. Auler

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

11:50 a.m. Definite mixed flock passes near area where previously Cy heard earlier. Includes 1 ad ♂ Blackburnian W., 1 fem. or juv. et ♀ 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.

Cy

Mount Duglassi — April 29, 1965
Manizales

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

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

It is rather surprising, therefore, that I have not yet (5:55 pm) seen any Duglassi 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 Duglassi. I.E. they can feed (at least on nectar) in weather which inhibits Duglassi

April 30, 1965
Manizales

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

Dawn songs ca. 5:35. Many Andean Sparrows

Sounds first four disputed 5.45 a.m. Still a little too dark to see well.

Presumed Scans in Abu 5:47 a.m.
Indian Spaniards and Horse Women singing quite strongly and
Noisily, Thus, at best, are presumably, in breeding condition
Everything very dull 6:00 a.m.
No Abu flowers but 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. No Scans are not visiting the Abu here (which is
real) nearly as frequently as they did near of the Abus on the Mountain
grounds in Bogota. Is this because the Abu here is not at the right
stage? ? ? Retaining less plants & flowers on it! Or is it because the
flowers do not have Diglossa holes in them??
6:21. See a pair hummingbird, which may be a juvenile
Scan, feeding on Abutilons. Flitting bill up tufts. Do not think I ever
saw a Scan feeding on Abutilons in Bogota.
This may be one of the very few plants where Scans never visit
& Diglossas (especially carbonaria s.l.)
6:31. See small flock, about nine in patch of wood along str
edge adjacent to garden
Leaving the garden 6:41 a.m.
Then go on up hill.
SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS
(After notes on mixed flocks indicate, there is a flock I Bel
Diglossa not far from the drive. Interesting that it apparently does
not come into the garden.)
On my way up hill, I don't see any more Scans. This up
area does seem to be primarily an inhabitant of gardens and a com

mixed of mon. Or, at the very least, it needs a lot of open space. Just like cauboronia s.l. and the South American forms of tarantula s.l. Then, one, it is not surprising, since leaves were absent, that I did not find any Aloes up here.

2:10 p.m. At the Inca. All during the middle of the day, I have been watering the Scans in the garden. It has been raining almost steadily. Moderately hard. But the Scans have been active all over during light flashes. Even "lunges." (Harsh notes or bursts of notes. The "lunge" of this species are like real Dufaurii lunge.)

According to the constitution here, in the afternoons, when there are bug seeking parents (even during the rainy season), small bright blue birds come into the garden to feed on Scarlet flowers, and get engaged in disputes with Scans. There can hardly be anything else except displacement of some sort.

FURTHER NOTES, 6:00 P.M.

I It is conceivable that the bright blue birds which the area lately has seen frolicking with Scans are really Sangaris nasicrii. At least, he called them "Cyanites" and has since called a nasicrii by the same name.

II See the afternoon's notes on mixed flocks. It might pay to test the "lunge" I saw this morning was really a lunge.

III After looking at several pictures of forest birds, I am still impressed by the general beauty of Dufaurii in this region

Mixed Dyglossia

May 1, 1965
Mundugua

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS
(Single Albi General account of Dyglossia high up.)

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

Albis may "take the place" of carbonovia s.l. and lafresnayi here, wherever 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 p.m., I visited the garden of the Jenica, in a rather casual manner. It was my impression that Sears 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
Mundugua

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS
(Albis, 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 Albis or Wcc's. This was

lly is quite remarkable! I must see if they are equally gregarious on the other crests of the Western Cordillera (and in the Central Cordillera). Does the gregariousness of the Cyp here suggest that they are also extralimital (like finches)? Probably not. The CT's which occur in mixed flocks here would seem to be native forms. Now, then, it is obvious that whatever the advantages of joining mixed flocks may be, the advantages of joining a Cyp flock presumably are larger than those of joining a small flock.

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

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

Some aspects of the territorial arrangement of the local Dendroica are becoming clear. The common Yellow, Black-, and Cyp probably range over the territories of the local resident, territorial, adult Myioborus and Basileuterus (and other resident territorial species) without coming into significant social contact with them. (Yellow seems to be characteristic of the subtropical commensals and territorial residents encountered.) "Gleaning" (Yellow, and a distinct species) may be as resident, local, and territorial as Adult, and certainly the ranges of the two "species" overlap at many altitudes here. However, in one case, however, that the territories of individuals of the two species overlap. But both species do have (apparently) that it would be safe to assume that the territorial separation is due to special behavioral mechanisms (and not to "gleaning" alone)

Munsel Digloss

May 3, 1965
Manchique

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS.

The Black Diglossa with Munsel patches seen today must be either Brown, Raf, or Cafesnayer glossoscarcina ("Glossis"). Perhaps most probably the latter (according to the published records).

However, it is obvious that the Cafesnayer - carbonaria s.l. group of Diglossa 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 Cafesnayer 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 semi-just below paramo in many areas) or relatively open vegetation if it is high. The one 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 there bushes had vegetation, thin branches and relatively few leaves). Rather a resemble of the Black Diglossa was either Raf or Glossis. There is about as open vegetation as any I have seen inhabited by Cafesnayer s.l.

If the bird seen today was a Glossis, and if this area was typical of its habitat, I can understand why this species is abundant under the Raf. Like the dominant colored forms of carbonaria s.l. and brevirostris s.l., it must live in much more open areas than the dark colored forms of the same species or species group.

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

of discussions of the evolution of the Diglemina. The species which I interpret as found relatively dry environments probably mostly as relatively open environments, wet or dry.

Leaving aside Cy. perhaps the habitat preferences of the 3 other presumed Diglemina here can be summarized as follows. Abies range from moderate to high elevations. Usually on low-mound ground-scrub or "alpine" scrub, but they also touch mid of the scrub as well, touch mid of them are large "upper sub-tropical forest" type trees closely. (I have no evidence, however, that they occur in the upper sub-tropical forest, among fir edges.) "Glades" seem to occur in much the same type of habitat as Abies, in the lower part of the Abies range. Glades is (or relatively they are) occur in more open scrub than Abies, in the medium part of the Abies altitudinal range

As far as my observations go, Cy 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 genera of Borneo where Australasia. Also even Cl explain why Borneo occurs in the northern end, and why Geneva's are more common (generally) there than elsewhere

1:35 p.m. See a fawn attack and chase a House Wren in a fuchsia bush in the garden. Do the fawns have alarm-odor-specific aggression too? Perhaps the parents of the fawns have a habit of keeping other young (cubs out of the garden most of the time? I wonder why I have not seen fawns fighting with Diglemina on tops of Cordillera? I may by chance have overlooked it if it was at all common.

Mixed Deglavini — May 4, 1965 Huanchaca

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS.

(5) Ap entomis are not obligate commensals But today's ob servations would confirm the impression that they are purely arboreal here. Also that they are not nuclear-zone birds

The ecological separation between Albi and Ag here seems to be very wide. Barely 1 to 2 Albi seen this morning, feeding high in mossy as the lowest mossy-zoned Ag. 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 Ag at quite such low elevations as Albi, but the Ags certainly come down to within a couple of hundred feet of the Inca area — as yesterday's notes. And both entomis range up to the tops of the mountains.)

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

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

(As I remember, I saw a number of contacts between Albi and Ag in the Juan de Florida in 1964. And certainly the Ags in the Eastern Cordillera come down into low mossy-mixed by Albis, at least occasionally. So the separation between Albi and Ag here must

be due to extensive behavioral factors — not just the absence of an immediate "competing" 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 alba. Cyanea may occur here because it does not occupy the usual Diglossa niche. Ecologically, they are partly small tanagers and partly Conirostra.

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

May 5, 1965
Illimani

Arose 4:30 a.m. Black Diglossa with buffy pectoral patch seen last night yesterday 5:38 a.m. Still too dark to see well. Half-hour half-cloudy, cool, warm. Some wind. Foggy to west

Heard first Sof-Cla song, in distance, 5:41. Short pauses as high e three distinct Whistle song 5:43 Orig am. Heard one with Sof-Cla Sof-Cla repertoire

Some Sof-Cla songs are longer than others. Perhaps "dawn" ? phrases stereotyped ???

Sof-Cla song stops. Then long distinct Whistle song 5:45 a.m.

Attapetes shut up, and I hear more Def-like songs. Blue-tit shut up. Then more Attapetes. Wittle songs

See map Scotty Hermit above 5:58.

Then sweet an elude a rapid, remarkable, snippy of floral life!

See map Cottage above Mural place

Sunrise in Settle just 6:04 a.m.

Then map Scotty Hyndlea above 6:15 a.m.

6:24. See map Apple tree, 30 ft above ground. Region of trees along edge of dale singing. Long fourlers twitters, without Intro Notes! Alternation with Def-like songs

Then an Effet from tree to tree. Follow Ag large white-bearded woodpecker, and a small green hummingbird!

Then hear Ag tongs with "Sit tit" Intro Note!

Oh God! 6:32. 8400 ft 2400 m. See "Glare". Setting down very yellow sun on top cliff edge near South-open, obviously wooded-growth Bird obviously Diglaena. Above. Dark dull black, apparently some white under wings. Apparently utters burr-like R!!! My trouble is that I can't be absolute, save that it isn't a Ouzel! But it certainly did look very Blue-ish.

Total Ag twitter, must overlap that of this "Glare". Literally "over". Mutterings of the two species probably (?) completely stratified here.

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

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

See map Scotty Hermit above

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

8:50 2750 m. Region mixed scrub, bamboo, and a few old trees feat ouard with epiphytes. Have been watching 2 Cyp. Doing a lot of singing. In trees. Sometimes in same tree. Sometimes in different trees quite far apart than suddenly pandemonium breaks loose. 2 or more birds suddenly fly down into low scrub. Only a few inches above ground. Quite unable But utterly lots and lots of nice, 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 on 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 neither recognize that this may have been a "rape" attempt (which could also, perhaps, be described as a "Pounce") by an "outside" of Cyp on a Q of a pair. Perhaps stimulated by the sight of the beginning to nest build??

In any case, it may be significant that the incident was accompanied by so many "songs". Vide copulatory, deliverer of flores. Incidentally, none of the twitters during this incident were preceded by any kind of Intro-Note

9:25 a.m. Watching mixed flock only 30 yds away from where the preceding incident occurred. There are 2 Cyp in / Centro 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 rare "Jim" Intro Notes

Thus sudden, one bird flies straight toward the other Mountain flies, and both plunge down toward ground. Only a foot or so above ground, they suddenly swerve and fly off into distance. The downward plunge was accompanied by twitters without Intra Notes. Another "Pewee" like incident! "Pewees" may be characteristic of Diglossa ???

NOTES:

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

II. As far as my observations go, the territories of "glauca" and undoubted albas are mutually exclusive. And they are equally distasteful over both.

III. This morning's observation would suggest that the Cays are breeding here now (Centrum), the other diglossas are not. This is not unpresumed. I neared the impression, in other parts of the Andes, that Cays bred twice a year

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

V The absence of overlaps between the Kaf. like songs of the Yellow-faced Whitetant and the Whistle Songs of Atlapetes (centrum, rufinucha) this morning was most interesting. Perhaps this sort of mutual exclusion is widespread in birds ???

VI Thinking it over, I can see absolutely no reason why Cays should not occur here. So perhaps the peculiar song I heard yesterday near the top

of the mountain ridge was attended by a Coer ?????

NOTE: Looking over my notes made at the Berqueron de Valle in 1962. I see that the territories of Bares and Alles 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 Bares was probably 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.

May 6, 1965
Mendrique

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

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

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

(Bettis as leaders of flocks. Bettis in flocks without Vcc's. Cys feeding in low scrub Cy appeared taking nectar from tubular red flowers.)

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

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 Alles)

COMMENTS:

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

I Sittis and WCC's are obligate commensals. Sittis range near-ly 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 absolute, 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 Albi territories without paying any attention to the latter. The discomfort seems to be reciprocal. Albis may "scout" or join flocks occasionally but they are not especially interested in the Conirostrum species.

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

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

Cyp have seem to join mixed flocks annually frequently. They also seem to be more nearly complete, 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 behaviour of the birds observed this morning would suggest that they may go very far, quite at the borders of their "normal" home range or territory, when not associated with flocks.) Their territories seem to extend over the territories of all his without producing any contact between the species

III Albs are terrestrial and scrub-inhabiting, in much the same way as canbouana n.l. and Capsmayer n.l. But they obviously prefer humid scrub. On the edges of forest, or actually under trees.

IV Scan seems to occupy the "communal Guan" niche completely by itself. Overlaps with Albs in intermediate areas. And dispute with them

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

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

VI Perhaps the greatest gap in my knowledge is the relation between Scans, on the one hand, and Cyp, Albis, and Wccs, on the other. Certainly Scans occur near the top of the mountain, in approximately the same areas as all Jeux (other) Diglossum. And certainly I have not

no contact between the Scans at the top of the mountain and the other species. But I think that their territories must overlap the territories of the others. Possibly they ignore, and are ignored by, the Conirostrum species (and all other species in mixed flocks?). Possibly they do not come into contact with the bananaquit, non-territorial here??? But what do they do about Allens?????

May 7, 1965
Almolonga

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

(Allens, Scans, Cocr.)

As far as my observations go (I think), the Scans near the top of the mountain are segregated, microgeographically, from the Pugloviei species. But Scans seem to be no more here, and the Pugloviei (not Scans) are difficult to me, that it is difficult to be sure about this.

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

The relations between Allens and Cocrs at the top of the mountain here may be similar to those among Pugloviini in the Cuenca de Mexico. The relations between Cocrs and Alps may be similar to those among Pugloviini near Quito.

Western Cordillera Colombia (#5)

Mixed Foglemi May 26, 1965
Tenallones

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

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

I presume that there must be Allo's around here somewhere but they certainly were not singing this afternoon. Allo's seem to be among the most vocal of Dafleurins in the non-breeding season. Ag may utter R's more frequently than carbonaria 1.e. utter Jarabitos during the non-breeding season - but carbonaria 1.e. utter many R-3 syls, at least when the population is dense

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

May 27, 1965
Tenallones

Going to walk around to the station again this morning. Starting 6:15 a.m. Still very dark. Everything quiet.

First group of Slate-throat song 5:30 a.m. Upslope. Am hearing one warbler at this time.

Thrush-like [illegible]

Muriel Digiacomo, May 2nd 1985 II

distinguish individual patterns. But, as far as I can tell, the chorus does not include either flute trents or Dysdercus.

Near forest Cy songs 5:38 am songs coming from more place as yesterday. Each phrase composed 2-4 "Jit" Vireo Notes followed by long rapid Warbler. No other Dysdercus or Whitethroat 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.

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 utterers similar phrases (as before) Apparently alternating phrases. Little or no overlap. Then shut up.

Immediately, I hear what sounds like Yellow-faced Whitethroat 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.)

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. Flute-throat sings shuts up. Yellow-face sings. Shuts up Cy sings. Yellow-face starts again. Partial overlap. Yellow-face shuts up. Cys continue singing.

This sort of thing repeated frequently during next few minutes. Here 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

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

Ag is certainly the species singing most frequently here. Followed by Yellow-fac. Flatt throat singing least frequently. As far as I have been able to tell, Flatthroat is still intergeling song phrases only when both Ag and Yellow-fac are silent.

This may be comparatively easy for Flatthroat because its song phrases are shorter than those of either Ag or Yellow-fac.

5:58. Now 1 Flatthroat does sing 1 phrase while Ag is in full voice. Complete overlap. Flatthroat shuts up. Ag continues.

Then both period general quiet 6:00 a.m. Now more Ag songs at longer intervals now. But still frequent. Ags must be incubating contentedly now.

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

Ag shut up. Yellow-fac sings. Shuts up. Ag sings. Shuts up. Yellow-fac sings. Shuts up. Ag sings. Shuts up. Yellow-fac sings. Shuts up. 6:04. No overlaps at all.

Dog is approaching now. Visibility poor.

All quiet 6:07 a.m.

6:12. Ag singing again. See bird in isolated tree. 40-50 ft up. All song phrases as before. Song pattern rather over-diagonal. Trill quivers muted with shutters. Presumably just as much of physical effort of production of the notes. Ag ignores 2 swallows and 1 flycatcher perched 5-10 ft away. Then shuts up. Feeds on clusters of white flowers in tree.

6:23 Near it is clearing up. All getting warm.

Hear some flute Throat songs in distance. No Diglossa or Yellow-face songs audible at the time.

Go along path in forest flight up hill. 6:50. Hear Yellow-face singing. No Diglossa or flute Throat audible at the time. Again. This time the songs seems to provoke "return" song by another individual — either another Yellow-face or (less probable) a Leptopogon s.l. Then both shut up. Then (first) Yellow-face sings again. Shuts up.

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

44 Seem to hear Bullant's song 6:55 See Yellow-face singing. Defiantly alone. In narrow tree edge forest 15-30 ft up.

7:05. Hear what might conceivably be Coeligena songs in distance. But can't be sure. In any case, it soon shuts up.

(Ps) Then hear Typical Cg songs in distance. No other Diglossa or Flute-(Ps) out audible at the time. Shuts up. Then Yellow-face sings a few phrases. Shuts up. Then Flute Throat sings some phrases. Shuts up. During next few minutes, hear more songs by Cg(s), Flute Throat(s), and Yellow-face(s). Hard to overhearing!

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

COMMENT:

(3) Cyp centrals are largely absent here, just as on Manduriacu. The Cyp seen today may even have ranged higher than the birds seen on Manduriacu (perhaps the trees here are higher on the average than the ones in most of the areas on Manduriacu where I saw Cyp). But the Cyp 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 30 a.m. Back at Dora Station. Ogs at edge of clearing still singing frequently. No other Doglonius or Whitethroats audible.

REMARKS: Our flock can show two fertile afternoons was particularly interesting, after two mornings:

I. Zonifera seen with flock twice. And once it copulated a ♂ WCC. Conversely, this hormonal bond may be an important factor causing and/or completing the life span of some or all of the local Doglonius.

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

But I wonder why I never saw such conspicuous WCC-Og courtships on Hemeliqua??? Do WCC's prefer to associate with fertile, 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 flesh caps like the ♂'s here) they may be less similar to Ogs in appearance. It is conceivable that the ♂ WCC's here are actually "mimicking" Ogs. (This is all the more likely as fertile 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 in both Doglonius collected in the Central Cordillera were with strangers rather than Ogs.

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 dark temperate forest in the Western Cordillera (Perhaps some other food also is available to WCC's here (present "Black Spruce"?)

and comparatively rare here.)

May 28, 1965
Pantheons

Flat out late, because of rain. Going up hill toward name place as yesterday afternoon. Reach upper edge Rosa pastures 5:50 a.m. Rain has stopped; but clouds are very, dark 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 long 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 loudly. Overlapping one another. Most Cys stop, briefly. Yellow-throats 1 long phrase. Stops. Up resume singing.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.
(Cy – albis – Slate).

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

Note the Slate-throats with mixed flocks, without Wcc, this morning. Perhaps Slates and Wcc's do not associate closely here???

Also note the attendance of 2 species of hummingbirds (X and XI — not Emeryes) on Alder. It is beginning to look as if hummingbirds can actually drive Ryderman out of an area. In any case these inter-specific encounters are further evidence that inter-specific hostility is comparatively more strong in the Western Cordillera (my comments in my Humboldt Notes this year).

Incidentally, I know that I have seen Emeryes in Quito region. Alone here, I think. But I don't remember ever seeing one attack or supplant a Ryderman. I must check this point carefully!

Working this afternoon.

2:30 pm. Upper edge Koen Station pasture. See "♀" Alb with mixed flock (this flock and behavior of this Alb are identical in individual I have not seen before. I wonder why. I have yet to see an adult ♂ Alb here?? Are they isolated, rare? Or does the ecol habitat preference differ from that (there) of adult ♀ and/or juvs.? If they are more abundant 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 Cacicus sp. and Cephalopterus sp.!!!

3:45 pm. Have mobbed area 2750 m. where heard "♀" Alb mentioned in morning. Fog bow. Quite dark. Now Cy uttering typical phrases, with 3 or 4 intro-notes as early too. Then Cy starts to alternate long phrases with the R's uttered by another bird. This latter is inaudible but the R's sound like bi-Alb. No overlaps between Cy phrases and R's. Then R's stop. Cy continues. The Alb starts audibly at any time during this performance

REMARKS: Just as one of the preceding records was run out, heard several Alb sound like they were overlapping those of their mate. In

Aves' Diplomacy, Aug 27, 1965 (2)

I Yellow-faces complete at random. Big white overlap Mon of Euplectes and Hem-magpie I and XI (I don't know if the overlapping is random or not.)

The two Flute-Heads seem to be very well segregated, segregated micro-geographically, actually, in most areas at least most of the time. "Flatted" variety when both species occur in the same mixed flock

Aug 27, 1965
Tamalones

Stopped by marsh this morning just like yesterday. Heard upper edge Roan Station portion 5:30 a.m. Rain has stopped temporarily. It is completely light

Going thru portion, it was obvious that the Flute-Heart in the "drowning out singer" just after dawn, ca. 5:30-5:45. Flute-Heart songs all over the place. When the Flute-Heads fell off, and the Go to Hell "dominant singer" 5:45-5:5 5. I did not hear any overlaps between Flute Heads and Go-Tos this morning. This does not mean that none occurred. But they must have been at least relatively rare.)

I have not heard any other R's (yet). After I have continued, ground by at least 1 area which is subdivided by a "T" cell.

I heard one Yellow-face after a few strong gleanes early in the morning during the general period when Flute-Heads were most vocal. But the Yellow-face probed a few seconds when the Flute-Heads were temporarily absent. Little or no overlap

Everything much quieter by 6:02 a.m. Going into forest 6:38 a.m. Reach area ca. 8700 ft (i.e. where last big mixed flock seen

yesterday evening). Then Ag sings madly. Then after 15+ pause, all with us
in Intro Notes. Then Ag stops. Immediately Yellow face sings + plays. Stops. Im-
mediately, Ag sings again. Then stops

Later on, I hear new R's in distance. Sitter Abbes or Mysopus.
Imagine, no (other) dogs in area or whistlers in audible at the time. R's new
to Ot utterally, & 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 & think
I and dog-mine! Pauses 40-60 ft up. Utters dog-mine type twitters. Pause
Ag. some phrases like "Ja tas wee Tasmeegor." Could utter the Abbes ??? (Cer-
tainly not Ag. Possibly wee, except that all — or both — looked dark.) Then stops
y first begins, no other dog-mine (or R's) or Whistlers audible. Then Yellow-
face sings. Complete overlap. Then pitchmatical dog-mine-types shut up.
Yellow-face shuts up.

Then R's a few seconds later. 9 think three are Abbes. Come from
area where Abbes seen yesterday. R's stop. Another group of Yellow-face
e song. Stops. Then Ag sings. Stops.

7:23 See 1 Dyson (species unidentified) 30 ft up in tree. Above
flag coming in 7:25.

7:30. Then several more peculiar dog-mine type twitters in tree top
Nothing else audible at the time

Aha! See single wee in tree, where twitters were heard only a few se-
conds ago. Identification dispute. Bird 30 ft up. Silent (wee-) And apparent
Ag quite alone! A few seconds later, catch glimpse of wee same tree. Above appa-
rently alone. But then several other (wee) Quadruplet (not identified, not twitters, different
+ species) flycatcher same tree. Then 2 more wee twitters in same tree. Pa

bug insects off leaves. Solut. No other species seen, clearly. Their butterfly flight distant etc. Nothing follows.

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

Starting down hill 7:55 a.m.

Just as I go to single up Diglossa in scrub, 2 flyup ♀ Selas (?), I think. but it looks more blue-gray than nuart — at least about 1 should get good view of underparts). Solit and alone.

Ca 8700 ft. Lone single Euphonia 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. atricolor is "least neutral." It includes all the conspicuous "colors" except white that the Diglossini are "capable" of producing.

II. Just in case the preceding notes are not clear.... I don't think that any of the local hummingbirds are "obligate" communals. I've seen aggregations of a single Euphonia at least three times. Certainly, I have seen flocking bird X flying alone very frequently. And I think that I have seen hummingbird XL by itself occasionally.

Western Cordillera Columbia

TOTAL = 1 bird

July 22, 1965
Valley Rio Grande

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

Then I heard a few R-3-2 patterns in neighborhood

Same Brown 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 Brown flies off. Flycatcher does not follow

NOTE: This area looks quite moist (although we are in mid dle of "verano" now, and it has been an unusually dry verano). Thus are white bearded Lowspines at slightly lower altitudes for Brown here are (at least) not absolutely confined to relatively dry areas.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS
(Brown, Cg, Silky, Green, other Hummingbirds.)

COMMENT: Brown would seem to be the dominant dry forest bird!!! This does surprise me. Am observing relatively common 9 also am surprised to find Brown relatively frequently high in trees. And relatively frequently associated with mixed flocks!!!
The Brown here would appear to be absent (or at least) "non-common" (This may, of course, help to explain why they have survived in this region.)

My observations today would suggest that the members of the "Lafresnaya complex" (possibly including Hummingbirds) have partly or completely overlapping territories - but in different vert

& 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 Urrao

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

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

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

Then the thrushes drop out and Audean Sparrows continue "full blast" Still quite dark 5:40. Fine thrush calls (classes) then Acorn Woodpeckers start 5:42.

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

Wren-like may be first diglossic twitter in distance up-hill 5:51 a.m.

Then Over first Yellow-faced Whitestart song 5:55. Partial & overlapping twitters (which may be diglossic — possibly eg — but which I am not sure about) Then twitters and Yellow-face phrases alternate without overlapping. Then more overlapping.

Dyed 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

Mixed Doglocusts, July 23, 1965 (54)

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

Also one single Yellowthroat up in scrub edge forest. Appears alone.

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

6:12. Few single Yellowfaces alone / up in scrub edge forest. Utters occasional long phrases. cyanocephala (s) seem to have shut up now.

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

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

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

10,100 ft. 7:18 a.m. Come across pair Cy. Defiantly alone. One or both bird(s) utter(s) brief twitters, without Intro Note, as Quiet ing 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 Gloriosa. 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 units of their songs are "ready" — quite like songs of Cas or one (or all) other species

Also practically over a low and undulating dense scrub-Chaparral "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 [illegible]

ted by Lafo in some other areas.

I catch glimpse of one bird leaving. Perched 3-4 ft up, in dead bare bush. Looking from side to side in apparently unusual posture.

The birds do not look as much like the Brown as I expected. They appear to be considerably less gray (or more ?) on the sides of the head. Rufous of throat also may be darker and redder.

Catch glimpse as bird does up hill. Get glimpse showing another long steps ca. 8:25 a.m. Leaves bush around 8:33. Then steps again.

Have now no other diglossics or Whitetails audible at any time during any of the Brown leavings. (altho I did hear at least one Yellow-faced Whitetail leaving slightly down hill earlier.)

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

8:45 a.m. A few feet further on, and up, hear Brown(s) leaving 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 diglossic or Whitetail 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 Fontalisa

(Troulejon) Páramo

Everything dead quiet 8:55 a.m.

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

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

Making loop, come to flattened ridge Glossy area 9:10. Some single toots around, but that, apparently, is all

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

Hear some more Glossy toots in distance. Certainly not same bird heard earlier. 9:22 a.m.

9:35 a.m. 10,700 ft. Hear and see Brown (definite). Singing. Edge alpine scrub and Páramo. Bird perched 15 ft up in small tree. Utters slurred after phrase, in unrelated diagonal pattern. All phrases fast, rapid, "trilled", and prolonged. So fast that they are almost trilling. But they also include pure R's in terminal or sub-terminal position (definitely heard R's in both places). Now Brown shuts up. Immediately Glossy (several hundred yards away) begins to sing. No overlap. Glossy continues for some seconds, then shuts up. Immediately Brown begins to sing again. Again no overlap. Now Brown shuts up. Flies off. A few seconds later, 9:43 a.m. Brown & Glossy in same area.

So the Brown and Glossy's here certainly are not separated

geographically!!! (It also is difficult to see how they are separated ecologically at this particular site. The nearest w which the Brown Jays was unknown — but apparently identical, in all important respects, with the unknown nearest on which Glaucous is more likely to hybridize.)

So far, however, I have no evidence that the territories of individual Brown and Glaucous is overlap.

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

A few minutes later, one single Yellowbelly alone w same area where last Brown seen earlier. Also goes into Parula. Perches on Spanish moss!!!

Another outburst Brown songs, and R-3s, here at 9:55. NOD.

Near the area where Brown burst songs, are some bushes with double red cup-shaped flowers (a subspecies of some sort). Apparently same species favored by Dyglamons on Perrine

Another burst 3 or 4 Brown songs, same area, 10:05 a.m. NOD. Then another R-3s. Brief warble then more R's, without 3s-3r's. Catch glimpse bird(s) in flight. Apparently chasing

Then catch glimpse Brown w/ tail 12 ft up. Song phrase after phrase w rapid movement. Then we that there via telly only 6"-1' away from Brown!!! Hopping about quite unconcernedly. Apparently paying absolutely no attention to Brown! Silent. Feeding on dust on of small yellowish white flowers. Brown eventually flies away out of another tree, 12-15 ft away. Continues to sing & silently continues to feed. But eventually disappears. At approximately same time, Brown

stops singing! During next few minutes, I hear a lot of Brown R's and R-3a3-4's in area. Also catch glimpses several aerial chases. I can't tell who is chasing whom. In this light, Brown and Sette 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 Sette may be an indication that the Brown was antagonistic to the Sette.

A few minutes later, no surveillance in area !!! Group includes at least 2 Yellow-billed, 1 White-beard, 2 Settes, and 2 Pseudorcas Brown's ——→ group. But (now) shows no hostility to the Settes! Group moves on. Yellow-billed apparently in lead. Pseudorcas ——→ Yellow-billed. Settes ——→ group. Brown apparently does not follow

After group apparently has moved on, I still hear Brown-type R's and R-3a3-4's in area. I think there must be produced by one Brown chasing another. A or chasing or Pursuing 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 Brown sings again. Sighted in the. Definitely, I know. NOD Then I see some dorsals with R. I am almost, but not quite, certain that it was a one Brown chasing another

Possibly the song of the Brown near Sette were not prevalent by the latter, but, rather, redirected upon it?

Stopping observation temporarily 10:40 a.m.

Starting, clear bill 10:42. Brown(s) still singing, NOD

10,000 ft. 10:53. Many another in BG Pseudorcas NOD

Area without alpine scrub. Quite like areas inhabited by Brown.
Also a single Yellow-bell in tree 10 ft up. Apparently alone.
Silent. Apparently eating small yellowish white flowers
Three Green Tongs 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 Brown Tongs in distance. Another Lifetime or Whitethroat audible. Brown shouts up. About 1-2 minutes later, a Yellow-face utters a phrase. No other Whistles Tant or Lifetime audible at this time.
11:25 a.m. Just below 10,200 ft. Just inside "upper sub-tongue" forest. A single Yellow-bell, 20 ft up in tree. Apparently alone
A few feet further on, one more fairly Blue + Blacks. Observed some fairly near earlier. Just still Beggars. Fairly near 3 ft up in Rhododendron
Oho! 50 ft further down path, we another pair Blue + Blacks so the population here probably is quite dense.
Can't tell if any of these birds are reacting to one another or not.
12:25 p.m. Ca. 9500 ft. Face single Brown 4 ft up in bush, just under tree where last Cyanocitta yesterday afternoon. Further confirmation that the territories of these birds are at least partly overlapping!
Another bird at Ca 12:45 p.m.
COMMENT: The higher altitude Browns, above 10,000 ft, are behaving in much the way that I would expect of montanus 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??? Can

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

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

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

A few minutes later, see 2 or 3 Coer in same scrub, same level. Silent and alone. Also flies off into adjacent forest.

Could this "Coer" have been a ♂ Alber — looking blueish because of the light ?????

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

3:00 p.m. Several hundred yards inside forest. Ca 8925 ft. See single ♂ Alber 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 "Ixit" Notes. Then this Alber is repeatedly swooped at (and chased, 9 times) by a hummingbird XIII. Alber retreats a few inches each time hummingbird swoops. Swoops about. Eventually Alber disappears. Hummingbird XIII remains behind

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

3.35 p.m. Nothing visible where Abb and presumed Coen near last (per Brit) do hear a couple of plovers coming from adjacent forest which might be Brown Twitters

Men decide to walk up hill along south 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 cyanocephala, 2 Euneornopsis, 1 Yellow bell, two creepers, certainly others. Probably 20 birds in bulk. Flock quite coherent and moving steadily downhill. All birds apparently ranging 6 – 20 (or 30) ft up. Flock as a whole fairly noisy. Lots of CN's. Can't tell where is real leader of group as a whole. But certainly cyanocephala ♂ → WCC's (both ♂'s & ♀) at least one.

WCC's apparently picking insects off leaves.

When flock was first seen, 2 Green & White Hummingbirds were hovering a few, but short, aerial flight only a few feet away from WCC's and Euneornopsis

A single Ruddy Flycatcher was about 50 ft (perhaps more) behind flock when first seen. It never actually came close to the others 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 diglossia here. Note that I did not see any fellis with the mixed flocks this afternoon (although WCC's were more or less common)

And I must check on Coen – Abb – Brun relations!

Mined Dyloums July 24, 1965
Valley Vic Urrao

Jong way up till this morning. Reach appox. 10,700 ft le
vel 5:25 a.m. (Area of highest Brun seen yesterday). Just as first
miscellaneous bird noises begun. Also just as fog starts to come
in. But fog is patchy and not too thick. Still quite dark. Cold. Alm
ost no wind.

Then I go downhill a little. To area where I know there are
Glorias on both sides of road (altho not close) and where I saw the
problem head motionless yesterday which I said was probably Glori
a, but which I now think was probably Brun.

My altimeter at this place reads 10,900+, now, but it read
somewhat less yesterday.

Hermit song is full song by 5:38 a.m. Hermits have pr
obably all headed, fog also lifting. All sorts of things singing by
5:45. But still no dyloumas.

First Attapetes Minute song heard 5:51 a.m. In distance.
Presumed. PL. Bird is singing fairly steadily.

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

Then hear what may be one brief snatch of Glorias song 6:04.
Then some more. In distance. All quite brief phrases. Then the bird
shuts up. Then hear 1 brief Yellow-faced Whitetail song far down
road. Then another brief phrase which may be Glorias. Then silence.
Then more Glorias song 6:08. Identification of them song quite difficult
But it is far away. The other distance [illegible]

DWA") audible at the time. Bird songs almost entirely now silent.

This development would suggest that Colpeonayes 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.

This Glorm is singing in area of quite thick and tall, and obscured, albeit sound. Still NODWA. Apparently only one Glorm within earshot of me. And the phrases of this Glorm's song are not as long, on the average, as those of many other Colpeonayes s.l. individuals I have heard in other regions. Presumably this Glorm is not being stimulated by rivals.

Glorm silent 6:16 a.m. And now I hear what seems to be Attapetes White-tips nearby! Several Attapetes singing in different areas. Still up 6:20. Immediately, there is a Unfeathered Glorm song! No overlap. Then Attapetes and Glorm alternate phrases. Again no overlap. Glorm continues. Attapetes utters a couple of phrases. Complete overlap (But the 2 birds which are overlapping are very far apart from one another.) Then Glorm shuts up. Attapetes continue Attapetes stop. Glorm starts again. Shuts up. Attapetes start again. No overlap. Shut up.

Evidently all the Attapetes songs heard this morning have been 2, 3, or 4 note White-tips.

6:35 - Glorm singing again. Distant Attapetes utters many White-tips while Glorm in full voice. Then (at least 6-8) complete overlaps. Then Glorm shuts up. Attapetes continues. Shuts up. Glorm utters 1 brief phrase. No overlap. Shuts up. Attapetes starts again

6:42 a.m. Yellow-face utterets one long plume between Attaq
tes Minute longs. No overlaps. Glorus silent at the time.
Attaqueslent up. A minute or so later, Glorus and Yellow-
face alternate a few plumes without overlaps !!!
6:58 ½ a.m. now written earliest of 2 Glorus's. Both lengths
quite steadily. Overlapping. Everything else is silent now.
Fog coming in again.
The Glorus's are really quite remarkable shy and difficult to se
e while singing. I have caught only a brief glimpse of one individual thi
s morning. Flitting from tree to tree.
Everything silent 7:02 a.m
7:04 a.m. Single Glorus flies over pasture, from patch of cedar
nut 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. Silen
t throughout. Not probably is not same individual seen yesterday. I
was again struck by how different Glorus looks from Brau. Fellow
or no gray on side. Chestnut rump, flanks and rich mahogany color. (The
heart of Brau is almost orange.)
Also again struck by the fact that the territories of these Glorus
's must be relatively large.
As a result of today's and yesterday's observations, I would
guess that the population of Glorus's here includes 3 singing individu
als. Possibly one, 2. No more than 4.
Fog getting thicker and wind worse. Everything silent. 7:20.
Then in another brief outburst of Glorus song 7:27, when
fog lifts a little, temporarily. NODWA.
Incidentally, as far as I [illegible] the name of these local

Glorious is very much like that of Lapwing

At 7:15 again a few minutes later, and there is another burst of Plover song. Only for most part subdued Glorious song — when it is heard

7:30 a.m. See much more feeding. Flyover scaup. Include at least 2 Whitehorse, 2 blue-wings, 2 Pintail. Birds quiet but close together. Pintails ranging 10-20 ft up. Others 5-15 ft up. Pintails fly away. But the others do not follow.

Plover is only a few yards from where Glorious have been seen. But, as far as I could tell, Glorious did not come to "escort" this group.

Fun trying to count 7:40. Lots of Glorious song in distance. NO DWA.

Group to area of highest Brown 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 Audubon Sparrow! Sometimes Alaska Brown shuts up. Audubon Sparrow continues. Then shuts up. A minute later, Brown starts to sing again. Phrase after phrase in very rapid succession. Same type as yesterday.

8:05. See two Brown here. Pintail about as small to 6-12 ft up. Mostly 5-15 ft apart from one another. One other Pintail landing 6-8 ft away from the other. Difficult to keep both birds in sight simultaneously. A minute later, one of the Brown here other Pintail to sing, another Brown some considerable distance away. Do not know if this 2nd bird is a "third" individual or not.

Going to a point a few feet from the Brown area, I can hear snatches of Glorious song, very faint, drowned by the Brown probably, even in comparison of the Glorious — just vice versa. In any case, the Brown

are quite silent while the Glorias are audible.

Then I walk across a small patch of Paramo toward another isolated patch of woods. In the middle of the Paramo, I am surprised at by a single Sean !!! (Identification disputed.) Sean then flies away over Páramo.

A second later, we both walk back to the edge of this isolated patch of woods. A single hummingbird is feeding at these flowers. Certainly not Sean. Has particularly brilliant patch of green on upper back. (Possibly no. XIII ?????) Brian suddenly appears attacks hummingbird and drives it off. Then Brian feeds on flowers that I don't know if this Brian is one of the individuals I have been watching in the other patch of woods or not.

A few seconds later, a Brian utters many long phrases in the other patch. Then shuts up. As soon as it shuts up, I can hear Glorias long substance doubtful. Then Brian sings again. I think Glorias doubtful continues after Brian begins. Partial overlap. But then Glorias apparently shuts up. Brian continues alone. Brian shuts up. Glorias starts again. Shuts up.

Then 2 Brians sing in their isolated patch of woods. While there is no sound of Brians from the first patch. So it seems likely that the patches are occupied by same Brians

Then Bustails, the wind here today and yesterday (perhaps typical of the area?) has been strongly up hill, from the south. This favors the transmission of Glorias sounds to the higher Brians, while impeding the transmission of Brian sounds to the Glorias's. Another significant factor probably is hardness. The Brian songs seem to be softer than those of Glorias. (Then difference seems to be [illegible] of [illegible] from Glorias and

Bruns

Bruns

Bruns

Bruns

Bruns

Bruns

(Refrain p. 6.)

8:30 a.m. One Brun performs long flight over Pärnu between the two patches of scrub.

I am gradually coming to the conclusion that there are only 2 Bruns here, occupying both patches of scrub and flying over the intervening stretch of Pärnu. If so, it can be said that the western part of the central section overlapping with that (there) of one or both Bruns. (NOTE: Perhaps significant, I have not heard or seen any flights display here. Perhaps the local Bruns are not breeding now.)

Everything very quiet 8:50 a.m.

Alm Brun flies in first patch scrub. Shuts up. Alm Gloss some distance away (to the East — this may be a different bird from any I have heard before) shuts up. Alm Brun flies again. Shuts up. Alm Gloss flies again. Shuts up. No overlap at any time.

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

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

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

Pair of PL alternates flew into isolated patch scrub. Allow. Uttered "feet" flights. Apparently ignored by Bruns — although I can hear the Bruns uttering R patterns not far away. Bruns also seem to ignore a pair of Ovettua nearby.

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

9:15 a.m. Go on to slightly different area where I can hear dusta at Glorus's fungus quite clearly. NODWA

Also hear Glorus singing to east. At approximately the same altitude as the highest Brems I have seen here. Again, NODWA. (Also certainly in the 3rd, 4th, or 5th singing Glorus in the region.)

It is obvious, nevertheless, that the population of Dyloreus as a whole here (i.e. Glorus is and Brems 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)

Evening thunderstorm 9.40 a.m. then clearing slightly. Some wind, but it is getting warm. Going to start down hill.

See single Scott's Hawk alone 12 ft up in scrub

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

10:10 a.m. 10,500 ft. Hear lots of Yellow-face Finch coming from border pasture and "upper sub-tropical" forest. Apparently a single wide mixed flock slowly. NODWA

10:45 a.m. Ca. 9750 ft. Near where flock with both Cg and Br was seen a couple of days ago. See another mixed flock in Alders: 2 White-bearded Flycatchers, 1 Ruddy, 2 Yellow-bellies, 2 Scitts, 1 Brown tree Creepers. Probably others. Also lots of hummingbirds around in same general area. Including at least 1 XIII. Area of open, mixed vegetation, both trees and scrub. All kinds [illegible] up. Hard

as a whole quiet. Quite coherent, insofar as all birds flew together, but not making progress in any particular direction. Yellow-bellies eating mistletoe berries. Sitta and Brown probing insects off leaves.

Sitta ♀ ——→ Brown.

Now we that flock also includes 2 B. nigrorestates (1 adult + 1 juv.), probing insects off leaves 3 ft up in scrub. And 1 Yellow-face, 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 (down hill) Come across what may be at least parts of same flock: 1 Ruddy, 1 Yellow-face, 2 Whiteheads, and at least 3 Big Butterflycups. All ranging 15-35 ft up. Butterflycups eating fruit.

Now the Sitta, tree-creepers, Yellow-bellies, and B. nigrorestates also have appeared here. Obviously following.

1 Sooty, Ruddy ♀ ——→ group. (Reaction quite definite)
Whiteheads fighting among themselves. Now aerial chases.
Flock now is definitely going up hill. Butterflycups 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. Now single Brown suddenly appears in bush 3 ft away. Obviously example of Brown ♀ ——→ Yellow-face. Brown feeds on tubular red flowers. Then disappears.

Get back to Jeep 12:05 p.m.

COMMENT: The relations between Browns and Glorias seem to be rather peculiar. Rather peculiarly "intermediate" or "equ

recall. Range of Brun, as a "species", completely overlaps that of glorum. 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 glorum seem to inhibit Brunn

July 25, 1965
Valley Rio Bruce

Going to work in forest at approximate base of Sawtooths morning. (8975 ft according to my altimeter now.) Arrive 5:40 a.m. Both Audubon Sparrows and Hermits in full song. Also Cal Quail and geese flying west

Near first dipteronc-type Swallow heard, unseen, 5:44. Hermit Thrushes. No R. But faint, long and rapid tsi ??? Brief fuzzy phrase after phrase. NADWA Phrases could be transcribed as "Ingeetage tage tage tage... agamaeoplaka ???

5:53. Hear a few soft R's in woods, south. Also ??? Parts overlapping the enigmatic Sawtters. Then R's stop. Sawtters continue Sounds like Sawtters must be agamaeoplaka.

Hear first Yellow-face songs at 6:00 a.m. Hermits overlapping present agamaeoplaka Sawtters. Only a couple of phrases then Yellow-face and presumed agamaeoplaka alternate phrases without overlap! Then Yellow-face starts up. Presumed agamaeoplaka continues

Mixed Doglomia, July 25, 1965 II

Mex presumed Agamaplaba and Yellow-face alternate nice phrases as without overlap. Mex butts shut up.

6:14 Mex lots of Allen-type R's edge forest, approximate area where 9 Allen and "Coen" seen a couple of days ago. NODWA. Stop at 6:16 a.m.

Double Allens here are not breeding now? Or population sparse? Imagine, these certainly have not been many R's so far this morning.

6:20 Mex more R's, alternating with Yellow-face songs in distance. Double, one+ tall yellow R's are Allen's, or Ruddy Hylocatalea, or what

Mex R's 6:27. NODWA.

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

6:45 a.m. 8870 ft. fee single of Allen alone. Silent. Feeding on tubular red flowers, 6-10 ft up, in bush under tall mature trees.

Mex Yellow-faces singing occasionally NODWA

Every thing very quiet 7:15 a.m.

7:31 a.m. Back up path upper border forest - scrub. Where Yellow-face songs and R's were heard alternating earlier this morning. (Mex) are not here this time, the same sort of warbling is still in progress. More Yellow-face songs and R's in alternation, without any overlap. And this time, I see the birds uttering the R's. They definitely are Ruddy Hylocatalea!!! So the local Yellow-faces definitely are "imitated" by a great variety of vocal patterns!!!

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

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

fruit low, thick scrub. Disappears from sight. Thus 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

7:55. A few yards down road inside forest. Hear what are probably four glossa songs, including many notes, fornlers, high pitched trills or nothing in way of intro. Coming from way up in tree tops. Bird invisible, but at least 50 ft above ground. NO DIA

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

Leaving 8:35 a.m.

COMMENTS:

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

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

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!!!

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

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

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

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

VIII Note that there are minor anomalies when different species are compared in detail. Thus, for instance, Sittes and Wrens seem to be more strongly segregated here than on Manchuria

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

Personal Diplomacy, I — August 6, 1963
Thursday

Home at Casa Carpentaria this afternoon. Julia & Carl look at the garden by the house 4.45 p.m. Cloudy. Hazy, warm. Lots and lots of roses in bloom. Here also are many fuchsias in bloom — but fewer than a couple of months ago.

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

But there certainly are still 2 or 3 individual Colibri around. All the individuals I have been able to see closely have red-violet throats and ear patches, and violet on center of breast and belly. For they are permanently definitely Sean (not Anthracina). (I should add however that the violet patches on their heads are smaller, 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 Sean; but I never noticed them before.)

Sean feed on red Abu pink frequently, flitting back between 2 pals. Of Hummingbird tracks the same as that of the Bogota Sean) Also feeding on Fuchsias, but probably less frequently. And I saw at last an individual feed on Bougainvillea. Of the Sean have pinkish-fill the nidus of Cinis at Casa Carpentaria.

Closed 4:55 p.m., I hear an burst of violent sounds like typical Sean "Chirk" song in distance (other side of house)

One of the Sean in the red Abu repeatedly supplants and chases a smaller green hummingbird (species unidentified) — certainly an

at the "SGH" area at Cavaan)

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 Horace says that it has, in fact, been rather dry recently.

Everything dead quiet 5:25 p.m.

Both single Scan and single Audean 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')

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

Stopping observation 5:45 p.m.

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

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

August 7, 1965
Manchuque

Arrive top mountain 5:43 a.m. Just getting light. Very little wind. Warm.

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

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

blue, region was broken up alpine scrub just above upper sub-tropical forest. Pulsing insects all leaves. Difficult to 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. 9.E probably same individual.) While being watched, today, this Coer ultered only "CN"s. Quite soft. But otherwise, like individual heard to utter songs a few minutes previously.

ca. 6:40 a.m. Hear more Coer songs. Dawn bell. Coming from area to which Coer was seen to fly.

NOTE: I heard three Coer songs while watching the large mixed flock described in my notes on general mixed flocks. There was a Cg 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.

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

The Cg sang frequently while associated with flock & it seemed that there was little or no overlap between the Cg songs and those of the Coer.

✓ 17:45 Go up road a little. Then hear Coer singing. Phrase often phrase in very rapid succession. All phrases identical. Comme ca: feeeeeeee deeeee - deeeee ta-ta see-wm-leyaa"

Songs usually uttered from perches some ca

Mixed Diglossum, Aug. 7, 1965, III. (40)

Bill never opened very widely
Eye conspicuously chestnut – framed in black "mask" Head looks small – with Rather rounded Head feathers slightly ruffled. Breast and belly slightly fluffed.
Bill looks very un-Diglossa-like !!!
Tongue definitely noticed during all or most of long phrase (certainly raised during the "twitter" bit)

Bird turns head from side to side during all phrases.

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

NODWA during all phrases by the Coer. The bird sings from elevated 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. Bird 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 copied a single Rufous-cap Hummingbird (Coer) feeding 10 ft away in an adjacent bush.

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

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

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

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

August 8, 1965
Manchique

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 none Coer songs in distance. Down hill from where accred Coer heard singing yesterday. S.E. near border "upper sub tropical" forest. Lots of plumes. NODWA.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

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

Seltz Wcc

NOTES:

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

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

II. From time to time today I have taken brief looks at the garden of the home of the Union. Still none seen about. Also some smaller hummingbirds of other genera. But still no trace of Diglossa or Colibri thalassina.

August 9, 1965
Manchique

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

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS — Juli alba no. 7 Alba just below 8850 ft. S.E. The Albas 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 conspicuous a couple of months ago simply because the population here is sparse. S.E. there is no need for conspicuous disputes or proclamations of territorial ownership here.

August 10, 1965
Manchique

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

col "La Palma". A little mountain or foothill on the northern flank of Monchique itself.

Arrive 5:15 a.m. Pitch black! Foggy, starting to get light 5:45. Heavy dew. Occasional drops from trees. Warm. Little or no wind.

Hike predawn to 835 ft, 255 m. Mountain on the western side, more or less. Difficult to tell exactly, because of clouds. Partly SW.

6:35 a.m. Light rain. See Yellow-bellies and Blue-Orange. Possibly encounter. SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS. Then see single White-throated Hummingbird, feeding on lavender pink Penstemon flowers (usual montane shape) 15-20 ft up in scrub. Distinctly pulling bill to base of long tubular corollas. 2 E. definitely Wing Pigeon holes. Then a Black Pigeon, probably appears on Penstemon tree, 2-3 ft from the White-throat. Plumage color (color seen to be absolutely gone, on 2 occasions) from behind. Then both birds disappear.

A few minutes later, a single Violet-throat Hummingbird (m) does appears on same Penstemon tree. Feeds on flowers. Also puts bill to base of tubular corollas, i.e. also uses Pigeon holes!!!! Then White-throat (m) appears. Attacks Violet-throat. Both seem to fly off and disappear. White-throat appears to pursue Violet-throat.

During next 10 minutes, a Violet-throat (m) appears twice on same Penstemon tree. Each time, it is mobbed, attacked by Violet-throat! And each time, the Violet-throat appears to chase it away!!!

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

7:00 a.m. Violet-tufted Coq in Pamplona Alta tree, White-tufted atlanta st. And apparently succeeds in chasing it away!

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

7:28. No one has visited the Pamplona for some time now. And the Black Dogtown has not reappeared. This is very odd! (Incidentally, at no time this morning have I heard any anti-rabbit Dogtown vocalizations.)

Now go for a walk.

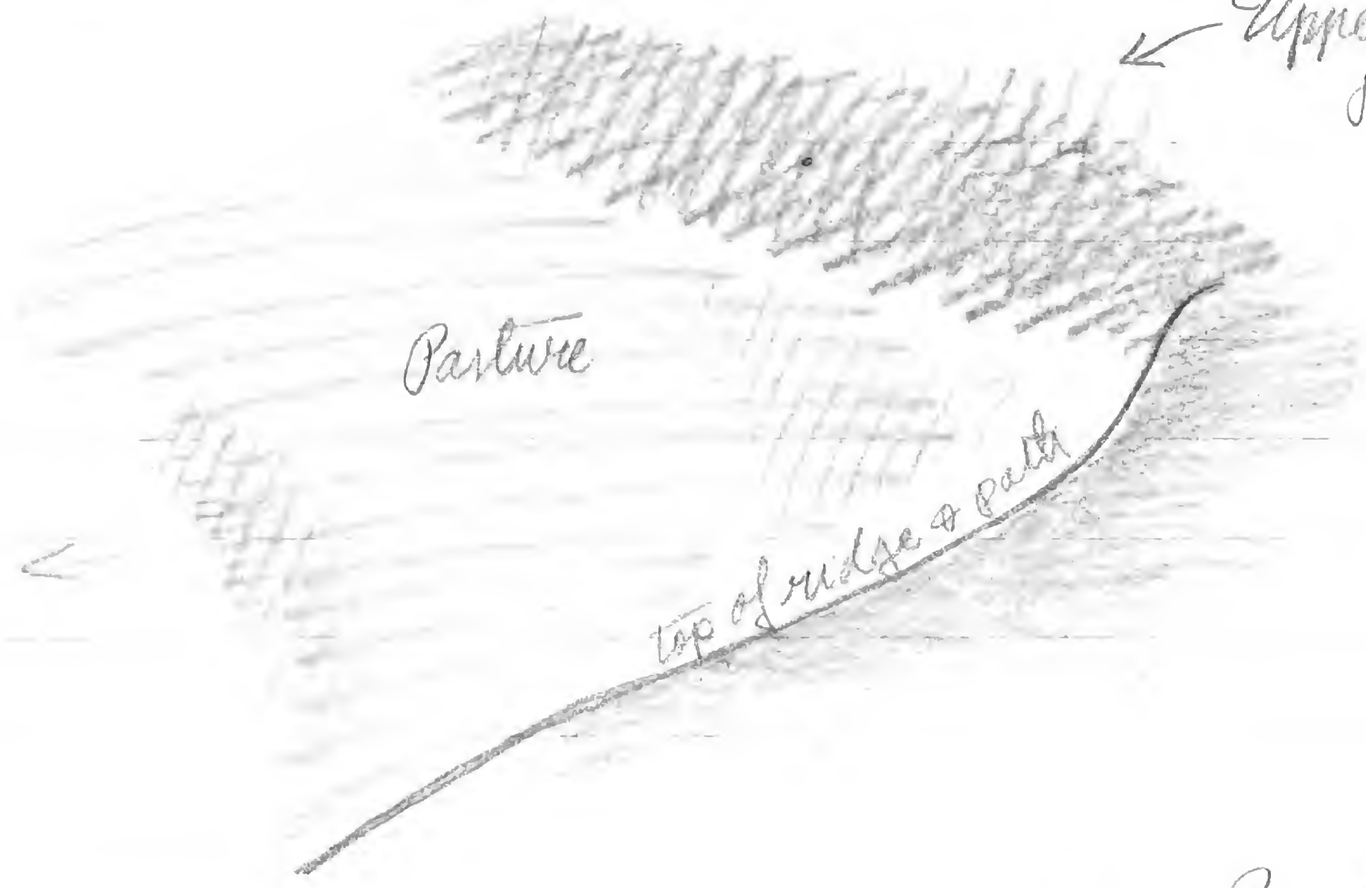
Nothing in Pamplona when I get back 8:17 a.m. Go off and come back again 8:30 a.m. Still nothing. Then, a few minutes later, see a single brown-backed alone, visiting another Pamplona (same species) with no soft calling. This bird apparently visited Violet-tufted not White-tufted! But it also seems to be paying attention to the base of the corollas!!!

9:01 a.m. White-tufted back from Pamplona plant. Alone. Its chest full of grains of corollas of several flowers. Then flies off.

Fog coming down now.

Go a few yards down road. 9:12 a.m. See single White-tufted feeding on another clump of Pamplonas. 3 ft up in small-edge prickles. Bird alone, silent and alone. Also diminutive, putting head to region of sepals at base of corolla. (Small amounts to get head of one of the flowers. There do not, are small Dogtown-type holes in the sepals. But not too small. Compatible with Alex — as well as Ol.)

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



= Paniflora vines

= "Mature-looking" scrub

= Obviously recent growth

The area here includes a more or less knife-edge ridge, with different types of vegetation on either side. On one side is "mature-looking" scrub. Very dense but not very high. This comes right up to the crest of the ridge. Right at its border, at the crest of the ridge, are the Paniflora 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, recent-growth between the mature, grassy part of the pasture and one of the patches of "upper sub-tropical" forest

The complications began ca 9:20. I was still watching Parulas & Yellows when mobbed by White-throat a few minutes later. Suddenly saw 2 Coers (adults) in adjacent scrub. Range 2-8 ft up. The two birds stuck close together. No sign of hostility. Obviously mated. Very quiet. Only occasional soft "seet" notes. (No trace of Coer bird song (I am sure that Ags would sing in similar circumstances!!).

Both Coers repeatedly came close to the Parulas (with 1 or 2 ft.). But they never absolutely no tendency to visit their flowers. As like the Ags, Coers probably do not eat into flowers. Parulas are not insectivorous either! SEE ALSO BELOW

When I first saw Coers, I also hear Ollapetes "fleece" notes not far away. Ollapetes apparently gradually moving along ridge. Coers gradually moving in same direction. But at least 20 ft behind the Ollapetes. Then the Ollapetes 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. Sexual ones, PL's appear to join and/or follow Coers. And vice versa, Coers appear to join and/or follow PL's. But all these reactions appear to be essentially "coincidental". No overt agnitation one species vis a vis, attracted to the other.

While this is going on, I can hear a very large mixed flock down hill, approximately in where "upper sub-tropical" forest merges 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 Yellow-bellies. Also I hear Yellow-faces singing in same area. Quite a lot of plovers

at irregular intervals. NODWA. Then Yellowface(s) shut(s) up. And then I hear definite Cy Longspurs! Long rapid Twitters probably with "Tit" Intro Notes (but not many or loud Intro Notes). Then I see the singing bird. Definite Cy. Singing 30 ft up in isolated tree in pasture. Phrase after phrase. NODWA Then Cy flies off, to join main body of large flock in edge "upper subtropical" 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 pulled insects off leaves throughout the whole period of observation. Quite clear. Not only did the Coers ignore the Pauciflora, but they also ignored a variety of small yellow, white, and orange flowers in the general neighborhood.

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

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

All buds 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 Arcadia

pages) But it should be noted that the "mature-looking scrub" here (& 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 — we also yesterday's notes on general mixed stands.) Is Coen primarily a bird of dwarf forest or thick scrub, while Ag 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 greatly 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 same Pauflora 10:35. But apparently getting insects off leaves. Is any Coen, 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 (new, clear today) and ecological differences between Coen and Ag. (Of course, Coens probably are not always pure by non-metamorphosis in all regions. I saw the Coens in the Parque Eucalyptus above Bogotá a couple of months ago.)

The only thing I don't understand now-why Coens are rare (or absent) in Central Founder.

I was rather surprised not to see vidrigotica 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 Doglocus, Aug 10, 1965 VII (67)

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

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

This afternoon going to work where feint "Glauc" and the Allen - Scrub 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 attracted. Disappears almost immediately, 2:15 p.m.

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

August 11, 1965
Manchuque

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. Hermit alarm notes and long. Followed immediately by "DC" Allen song flycatcher song.

Going to work Pacific — Cowlitz Divide Trail

ending — and humming bird disputes)

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

First hummingbird sounds heard 5:58

First Alopetes Whistle songs heard 5:59. Overlapped completely by "DC", but NODUA.

First hummingbird vocals Barrikan I 6:02. Jet identified

Quite a lot of Alopetes Whistle songs. Presume OG PL. Awaiting breeding here too.

6:05. Violet Shouts in Rainforest I ("RI"). Peculiar. Many fast staccato bursts. Silent. Quite alone. Flies off. Then multiple green hummingbird sounds (possibly same SCH seen as "Cavan") visits RI. Also feeds bare conifers. Flies off.

Four unidentifiable Alopetes sounds DC and R's heard 6:14 a.m. (9 times cycles "DC" must be big another year!).

Then seen to be 1st a Blue-Black(s) 20 ft up in tree tops and then Yellow, "CN"s. Apparently alone.

RI doesn't seem to be very attractive this morning! Then, 6:25 Violet thought birds base conifer one flower. Flies off. Then single White throat flies into bush left from RI. Alone. Flies off. Then catch glimpse single "Black" Dyglossa 1 ft up in scrub near RI. Don't see any white patches, but bird looks very grayish. Must be Alopetes Silent & alone. Disappears immediately.

Then see single Brown Jay seen in nearby scrub. Apparently alone. Silent.

Then, 6:35 a.m., see fourth dispute between 2 Alopetes. One bird chasing the other middle three-thirds scrub 1–3 ft up. No special postures or movements, but one of birds (s) utter a number of

moderately short, hoarse, very usual "Hump" Notes. Rather surpris
ingly, the white flank patches were not visible on either bird so th
ey are not displayed in hostility. (But I am sure of my identification
on because both birds differently were grayish.)

While all this is going, a mixed flock seems to be gathering up
4 out a few feet away. Contains, includes 1 Blue-Black, 1 P2, 1 Ruddy
4 Flycatcher, others. All birds seen are 6-12 ft up in small trees. Ru
ddy alters R's. Can't tell who, if anyone, is leading.

Did the dispute between 2 Albis occur because one of Albi
"escorted" a flock into the territory of the other of Albi?

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

Going down to mist Pauciflora near where Coers were seen yes
terday ("PII") 6:50 am

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

Getting in Pauciflora, and no Coers visible in neighborhood.
Many Yellow-face Song down hill. NODWA Again. NODWA
Sun shining bright now.

Now walk along ridge into patch of forest more or less transi
tional between "montane-scrub" and "upper-subtropical". See
single Alectroenas sanctaris alone. 15 ft up in tree inside forest. Al
ters "EN"s. Flies off

NOTE: The whole area where I have been working is almost
due West of Mamelique. The Hope with "montane-scrub" faces
due West. The Hope on which PI is located is WNW. (Defacto)

Back to PII 7:20. A single Long-tailed Sylph burning fast

(possibly same species seen on Guadalupe above Bogota) nails flowers be ufly. Also puts bill to bases corollas!

Well! Well! Well! 4:25 a.m. Jungle Cg (definite) appears. Moving up hill thru "mature-looking scrub" (possibly coming from what looks like "upper sub-tropical forest" way above & below. Passes thru some of the bamboos visited by Coers yesterday. Silent. 3-4 ft up. Appears entirely does not feed. Then passes thru PI. Shows no interest in the flowers. Then passes over ridge and down into tall forest on the other side (where I can hear Basileuterus and/or Hemispingus type R's and Flavovirides). Apparently on its way to join mixed flock!

So Cog and Cg tanagers or tanagers are at least partly overlapping here. Not stratified.

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

Everything very quiet now 4:35 a.m.

Back to PI 4:49. Jungle Alba hops out of low scrub. (Identification definite — as both gray color and white patches). Flies bird-to tail-less! Red & has its tail during the flight earlier this morning? Hops rapidly up into PI. Feeds on at least 8 different flowers. Definite cutting into sepals! (And the cutting seems to be quite a struggle too!) Then flies away.

So it definitely is the Albas that are being "parasitized" by humicolas!

Incidentally, this bird was absolutely silent throughout (Just even a trace of a "CK". It was only a couple of feet away from it.) Was it silent "in order" to avoid attracting the attention of the local

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

It is interesting that I have yet to see a Alb here. Are they separated from the ♂'s during the non-breeding season? Have no postact, do they have different feeding habits ???

Juv hummingbirds come to PI after the ♂ Albs

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

Hear some more Yellow-face songs down hill. NOBWA

See several small groups of furnariids, apparently not mixed.

7:03. See single Pyrrhula ruffous up in bushes region "upper sub-tropical" forest. This is not far from where "Barred" Pyrrhula seen yesterday. Here certainly are a variety of furnariids in the general neighborhood at the time, but the ruffous doesn't seem to be paying any attention to their sounds. I think that the ruffous must be classified as "alone".

9:10. See single Violet-throat Sabrewing along "upper edge" sub-tropical road ("MLS").

9:20 Back to PI. See single White-throat feeding on Red flowers, 20 ft away, in usual way. Not molested. Flies off. Then see single Violet-throat feeding on flowers of PI tree, in usual way. Not molested. Flies off. Both birds quite close throughout.

Alb(s), White-throat(s), and Violet-throat(s), may all show a tendency to refrain from venturing thus even when other species are present. Better, all are here so rarely that the tendency is not clear.

Nothing in PII. Heavy fog all around.

Also 9:34 a.m. See Red-throated Parrot in pair in sub-tropical

yellowish. Tellers occasional note "seet" flights. Then disappears.
It looks as if these birds may follow a regular routine, regular pattern as around Mountain Home.
Leaving 9:45 a.m.
NOTE: Norene thinks that the small mountain here is called "San Gerardo". And he is sure that the name of the Finca here is "La Palma".

COMMENT: I am surprised that I have not heard one or both of the Coers near PII Leaving. Is that because the mates keep together.
In general, it is my impression that almost all Coers feeding relatively near. The specific call appears to be "less" vocal than carbonaria's, lafresnayei, or cyanea. About as quiet as albilatera! Why??
Working along highway, in "permanent fog zone" this afternoon. SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS. Ca 3:30 p.m., see pair of Seiurus with mixed flock. At 8140 ft.! I wonder this is the lowest altitude at which I have ever seen Seiurus?? Do they come down to unusually low altitudes in wet, humid, foggy areas??
It is interesting that there are no WCC's with this flock. Although I have seen several WCC's with other flocks earlier this afternoon. Are WCC's and Seiurus less apt to associate with one another at relatively low altitudes than at relatively high altitudes??
Commander Eider, one another mixed flock which included a pair of Myiozetetes granadensis. Perching 1-10 ft up. Usually in lower half of this range. It is my impression that the lower altitude Cyc here may come down low in vegetation much more frequently than the higher altitude Cyc. When they do come down low, they come into what looks like perfectly typical Alb habitat. Unfortunately, I have never seen a Cy

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

August 12, 1965
Manchuque

Going to wake on top of Manchuque until this morning. Arrive 5:30 a.m. Just getting light. Partly cloudy. Very windy. And unbearably cold!!!

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

Then I go down into VSF zone. And hear more Cer songs on 6:30 a.m. This singing bird publicly in area of tall forest! NODWA

Then go back up to "alpine scrub" ("As") zone. And down one petite stern As. 6:59 a.m. Hear Cer singing phrase after phrase. This anyway is not the same bird heard singing earlier today (altho it probably is one of the ones heard a couple of days ago). Long phrases evenly lilt. Have heard a couple of days ago. ie. 3 "feeeee" Notes, followed by buzz flutter, ending in "Howard" (or "flur"). Bird apparently singing 15 ft or so up in small trees, but I can't see it.

NODWA when Cer sings first. Then I hear Yellowface insert one long phrase between Cer phrases. No overlap. Cer resumes singing. Yellowface utters one more phrase. Complete overlap Yellowface shuts up. Cer continues singing NODWA Cer shuts up, 7:09 a.m. Then starts again a few minutes later. NODWA, Then with buzz flutter first

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

More may be there seen individuals who sing in this region from time to time.

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

7:37. Right up by Pond Visitor Center end of Nature station clearing I have mentioned before). Seemed to be Alder flitting thru AS. 2½ ft up. Silent. Difficult, close if seen at all immediately.

A few minutes later, saw single Rufous-capped Warbling Vireo doing vocalizations-prob. Subalpine Flamed Same area. Silent and alone Rufous-cap probably in addition to Audubon complex of calls.

8:30 a.m. et seq. See mixed flock, with Cy, Settis), and WC c's. (Others described in my mixed flock notes). A single Alder Flycatcher appears to enter flock. Only seen in woods, once fairly high in tree. The Cy and Settis with flock also ranged high to low. Thus, in this area, now, ranges of Cy and Settis at least partly overlap the range of location of Alder. Not perfectly stratified. This area u 9240 ft according to my altimeter now. Is segregation, between Cy and Alder, by stratification characteristic of the breeding season alone??

9.37 a.m. See single Cy. Apparently alone. 2 ft up in second-low tree with white borders at uppermost limit VSF. Silent

Stopping observation 10:00 a.m.

August 13, 1965
Region of Ubehebe

Road the Right point on the highway (very part the town of Ub

ible) 5:42 a.m. 8400 ft. 2550 m. Thin area is fairly open on E. side due West. Clear. Dark, warm. Everything quiet

5:53. Near Diglossia-type Twitters up hill. NODWA.

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS.

8.30 a.m. Near what might be Allen's Gallinule in distance. Can't see bird. Then I do see bird. It is a Ruddy Flycatcher. Up top isolated tree in middle of rock slide. Definite, alone

9:55. See single Cy. Definite, alone. Uttering lots of four phrases in rapid succession. All phrases perfectly typical "Northern Cy" type. Rapid Twitters preceded by 2-4 "Tsit" Intro Notes. Bird sitting in perfect, unvitalized postures, on a variety of perches, 30-40 ft up. I think that solitary Cys always choose high Song perches. This bird is being answered by another Cy several hundred yards away. Latter apparently also high in tree. Certainly some of the phrases of the second Cy are quite like those of the first. But possibly others have "Zeee", "Za-zee" and/or "Feeet" 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.

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

I was pleased, in a way, not to see Colors 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 Cafresnayei s.l. Can de Schauensee's reference to Blessin's in the mountains west of

Oxypogon be present? Could the species have become extinct on the nevado itself (say after the Pico de Espejo)???

Diglossa in general certainly seem to be more in the area visited this morning. (This is more or less true of all the southern part of the Western Cordillera.) But, as far as I can see, Hummingbirds 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 Hummingbirds in the southern part of the Western Cordillera. This species does seem to have much the same requirements as Sparkling V.E.

Central Cordillera Colombia.

Mural Dogtown — October 21, 1967
Nr Medellin — Between 6 Palmitas
Central Andes Colombia

This morning I spent a lot of time looking for Diglossa
in Cattleia 4500 - 7500 ft. Quite a lot of scrub, and lots
of small-white Agapanthus like flowers. But lots
tubular red or pink flowers and Diglossa were very rare.
I finally found 2 dump mines with very little vegetation and a few clusters of tubular red flowers & in one of these mines, I found a single diglossa — a ♂ — the only Diglossa seen all morning!
These birds seem to be quite remarked & dependent on such flowers! It was particularly surprising that I saw no Conirostrum this morning!!!
The single ♂ was associated with a mixed flock (see today's notes on mixed flocks). Behaviour much like the ♂s of Venezuela in similar circumstances. Largely or completely silent. Certainly no song. And apparently associated with flock only while latter was in its (the ♂'s) territory.
While associated with the flock, the ♂ remained fairly low in vegetation. Feeding on insects, and fat (on stems) and tubular yellow flowers.
Then the ♂ disappeared followed other bird(s) down the after a pair of Yellow-faced Grassquits (nr. XX), which were following other birds.

Mixed Dofleming, I. November 5, 1963
Santa Elena
Central Andes

Arrive pic site 5:10 a.m. Stay to look 8am for 2 types of different types of vegetation around
Hear 1 pair "Alba" type song 5:15 a.m.
Hear abundant morning song. Area may be too wet for evebear
in esp. Evening 6:30 a.m.
9:20 Have spent hours walking around various areas 8000-8400 ft looking for Burmeis, Ino Gale Watching mixed flocks in areas which looked suitable for Pencilleyes or Elvira (even had pride tinsels flowers around). Burmeis must, I think, have very special requirements, or be unable to compete with other species
SEE TODAY'S NOTES ON MIXED FLOCKS
9:30 a.m. Have also had Pencil feeding on tubular red flowers in tree on edge of Square
At 9:45. Have just seen another Ag with a mixed flock here
A single Ag seems to be regular member of almost all mixed flocks here
Have also not too far from where the Alba was seen earlier but there was no Alba with flock

Central Cordillera Colombia (3)

Mural Dagenais, I May 8, 1965
Region of Puracé

Going up Puracé Road to Manzanos, Ilarco, Bogota, etc. Avenue
Apt 5:00 a.m. 3180 m. 10,295 ft. Still too dark to see

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS.

COMMENTS:

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

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

III. I certainly heard Cgs singing this morning. And I think I heard both Allen's and Kalo singing. But there were no overlaps between songs different species. And, on former occasions, different species never sang from exactly the same area(s).

May 9, 1965
Region of Puracé

* Above same place where mist-nets were put up 5:00 a.m. 8th

Foundydeck Clear. Calm

5:56. See Green Hummingbird VIII feeding on some species red and white flowers on which Sf fed yesterday. About 30-40 ft away from where Sf was seen

Have been hearing that there has been no Sf song this morning — yet,

5:55 a.m. Flew would suggest that population is not dense

Then heard what is almost certainly Sf song 5:58 Brief glimpse.

5:59. Heard what is unmistakably Cg song coming from area 30-40 ft from where Sf was seen yesterday (and also heard today). NOD Male area from which Cg songs are coming, also visible 20 ft from where hummer VIII was seen feeding earlier. Cg plumages with "Sit" Intro Notes.

Multi-banded Flycatchers moving over toward Cg ! 6.02.

Book 106 Now on Black Duck Loop, briefly in bush only 20 ft or so from where Cg is singing. Disappears immediately. Cg still singing. One or two more plumages then disappears. Could it have returned before approach by Sf ??? (Appeared entirely there was no overt attack.

Everything quiet now 6:07 a.m.

109 Now hear Cg singing slightly up hill. Alone NOD. In bkc, related to pasture, 15 ft up. Then flies off to another tree 30 ft away singing more like all plumages "Sit" Intro Notes. Like most Cg, this individual seems to have relatively large territory. At least 300 yds across.

Cg shouts up. Sf (up hill) sings. No overlap. Then hear a more Sf sings singing. Overlapping one another. Also overlapping some Pewee-like up to songs. Then Sf (s) shout up. Pewee-like songs continue. Then more Sf Overlapping songs.

Then suddenly this area 6:20 a.m.

fef New Def-Obs phrases in distance are short. Can't tell if Mtg are by Def or Mutetant. Probably the latter.

Abs! 6:25 Can hear what is obviously real Def singing. Often Mutetant shuts up! New Def starting long wide-tonal-range phrases. Then shuts up

Immediately, I now think that it was a Mutetant which overlapped the Pacific-Wrangler earlier

6:31. Hear Cy singing in bush, 15 ft up. Phrases quite like those heard earlier this morning, but better parts divided, including fewer notes.

Huge long phrases overlap completely with bellowing long wide-tonal-range Def-down in same bush. Unfortunately, can't see the Cy while it is actually singing. But see only Cinnamon Flycatching bird, in flight, make repeated short passes at spot where Cy keeps are coming from. Cy continues to sing throughout the swoops. Then the Cinnamon flies away. Cy stops singing. Hope is to see exit. Difficult, as Cy faces me. Very alarmed. Lots of hopping about with many WF's & TF's & "Ind" Notes.

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

Clouds closing around me.

Then Mutetant sings. All Diglossic about at the time. Then Mutetant shuts up. Def begins to sing steadily.

111 6:54 Can't Cy now. Cinnamon & Cy in same bush. Pass only a few inches or a foot apart. Cinnamon retreats a few inches. Cy flies away

Def singing again. Mostly diglossic audible.

Slightly uphill Cy singing. Mostly diglossic audible.

112 See single Def in isolated bush. Alone. Silent. Then probably in the four-t Def seen yesterday singing now. But not in the other side of clump

Cg [illegible] of song-volume Cg sang earlier today. DE countries of Cg and Laf have probably overlap to at least some extent.

7:20 a.m. Flibbertart sings in distance. Shuts up. Then Laf near use begins to sing. No overlap. Paused eyes ed & sit up. In posture common Head flat on top. Head looks natural, small. Whole bird looks sleek. No Belly fluffing. Bill pointed downward slightly upward. Opened very little during notes. Aloud between notes

No Diglossini here seem to be very careful not to overlap one another's songs. Nor do they overlap Flibbertart. Quite Quite-like in this respect. Flibbertarts seem to be equally careful not to overlap Diglossini.

Laf shuts up. A few minutes later Cg sings some distance away. No other diglossini or Flibbertarts audible.

Well! Well! Well! He never said then done! See the Cg singing in small tree 15 ft up. Defuntg alone. All song phrases with "Jut" Intro Notes. (Then Intro Notes do seem to be characteristic of isolated birds.) Bird moving about from perch to perch within tree, singing at each perch. Then, 7:34 a.m., Laf begins to sing down hill. Probably 30-40 ft from Cg. Flibbertarts, the Cg continues to sing. Repeated (perhaps 20) complete overlaps songs of the two birds!!! Then a Cummon appears close to the Cg. Swoops at it at least 3 or 4 times. Obviously hostile. But each swoop stops just short of actual attack. And Cg continues to sing. Little it would likely does move away a few inches Cummon flies off (It appears that Cum-

(Cover 4) a mons ann pretty [illegible] blue to blue-violet bottle, toward Cy in the latter ann midrug. Beneath this are more conspicuous blue) Bott Cy and Laf con true fringes with complete overlaps. Then a pair of Allotetrants, about 30-40 ft from Cy, another little one from Laf, also begun to form. Complete, separated overlaps all 3 pairs. Then, eventually, both Cy and Laf shut up. Allotetrants utter a few more phrases. Then shut up too

All this quite reminiscent Eastern Condition!

Incidentally, the Allotetrants were quite alone at the time

Then Diclinia in distance 7:50.

One report of Cy below-par here in most interesting and unexpected. I have repeatedly seen individuals in the Eastern with dark red cup-shaped flowers Here are the flowers which the Cy in the Eastern Carolinas did so much. But I have yet to see a Cy here feed on one! Flowers seem to have been appropriated by the Hummingbirds here (especially VII and VIII)

Dreary next few minutes, then quite a lot more Cy and Laf phrases Just overlapping. But then, 7:58, there is another complete overlap. Cy longer note by a fair bit. Shorter.

Oh God! Sing ann Lec one Black Diclinia repeatedly attack, chase, and replant nuptial. Some distance away, downhill. Di regain relatively tall & dour scrub. Ma attacker is central, a Laf. But the attacked does not have visible diamond patches, and appears to be relatively small. Presumably Cater! All very Eastern Carolinas-like!

Be on top hill Laf singing, various places & 30 ft Then shut up Song down hill 8:30. Then some more Cy songs as before. Then other Cy [illegible] Cy chirps up. Allotetrant songs. Then up

Ma single Cy about Opposite, [illegible]

old white flowers in small tree 15 ft up

(1) 120 Flew to male adult Gy alone. Top tree 25 ft up

Alter 121 Flew to male black Diglossa alone Alter ? In thick low scrub

Good god! 7:07 10,205 ft. 3090 m. Region fairly dense scrub

122 See male &c. (Buff, beast). Feeding clusters white flowers top tree 25 ft up. Flew parties down scrub where Kof - pierced Alter dispute over red earlier this morning. Alter passes my close to where Gy near earlier. Flies back dispute close

A few minutes later, hear some long plaintive whistle notes which may be uttered by this bird Quotes, "Tah-ah-sreeeee-ah-yah" four times repeated over to some doubled. Unfortunately bird not visible But it certainly seems, several times, from a tree in which an adult Gy was seen earlier this morning. No other Diglossa or Whitestart which this CC was visible Flew was a single Whitestart, alone, about 30 ft away, while this long plaintives by this unseen bird were being uttered But it didn't seem to pay any attention to them.

7:20. About 30 yds away. See male Alter (Alfredo) Four-tuck scrub. Feeding on cup-shaped dark red flowers. Four times which this hummingbird favorites, and this Cyp favored in Eastern Cordillera Secondary Diglossa style by cutting into bases corollas. Quite silent and alone Flew a Cinnamon appears. Perches about 2 ft from Alter. Alter flies a couple of feet further away (down into bush) Cinnamon flies away. Alter comes back to feed as before. Cinnamon flies in again. Flies three times scrub-scrub. Alter flies away a few feet Cinnamon flies away Alter comes back again to feed as before. Eventually moves off and disappears from view.

Flew is not far from where dispute was earlier this morning. So-

fol
alter
cc
alter

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

It is interesting that CC should appear in same general area as Alter. Alter's alter area certainly is not denser, and title seems is not thinner or lower, than elsewhere around here. Don't tell me CC is a "communal" of alter ??? (This might help to explain how it has evolved different-looking vocal habits from other mountain Convention opp.)

Here is none again now, 9:35, but very light. Hardly a sprinkle

fol
cc
cc
124

Hear Laf singing in distance. Walk over, and discover that bird is singing from same tree where Cg seen earlier, and from which possible CC has gone from!

fol
cc
cc

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

fol
cc
cc
125

Another one, 9:53. See single Cg alone. In tall hardy tree. 10 ft above ground. Silent. NOD.

fol

Laf still singing down Cg road 10:00 a.m.

Leaving 10:17 a.m.

COMMENTS:

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 (quite different) forms in the Eastern Cordillera.

Dm

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

Dm

III. In view of the many hostile reactions between Diglossus and hummingbirds observed in all parts of the Colombian Andes, it is especially remarkable that I did not observe much overt hostility between Diglossa mi and Iconia in the Sierra de Merida.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

May 10, 1965
Region of Pecunce'

Arrive same place as yesterday 5:15 a.m. Getting light. Cloudy, but no rain - yet. Andean Sparrows in full swing.

Arrive general area where Atl + CC were yesterday 5:50 a.m. Faint (dist) whistle Leaf Song (in distance) 5:53. Hooded Diglossa or Whitetart audible.

5:56 a.m. Hear what might be Alb R uplift!

Faint Whitetart Song 5:58. No diglossa audible. Apparently coming from the where Cy were yesterday and where CC may have sung. The Whitetart utters several plaints. Overlaps completely with Andean Sparrow-Songs, but nothing else.

Near Whitetart sings uplift. See the bird. Immediately after up. Definitely alone Whitetart shuts up. Hear faint Cy Song in distance 6:03. Cy shuts up. Then hear some very faint Sparrow like twitters nearby. Probably diglossa, but God alone knows which ones. Then there stop. More Whitetart Songs

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

6:15 a.m. Many some more females, faint, high pitched Twitters. Single phrases. No Intro Notes. Men silent. Then some more Whitetail Songs. Then dear some Twitters "Dah-duh-duh duh-duh-duh"

— — — —

6:17 Apparently uttered by Blue Diglossa, presumably. At least, I see Blue Diglossa some area just after Twitters stop. Can't tell very lowest utterly Cy from Q. When this bird just began to sing, nothing else was audible. Then it stopped. Whitetail began. Then this bird and Whitetail alternated phrases. Then this bird shut up again. Whitetail continued for a while.

Now a different bird in same bush as Blue Diglossa utters (more) long phrases. Quite similar to "Duh-duh-duh ...." type transcribed above, but a little longer and more females. And now I see that they are being uttered by a brownish bird. But light is atrocious and I can't tell if bird is CC or worm.

(12) Then this bird shuts up, seems to disappear 6:25. And then I see Cy (black?) in bush. Feeding on dark red cup-shaped flowers (Aphelandra) fruit.

This area is approximately 100 yds from where Alter and CC were yesterday.

Again, everything dead quiet, 6:37. What the weather. It's now very cloudy, relatively dark, no wind. Sort of mysterious!

Now some Whitetails singing in distance.

6:45. 2 Blue Diglossas fly by. Fruit and above. Land in some-what a few feet from where Alter + CC were yesterday morning. Immediately nearby Laf begins to sing. Blue Diglossas fly away. Laf shuts up. This would certainly suggest that there is some Laf-Cy Routine here!!!

Blue 127 Laf 130 Cy 131 Laf 132 Single Cy back in bushes. Apparently feeding insects. Left up. In general area where Laf, Alter, and CC have been seen. But no Blue Diglossa.

(cont'd) appears or sings this time. Interesting enough, there was a Cinnamon near
VIII the Cy this time. Also a Green Hummingbird VIII. Neither appeared to pay the
slightest attention to the Cy. Because the Cy did not Lung ??? Cy flies off
almost immediately.

16) Single Swallow flies into tree where there is a Whitetarant. Swallow sees
about 10 ft up. Whitetarant feeds 20 ft up. Hy calculates Swallow's next
Whitetarant hunt immediately, single Laf appears, hopping up to top in
all bush 30 ft away! But its there silently. Then Swallow and Whitetar
t disappear. Laf flies back down into bush and disappears too 7.01 a.m.

Whitetarant sings in distance. No diglossia audible before or after. It
looks as if these Whitetarants do not stimulate song by Diglossia, at least no
w, to any appreciable extent

Large green hummingbird with blue wings feeds in tree where I have
seen Cy, near where Laf, Alty, and C have been seen. No diglossia appears
to exist. (Has hummingbird in species I have seen elsewhere in Andes.
Eastern Cordillera? I have never seen it feast with Diglossia anywhere.)

7:13. See single Alty feeding dark red cup-shaped flowers only 2 ft
from where Laf was only a few minutes earlier. Silent. Alone. Disappears al
most immediately.

Morning, Cy territories have overlapped both Laf and Alty territor
ies

7.16 More prof. Single adult Cy, witness "feet" Flutes flies over
scrub in which both Alty and Laf seen this morning. Sounds in tree. Then flies
off again.

7:25 See single Laf feeding dark red cup-shaped flowers 3m scrub
4 ft up. Not far from where both Alty and Cy seen before.

Mixed Dufaureau, May 19 1965 IV (13)

fol 135 7:31 a.m. Single Cy, alone, flies out of sweet pea bush where Alter was yesterday, and visits bindweed flowers

7:40 See Alter on bindweed. Alone. Single flies to the bindweed where she has been seen the first, thirty, high pitched twitters without Intro-Notes (on R) that I have been hearing from time to time. Very beautiful.

fol 14 Single Cy suddenly flies in to join Alter on bindweed. Immediate flies commence. Did the Cy (also) think the Alter's twitters might be Cy home in origin?

Joins cy bell 7:47. Hears Cy singing in distance. Flutters up. Alter flings herself up after him

fol 139 7:58. Per another single Cy about. Alone. Feeding dark red cup shaped flowers small bindweed sparse second growth scrub.

8:01. Good heavens! Per another bindweed same species plant about 100 ft away. Much bigger. Begin sparse scattered second growth scrub.

Alter 150 On this tree, feeding on flowers are 1 adult Alter, 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, 4 a juv. Alter! (All identifications definite.) Also feeding flowers. When the adult Alter starts to chase and supplant juv. Alter. Again & again & again. The 2 Alters return to, pass very close to the Cy. Without paying any attention to it. Or it to them. Eventually, the 2 Alters 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.

Alter (5) 8:11 Alter (5) back a few minutes later. I see an adult Cy and the same 2 Alters feeding on flowers same bush. All within a few inches of

one another. No obvious hostility between species. Cg & Lesg typical bonpla
rensis. But Cooing away from Ateles. Then Cg flies off. Ateles do not follo
w. Then adult Ateles depart to close and unplant fruit, as before. Even
tually they move off and disappear from my sight.

Neither of the Ateles seen here could be the same as the one seen down
below. So there are at least 3 individuals of the species in the region.

Obviously Cg and Ateles townsends overlap here too. And it is rea
lly most remarkable that there is no hostility between the 2 species !!!!
Every region in the Andes has its own peculiar Diglossic complex!

Looks back again a minute later. Again, there are the same 2
Ateles and single adult Cg in bush. Adult Ateles chewing fruit as before.
Adult Cg feeding peacefully, paying no attention to Ateles. Then all fly
off. Cg probably in different direction from Ateles

Incidentally, neither the Cg nor the Ateles payed any attention when
I first came into bush. And the Cg here has shown no indication of ev
er to either fear or attack the Ateles after Cg only 100 ft away

8:20. Good god! See single CC (defunct) perched 2 ft up low open
scrub only 6 ft from where I first saw caution !!! NOD. CC feeds by pulling
units off blades leaves. Utters a couple of "Sid" Notes. Flies off.

8:30. Adult Ateles still chewing and unplanting fruit from bushes.
One unplant accompanied by R (no Za za). Cg not around

Again VIII hummingbird feeding same bush as I first saw
Everything gone near 8:35 a.m. Going further up hill
Incidentally, the weather hasn't changed at all today

8:40. Region scattered round growth around, some small blooms
& bush uttering single "Zee wee zee dee dee" Song phrases CC? Or wren?

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

VIII 8:53 Sec single Qren VIII Hummingbird visiting clumps tubular red flowers (small flowers – not Pauciflora) Repeatedly puts bill to base corolla! Then I check the flowers, there were no holes in the corollas. But was this bird looking for Diglossa holes??? ✓

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

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS.

Mixed flock with pair of Setti pass by. Once, when one Setti rejoined the other, in low bush, one of the birds uttered "grating" twitter. I heard it quite well. Could be transcribed as "Dich-dich dich-de dich-dich"

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

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

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

Morning Cats of loud Roar "Jet" Notes. Abruptly, SHN's. Laf flies away. Agf ⟶ Laf !!! Both disappear temporarily. Then Laf reappears in an other bush some yards Feeds. Agj ⟶ Laf ! Both hop about. Laf supplants Ag (can't tell if this supplant "intentional" or not). Ag retreats. Then flies off. Laf continues feeding. Then a Cinnamon appears. Makes a couple of substitute swoops at Laf. Laf moves off gradually and disappears

10:23. Laf back alone, feeding in front bush. Silent for about 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

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

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

Leaving 10:45 a.m.

COMMENTS:

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

I Laf are common here, although not as numerous or as crow ded together as in some areas other parts of the Andes. Similarly, Cgs 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. Atens are relatively rare, CCs are relatively very rare. Selles are rare in their usual manner.

Cinnamons are very, very common. Undoubtedly, the dominant nectarivorous type here. Four 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 Lafs or Cgs. (It is my impression that the population density of these species — and the representative species in other parts of the Andes — does not vary quite from place to place.)

II. The relations between songs different species are much the same as in the Eastern Cordillera. Of the dyglossic, oscine, Laf and Cg species 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 Dyglossic complex here. Its songs do not usually overlap with those of Laf or Cg 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 "entirely" member of the Dyglossic song complex here.

III. Cg territories certainly overlap those of Laf, Alters, and CC's. Alt Cgs here probably are more frequently awkward than any of the other local Dyglossics, except Saltes (see below); but they certainly come down into scrub quite frequently. They are not "stumped" above the scrub-inhabiting forms like the Cgs at Mundubique. CC territories certainly overlap those of Cg, Laf, and Alters. Laf territories certainly overlap those of Cg and CC's. Alt territories also overlap those of Cg and CC's. I am not certain of the relationships between Laf and Alt territories. They may overlap. Or (perhaps more probably?) they only adjoin one another.

Cinnamon and Green Hermits VIII territories seem to overlap those of all Dyglossics in a perfectly "random" manner. I.e., I think

k, do the territories of Yellow-faced Mistetarcts.

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

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

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

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

Ates and Cps 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.

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

Canon VIII

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

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

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

May 11, 1965
Region of Ruins

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

5:46. Hear what sound like antpittas Whistle songs Do Diglossini or Whitetants singing at this time Then hear a couple of R's which might be Leg albo (same general area where Ater and CC first seen, and where Laf and Lg also occur). Overlapping Attapetes completely. Then loud chittering R's starts up. Attapetes continues.

Attapetes starts to stop. Songs coming in irregular bursts. Then hear a faint Whitetant songs. Partial overlaps with Attapetes 5:52 a.m
Then Whitetant songs again. This seems to stimulate Laf to sing!!! Wide overlap Whitetant and Laf. Both overlapping Attapetes! Both Laf and Whitetant shut up Attapetes continues, Attapetes stops. Whitetant songs stops. Laf songs. Stops Do overlap at all in these last phrases

6:00 a.m. Some more Whitetail and Laf songs. Not overlapping
Then an Alb-type R. NOP.

Then we group 3 Whitetails closing one another. Alone. Some long and SHR's during encounter. No diglossum audible or visible at the time.

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

Then Whitetail songs. No diglossum audible. Whitetails singing in tree, 15-25 ft up. Same tree where Cy has been seen. Also near, close to where Alter, Laf, and CC have been seen. Then the Whitetails move then low scrub. Cy seen over area where Alb-type R's have been heard. Into area where CC has been seen.

6:17 a.m. Whitetails still singing occasionally. All Diglossum silent. The Diglossum seem to be very dull and inactive in this area this morning. Just like yesterday morning same area same time. Songmeasures today, as yet seems to be coming out 6:28. No dullness and quietness at this time of day just characteristic of this particular area???

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

6:43 Whitetants now singing along. Whitetant shuts up. Then
Then Alli-type B's. They stop. Then I see Black Raglana flying. Then Lef
hang. He overlaps with anything. Lef shuts up. Then "Cy" sings alone.
6:47 Good Reasons for Indigo Blue + Orange Tanager + flit up
in second growth scrub where Alli has been seen. Defiantly alone. Then it
flies up into adjacent tree, joining a Lef there! This is exact same tree wh
one Cy has been seen. Both birds hop from branch to branch. Blue + Orange
repeatedly (at least 10 times) follows Lef. Both birds silent. Then Blue +
Orange repeatedly chases and supplants Lef!!! Both birds still silent
Both fly away. Blue + Orange in pursuit. Disappear Then, a minute or
so later, no there both in scrub. Blue + Orange still pursuing. Both
birds still silent. Incidentally, the scrub-thru which the 2 birds passed
in where I have heard Alli-type R's.

6:55 Now there seem to be 2 "Cy"s singing. Some distance ap
art. Overlapping. On one there 2 "Cy"s. One seems to have Intro Note.
The other does not. Then bird without Intros shuts up. The other contin
ues. Then shuts up too. Were there 2 birds Cy and CC ??? I think so.

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

Lef singing 7:25. NOD In tree 15 ft up. Also low scuff-
ling up hill.

7:27. Lef pair Lefs supplant Alli. In small tree, 12 ft up. Pa
rallel silent. Alli makes no resistance. Disappears. Alli and one of the
Lefs probably same birds involved in chase observed a couple of days ago.
But then were in 100 yds up hill. The relative positions of these 2 sites might
support hypothesis that the territory of the 2 pairs are adjoining rather

then overlapping

Adult ♂ and ♀ here. ♂ and ♀, and Attns and Lsp, seen together yesterday 8:00 a.m. Getting visible now, except a single small green hummingbird (not VIII, possibly Eupherusa species) feeding flowers Attn-Cy bush

155 Then one single ♂, alone, feeding dark red cup shaped flowers of bush soft away. (Even though these flowers are not tubular, more or less common ca , the bees still cut into the base of the petals — or sepals).

Then no pur. Attn feeding same bush as yesterday.

Attn 1st Adult ♂ ♀ ⟶ Attn ! Both feed. A few feet apart. Then fly in different directions.

Attn 156 8:10. See adult Attn hunting, perched exposed bush about 30 ft away. 10 ft up. Short twitters. One might be transcribed as "Tsh-tsh-tsee-tsh-tsee" ! NOD. Shuts up. Flies off. A minute later, I hear ♂ hunting down hill. Then shuts up

8:18. Pur. Attn back feeding same bush. It also is cutting into base of flowers. Then nudges, supplanted and chased by adult Attn

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

Just as I start to go, hear Cy songs. With Intro Notes. Then 2 ♂♂ (adult and presumed pur.) fly into bush where Lsp seen feeding earlier. Feed on dark red cup-shaped flowers. Their bills do not cut into the base of the flowers. Stick bills into cups, just like hummingbirds. The Lsp does not show up while the ♂♂ are feeding. They soon fly on. The territory of these 2 ♂♂ (and I think they must be mated pair) contents, overlaps, and probably overlaps completely, territories both Attns and Lsp. And must overlap territory ♂♂ at least to some extent. No trace of vertical stratification of territories here (The vegetation would not permit it. All trees are

too scattered bem.)

Ag Adult Ag back a few minutes later. Feeding on other bush. Silent on dalom.

Ad Then see Qmen VIII Hummingbird feeding flowers same bush where Ap and Laf feel earlier. Hitting bill into cups

Laf Fugus 8:42. NOD.

Fog definitely coming in now. Still very thin.

Going down hill 9:20 Laf and Whitetants still fungus occasionally. No overlaps Raw starting.

Laf Female "pile Agrionis" - type alow. On pasture ground, among subterranean patches beneath

166 Raw stopped 9:39 See pair Whitetants in isolated bush where both Ag and Ater seen (at different times) on previous days. Utter occasional at longs. Men see Laf in bush 10 yds away. Identification dispute. But the Ag certainly in bush where I saw Ater a couple of days ago. Ater apparently not around now. Hear Laf - Ater bounder, slipstal (Utter is region where clear observed)??? Also in bush with Laf now is small olive yellow-bird

110 B. nigroorostatus?? Whitetants ↓ ——→ Laf. Men Laf and olive-yellow-bird disappear Whitetants remain behind.

Incidentally, just before Whitetants found, a migr Cuculus appeared and made one unlimited sweep at Laf. Laf didn't react much, and the Cuculus flew away again

172 Dowdy read. See pair Whitetants alone. Shortly join group of birds in low dense scrub. Group apparently a mixed flock. Can't see all the birds, but flock certainly includes 1 White-browed Hyperitron and 1 Ag. Heavy. Lots of "CN"s. Ag also keeps repeating. All plumes long-lasting

1163 o, preceded by 3-4 distro "Zit" notes. W Wu Whitetants fly on. Not fo
1166 llowed by anything else. A minute later fly off, opposite direction. Als
1167 o not followed. Flies more in small trees across road. A single
Dubusia j ——→ Gy. Diglossa. Dubusia 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 rul
e which could explain some of the variations in vocal behavior of Digl
ossini. It might read as follows:

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

Some examples may be cited:

I The Sierra de Mérida. Three different areas. (1) The
area around Pont Tedferico Slater on Pico de Espejo, an area of relat
ively dense forest and (occasional) patches dense scrub. Territories di
fferent species overlap, and individuals of different species come into con
tact with one another without fighting. (2). Paramo La Negra Reg

ion of fairly thick scrub, scattered trees. Territories of different species overlap, but no contact between individuals different species. (3). Clon es de Thella Scattered trees and scrub in pasture Individuals of differen 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 are as. (1). Paramó de Guasca. Thick scrub. Territories of most (not all) species overlap. Occasional overt fights between individuals differ ent species. (2) Guadelupe 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 Paramó de Gu asca. (3). Numerous Gardens in Bogotá. Territories different species overlap. Fights between species very common indeed (at least at some te 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 town "Carpinteria" 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 Machapoyas. Thick scrub. Much overlapping songs of different species, and also overlapping of territories (2). Around Machapoyas itself. Region of scattered patches of scrub, hedges, and gardens. Almost no overlapping of songs different species. Probably not very much (?)

overlapping of territories.

Presumably there is a simple explanation of this general rule or correlation. Presumably it is advantageous for species in open areas to be dispersed and/or advantageous for species in areas with dense vegetation to be close together. (It may be significant that all the Communum species which are obligate commensals of mixed flocks occur in forest and/or relatively thick scrub.) It is easy to imagine various advantages and disadvantages of all types of Diglossine social organizations, but it difficult to decide which are really important. Perhaps food sources are less evenly distributed in open areas than in areas of dense vegetation? If so, it might be even more advantageous for an individual to repell all possible competitors in open areas than in areas of dense vegetation. Or, possibly, the poor mobility in areas dense vegetation favors aggregation of individuals as protection against predators (more my card on regards 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 Guaca and the mountain above Pelo 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-communal) Diglossini are adaptations to obtain the most advantageous population density, and if the differing social organizations of tanagers, finches, cotingids, etc., are correlated with frontier conflicts and/or mobility to "hop" between islands, then the mixed contains an

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

May 12, 1965
Region of Ruma

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

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

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

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

In large regions, there is a relatively large amount of non-hostile contact and/or overlapping between species. (Example: Quito 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.)

Gm

I think that this correlation may "hold" everywhere. And work out very nicely, even in detail. Thus, for instance, there may be naturally two overt fighting Antpitta species in the Serrania de Merida — a ra

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

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

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

The differences in social organization between non-communal 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 small regions, there must be both advantages and disadvantages to disputing with competing species. Elimination of a competitor vs tame "wasted" in disputes.

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

even after a very large number of disputes.

The whole subject of the variations in social organization of (in non-communal) Dyeconnie social organization might be summarized as follows: Differences between the behavior of Dyeconnii 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 Dyeconnii 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 Dyeconnii which are outlined in my Serra do Mendes 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 Purace

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 Purace

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

6:10 a.m. Mutterants have been singing for some time. Off and on. Then have been spirt fast song. At a time when all the local Mutterants are silent.

6:35 a.m. There have now been quite a lot more songs by both Mutterants and Lafs. 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 quiet.

8:05 a.m. Walking along road. See Laf supplant another bird. In small 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 at edge of road. Silent. 3-4 ft up.

8:35 Hear silent Mutterant either Ag or Alter singing in distance. No other song or Mutterant singing at this time. Bird utters about 4 phrases. Then shuts up.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

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

(The 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 real segregation of the birds here is almost perfectly intermediate between that of the birds of the Eastern Cordillera and that of the birds of the Western Cordillera. (This does not necessarily mean that the birds here are not a

(so intermediate, on many repeats, between those of the Costa region and those of some other part(s) of the Andes, such as the northern, or Cauca, part of the Central Cordillera.)

May 16, 1965
Region of Purace

Going to woods again in front area visited here (the area where there are so many Diglossus and hummingbirds). Arrive 5:58 a.m. Just starting to get light. Fly parts, cloudy. Not too cold.

First Whitetant song (brief) 5:51. No diglossus audible at this time. In general, birds have been quiet so far this morning.

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

Whitetants and wrens both singing 5:56. But not overlapping. Whitetant songs seem to be composed, essentially, of "new triplets." Commonly: "Tuli-tuli-tuli-tuli tuli-ta." Sometimes repeated

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

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

Laf

1710

See Whitetant sings 6:08. Whitish. In tree. 20 ft up. Alone. Now Whitetant sings alone. Low in scrub. Only 3½ ft up. Laf has been silent for some minutes. Whitetant shuts up. Cy sings typical plovers whistle. Cy shuts up. Whitetant sings. Shuts up. Cy sings several plovers

Cy

Ater
Laf

171 Hee nugle Ater feeding in scrub. 6ft up. Silent. Thru is general area where Ater - Laf dispute rem. 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. 9.2. "boundary" between Laf and Ater territory here has not "shifted." And there seem to be some overlap between these territories But probably only partial. (And the territories of Laf and Ater is slightly up till do seem to be evidence.)

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

Rain stopped 6:26 a.m.

Laf Both Cy and Whitetaint silent. Laf sings single phrase up till. Then Laf sings again for long time. In the midst of this, several Whitetaints sing briefly. Complete overlaps setups of the 2 species.

172 Hee nugle Whitetaint alone. In scrub. 3ft up.

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

173 Then can, hee nugle Laf feeding dark red cup shaped flowers 3-6 ft up. Quite quotes a nugle Ostrina 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.

174 Laf sings. NOD. Then hee another Laf feeding alone on red and white flowers

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

175 Hee nugle Cy alone in bush, 6-12 ft up. Uttering bits of single "Jet"

Cinn
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 1 (Again) the Cinnamon swoops at single Song Thrush going from bush to bush. Thrushes perches. Cinnamon perches 5 ft away. Single Alert — 1 Pic → Thrush - Cinnamon group. Then all 3 fly away in different directions

7:59. Hear what sounds like Alert long without R in area where Alert 1 Pic and Laf tremolos apparently overlap partially. Then see ♂ Black Diglossa repeatedly applaud another in bush. Presumed Alert songs continue for a few seconds. Then stop. All birds out of sight. More utter-specific hostility ???

Laf
A few seconds later Laf songs not far away. No other diglossine or Whitetail audible. Continues for a long time. Then see bird. In small tree, & fly up. Apparently alone.

Laf
8:18. Song up hill. Laf and Whitetails still singing occasionally

Without overlaps

Laf 1 Pic
Cinn
8:20. Laf singing near top small tree. About 15 ft up. A Cinnamon flies in and swoops at Laf repeatedly. After 3rd swoop, Laf shuts up. 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 4 or 5 times. Once, Thrush Cinnamon made actual physical contact!!! After about a minute, Laf flies away. Down into low thick scrub. Cinnamon does not follow.

Cinn
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 Augusta !!!

8:33 Laf sings alternating repeatedly with what are either Cg or Alter songs. Then there is one complete overlap. Then Cg or Alter substitutes. Laf continues

8:40. Anyone even where Cgs near "associating" with Laf and Alters some days ago. Nothing audible or visible at the moment. Then catbird sings

8:49 near Black Diplomin down hill.

Birds in general much quieter now 8:50.

8:50 Well, Well! See single Laf flitting thru wood not far from large bush with dark red cup shaped flowers in which Alters and Cgs 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 twigs of vines about 30 ft away. Last to sight. During whole period Laf under observation it was silent and alone. As soon as I lost sight of Laf, I turn to bush A and see that there is an adult Cg feeding in it. Silent and alone. Flutters bill into centers of flowers. Also, apparently, putting bill to base corollas. Long holes made by other Diplomas ??? Then Cg flies into same tree as Laf. I can't see connection (if any) between the 2 birds. But Laf certainly, still there. So this seems to have been a definite joining session. A few seconds later, Laf comes flying out in hot pursuit of something. But its quarry appears to be a hummingbird! Both birds vanished in pursuit but to see ever almost immediately. And I don't catch sight of Cg again (either).

A few seconds later, single CC flies into Bush A. Silent and alone. Feeds on flowers for some minutes. Like Cg, appears to stick bill into bases of corollas as well as into centers of flowers. Eventually flies off, without any other Diplomin having put in an appearance.

9:14 a.m. See green VIII hummingbird feeding in Bush A. No Diplo

same audible or visible at the time. Hummingbird noon Reason.

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

Aten 183 Speak of the devil! 9:18. Single Aten, adult, appears moving thru lo
Laf w nearby, a few ft from where I am sitting. Also well within area in whic
ch Laf has been seen to range. Aten is silent and alone. Laf not visible or au
dible at the time. So it would appear that the territories of this Aten and Laf
also overlap, partially, and/or that Aten may range into Laf territory when
the owner is "away" (presumably at opposite end of territory).

A few minutes later, we what is undoubtedly same individual Aten fee
Aten ding in adjacent bushes 5-10 ft above ground. Silent and alone. Apparently fe
Laf eding for insects on leaves. Flies off in direction Laf most recently
VIII heard.

9:40 a.m. Apex VIII hummingbirds feeding bush A (again)

Going down hill again 10:00 a.m.

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

Laf Laf long

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

Laf 184 See single Laf alone. 4 ft up in dense shrub.

Laf 164 10:20. See Black Bigbees chasing a Blue in flight. In area where I
have both Ag and Laf live. The Blue, in fact, was almost certainly a Ag who
Ag had been serenaded with wavily curved flocks a minute earlier. The flocks
dispersed when I arrived. Probably the Ag, on its guard at my appearance,
flew into bush too near to Laf.

Laf 168 Re undoubted Laf same area a few seconds later. It is repeatedly
Ann scooped at by Anna.

Laf 169 10:40. Now see 2 Black Bigbees engaged in close aerial com
Aten bat of them definitely a Laf (seen afterwards). But close, also viciously pursued

by several typical carbonaria s.l. R-3a3a's, Phainopepla, Icterus cucullatus, Toxostoma lecontei.

fol Ater

Here birds certainly not the same as the Fol and Ater seen dupicating the other day.

Leaving 10:48 a.m.

COMMENTS:

Gen

There really seem to be a surprisingly large number of water-specific dispute in this area. Especially as there are no overwhelmingly attractive and unusual concentrations of food (such as an Eucalyptus or an Erythrina in bloom) here.

I am surprised to find no Coers here. The region is humid - but probably not more humid than the Pico de Orizaba in the Sierra de Merida And Coers certainly occurred above Chachapoyas, an area which appeared to be relatively dry (for the humid temperate zone).

Con

An observer working in the Andes certainly gets the impression that the removal or disappearance of certain particular species in particular areas is largely a matter of "chance". I.E. when two closely related species (e.g. the Cyanocitta and the Coer, or the Turdus and the Yellow-bills) 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 Think more Jew-observations of birds around Papayán 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

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

II I now doubt that either Bares or CC's occur in this area near Papuyan city

III. Here is one important piece of evidence which supports the th con, that the selection factors involved in (i.e. the advantages reaped by) the evolution of different social reactions in different regions are not gu to the same as those involved in the evolution of different reactions in differ ent areas of the same region. In relatively open areas, the population is sparse and scattered, irrespective of whether it is composed of one species or several. This is quite consonant with the hypothesis that the greater representation 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 Pinnae

Arrive same place as yesterday morning 5:43. Getting light. Sky half clear, half cloudy. Looks as if there might be rain later
Hear first Whitethroat song 5.43. Only one phrase Thin Laf sings loudly. No overlap. Laf sings again. Shuts up.
Going to look at area where Black Diglossa was seen to have Blue

and relieve R-3 was heard yesterday

It is cold this morning!

More Mutetant song. Then silence. More Mutetant again. What extant shuts up / Lef sings. Shuts up.

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

Mutetant sings. Seem to simulate Laf in distance. Partial overlap. Both shut up. Cy sings again. No overlap. Cy sings phrase after phrase. All just as before. Also feeds from time to time. Feeds on red and white flowers on which Lafs have been seen to feed. Cy 2-4 ft up in scrub. Then single 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 passes through one of the bushes in which Cy sang earlier. Both birds pass out of my sight, Laf still advancing after Cy. Cy eventually shuts up.

6:15 Near Laf song. No other diglomine audible at time.

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

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

Cy seems to have flown up hill. Catch glimpse of Laf feeding on ants from time to time.

More Mutetant song. No diglomine audible at the time. Again. Again.

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

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

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

Song up full 6:45 a.m.
Still more Whitetart song when no diglossine is audible.
Laf 193 Saw a single Laf alone, feeding 3 ft up thick scrub
Reach A bush area 6:59 a.m. Nothing audible or visible at the time
Cinn VIII Whitetarts 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 194 7:14. Single Cy appears in bush same species only a few feet from me
Apparently the fem. which lives in this area. Feeds on flowers. Starting bill up
to caps. Quiet. Utters only occasional soft "Jit." Then later (definite) flies
193 in, supplants Cy. This apparently is the adult later. Supplant is silent.
later perches quietly in bush for a few seconds. Cy apparently has retreated in
Cy to scrub a few yards away. Later flies off. But apparently it has caught in
later glut of Cy again. A second later see Black Diglossa perching, chasing Blue.
Presumably same later chasing same Cy
Laf A few seconds later, Laf begins to sing very A bush. No attempt

glossic or Mlutetext audible at the time. Leaf shuts up. Mlutetext hugs up hill. (I can see this bird. It is alone, 40 ft up tall tree.)

(A) Then see male adult Cy feeding dark red cup-shaped flowers bush about 20 ft from A bush. Apparently alone. Flies away.

After 176 A few minutes later, see juv. After feeding in A bush stay. Silent. Apparently quite alone

Going up hill 7:45 a.m.

After 176 See Long Dipsoma chase in area low scattered vegetation. Adult Alter is certainly the pursuer. The pursued is apparently the juv. Alter. Chase accompanied by lots of R's, a few R-Zaza's, and at least one peculiar pattern cut emediate between R and Swallow. "Zreee zreee zreee zreee" type

Then two birds eventually

(A) Fly down hill. Immediately, a fly, about 30 yds away from where chase took place begins to sing. Song usual type. Three and four "Jut" Dubro Notes with each phrase. Then, Cy alternates a few phrases with Mlutetext nondestance away. No overlaps.

Going down hill 8:04 a.m.

Leaving this area 8:45 a.m.

Arrive area where rufinucha seen yesterday 9:15 a.m. Loses displaying. Feedings and flights. Also see what looks like Alter displaying flight with Swallow about 30 yds from where presumed Sean displayed a minute earlier (Alter incident also recorded in notes on ground moved flocks)

After 201 ?

9:27. Hear Albi-like Swallow from low scrub edge pasture

Alter? Sean? 9:55. See a Cinnamon attended by a greenish hummingbird of equal or greater size. Can't identify the latter, as it just lunges in and then away. But it might well have been a Sean!!!

10:10. Another area. Edge large patch found; low second growth. Sce 2
Ater 202 Aters flying around together. 2-6 ft above ground. Alone. Feeding on orange-red tubular flowers. Also picking insects off leaves
Catti Conf glimpse hummingbird feeding white trumpet shaped flowers.
Sean 7 Apparently typical Scan.
Leaving 10:30 a.m.

NOTE: It was nice to see CC's associated with a flock in the second area visited today. Thus, their behavior toward mixed flocks would seem to be essentially similar to that of all the other non-communal Diglossini. Their behavior toward other Diglossini, however, may be rather different from that of the other local species. They may be the only one of the local Diglossini which has a full set of "mutual avoidance and inhibition" reactions — like all the species near Quito

COMMENT: One aspect of diglossine "social complex" behavior was not particularly evident today or yesterday, but was fairly conspicuous during some earlier days. Yellow-faced Whitestarts start singing shortly after dawn, and their songs quickly reach a peak of frequency. Then they decline, very irregularly, during later periods of the morning. Sofs, by contrast, sometimes (perhaps usually) do not begin to sing very frequently until after the frequency of Whitestart songs has already begun to decline. This must help to reduce overlaps between the songs of the two species. (As I remember, this "delayed" onset of frequent singing is characteristic of other Cafresnayei s.l. populations in other parts of the Andes. It may or all areas it (also) helps to reduce overlaps with carbonaria s.l. songs.)

Important I have found that some "Greeting Twitters" of PRA

dapeles here are very Diglossine-like. Particularly reminiscent of Dof songs in tone and loudness. I am not sure that some of the "buzz Dof songs" recorded in my notes were not actually uttered by PR's. Especially the "Dof songs" overlapping Whitetant 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 Dof and Whitetant songs.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

Worked along edge Cauca River near Popayán this afternoon

COMMENTS:

I. I am not sure that all the "Scans" I have seen at the altitude of Popayán are not Hummingbird IX (presumably another species of Colibri.)

II. The area where I worked this afternoon looked almost ideal for Barns. Large pastures, thick second growth scrub, some with many trees of moderate size, scattered among pastures. It also looked good for BG's. (Actually, as far as the mere "shape" and density of the vegetation is concerned, large parts of the area looked almost equally suitable for carbonaria n.l., CC's, or even albis.) But all diglossini were at least rare in the area.

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

This area (between the Eastern and Western Cordilleras) 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 Merida)

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.

Of these the former alternative is more plausible. Note that the two Diglossini which seem to be most common in very humid environments, the albilora and the fuliginosa, are the two species which would be expected to encounter and/or compete with hummingbirds least frequently. Albilora are "skulkers", usually staying inside low scrub — a type of environment which many hummingbirds seem to avoid. And they 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 northern part of the Western Cordillera of Colombia.

But competition with hummingbirds, by itself, probably is not sufficient to explain all variations in distribution and local absence of Diglossini in other parts of the Andes. It probably will still be necessary to involve such factors as density of vegetation — quite apart from humidity — and type of regions in which populations occur. Viz Belvia where populations of Diglossini seem to be dense, and from

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

May 18, 1965
Region of Ponce

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

Hear what sound like Aten twitters

Hear Colibri here definitely seems to be Scan (see purple mountain-tanager displaying and warbling nearby.

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 another genus.) Another Scan, definite.

Scans seem to be very common here.

They are quite ignoring the numerous tasty flowers in the neighborhood.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

7:20 a.m. Area of low but very thick scrub, with lots of small clusters of pink Pentstemon, slightly below road. Two Aten flitting about. Feeding on Pentstemons and other flowers. Usually not together. Once, one lands one foot from the other. The approached bird does TV (two times BU). Apparently silent. The other bird flies off.

Aten 2 of type Pentstemon, slightly below road

Part of the time, there also is a Scan (definite) present in area. Scan territories seem to overlap Aten and CC territories completely here. At one time, the Scan was only 10 ft from one of the Atens. Then it followed the Aten for some

Scan Aten CC

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

Jean — Jeans still vocalizing and displaying vigorously 7:33. They would appear to be in breeding condition here now!

Alter ♂ — 7:35. Single Alter perches erected, 4 ft up, and utters several long phrases. Rapid Twitters NOD.

Alter CC — Songs of Alters and CC's seem to be as similar here as in Quito region

7:40. Same Alter back same place. Singing as before Then shoots up. And suddenly performs extreme TV Apparently there is another bird around somewhere. But I don't see it. Then the Alter relaxes

Alter — Eventually flies off

Are there Alters coming in to breeding condition?

Jean — Single postures of Alter bird apparently unretaliated. No belly-flashes. Jeans seem to be ignoring Pan flashes. (Attitude this may be true throughout the Andes.

Alter — Same Alter 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.

Alter ♀ — One Alter chases the other furiously. Chase is prolonged Then one comes back and sings in usual place

Alter — Territory of Alter here is very large At least 300 ft on diameter, 200 ft in the other. Population cannot be dense here.

Sean Ater

Ater on of the Sean three nests small trees and shrubs with Ater territory quite frequently, it does not seem to favor the same trees and bushes.

Sean Ater

7:57. Aha! Sean appears, just above low shrub. Ater flies to it coming from site 30-40 ft away. Lands on branch about 1 ft - 9 inches away from Sean, Sean immediately hovers right above Ater's head Sean 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 Sean lunging forward with head & bill. Wings are slightly spread (appear to be twitched). Then Ater flies up toward Sean. Brief aerial dispute. Ater perches again, Sean hovers over its head again. Then Sean 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) broke lunging, aerial perch. Now, the long pinions seem to have slight tra ce terminal R or, at least, hoarse "r-er"

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

Sean Ater

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

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 can recall, Ater and Sean vocalizations overlapped at random

Ater

8:19. Heard Whitethroat singing. Obscure, yellow-faced. No Ag-Sef vocalizations audible at the time.

Ater Ad6

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

Alter Sean

4 or 5 long phrases. All phrases rapid twitters, definitely without R. Then the bird flies away into low scrub. There were no Scans audible during the period. After Song. Alter Song(s) recalled immediately before and after! (Scan vocalizations both cases long undeterminate series harsh "Chuk" or "Chup" Notes.) Was this just coincidence???

Alter Scan

8:38. Again Alter back mid phase Uttering Songs without R's. NOD. Again, Scans are silent at the time! But Songs of Alter do overlap one Long Substantial phrase in distance.

Alter shuts up. A few seconds later, hear Scan "twitter". Then "two utters" are the rapid series of notes which Scans seem to give in answering one another.) Scan sounds coming from area far away from singing Alter. Then I hear long series harsh "Chuk" Notes. (This series may be the Scan equivalent of territorial "Song".) Then everything is silent for a while.

Alter Scan

Then Alter sings a couple of phrases. Stops. Immediately a nearby Scan utters a few "Song" "Chuk" Notes. Stops. Immediately Alter utters a few more phrases. Stops. Immediately Scan utters more "Chuk"s. Stops. Immediately Alter sings again. Stops. General quiet.

So it does look as if mutual stimulation Song is effective with Scan — Alter relationship!!!!!!

8:45. Alter sings a few more phrases. NOD. And no Scan audible at the time! But Alter Song does overlap Catamenia Song in distance.

It looks as if this may be (another) case where Scan is a full fledged member of the Deglamin social complex.

Alter Scan

Now are more Alters are uttering "Chuk"s in distance. Alter Sings nearby. At this time, there seems to be complete overlap!

Alter 209

8:52. Another even a little further away read Another Alter.

Alter Sings and alone. Region fairly tall thick wood growth. Bird feeding white cup shaped flowers. Alter sings. All phrases short Twitters without R's. NOD. No Plutetant or Sean audible. Then bird flies away. Sings again a few minutes later. Then Sean sings overlaps Sean "chuk"s in distance. Then Alter shuts up. Immediately, Sean begins to utter "chuk"s nearby. Shuts up. Alter sings again. At first, nothing else audible. Then Sean begins to utter "chuk"s not too far away. Song overlaps. Then Alter shuts up. Sean continues. Then during next minute or so, Alter utters a few more phrases at irregular intervals. While Sean continues. Complete overlaps. So Sean can begin singing while Alter is singing — and Alter can begin while Sean is singing.

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

Again, Alter sings while Sean, 100 yds away, is uttering "chuk" Notes

9:18. Several Seans singing vigorously. No Alters audible (allho I know that there is at least one present in neighborhood.

9:35. See several Seans feeding same species of white flowers that Alter Sean fed on earlier.

9:45. See party CC is on ridge. Then is seen where CC's have been seen with nufunchas But now the CC are definitely alone 4-6 ft up. The 2 birds do not stay close together. Usually at least 20 ft apart. One utters Sean utters when landing by itself. One Twitter might be transcribed as.

"Ta-ta-see ta-ta-see-ee-yer." Uttered very rapidly

Sean 1:17 On an uphill in direction in which CC is now moving. See Yellow-footed Plutetant 2 ft up in bush. How many of Plutetants. Don't see CC's, but they must have joined and passed Plutetants earlier. Then 1:23 see 3 nufunchas in low scrub 40 ft away. Plutetants Sean and follow nufunchas Group goes down hill thru low scrub. Then I see that there is at

1st least W/ CC with group. Following. Probably pair has been with group all the time. Also is undoubtedly same group seen yesterday. It seems to be very restricted! Now see that there is a single cyanocephala with group. Also following. All birds quiet. 2-4 ft up.

1st

On way down hill, get another (very poor) view of same flock. Still includes Whitetants and cyanocephala. Cyanocephala flies away. No one follows.

Leaving 10.20 a.m.

COMMENTS:

I. Although I did not see much fighting between Diglossa and auriculates 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 are mated 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 slowly; (c) and/or the songs of the other species are uttered very frequently (i.e. the Diglossa has become thoroughly familiar with them).

And all my observations tend to confirm the hypothesis that mutual inhibition of song works best when species are moderately motivated. At very high intensities, the species cannot "contain" themselves

and overlapping occurs. At mid, low-intensities of motivation, the species pow "cavalers" — and (again) overlapping occurs.

III Hes afternoon I worked in area on banks of Cauca near Popayán. I saw a Scan Tiere (definite) Hes means that the presumed Scans I saw a few days ago in mud-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, Scans certainly are rare. The habitat preference(s) of Scans do, in fact, seem to be much more similar to those of nos Diglossini than to those of most other hummingbirds

I have yet to see a BS along banks of Cauca. This would support the hypothesis that territorial BS's and Scans do not overlap in such areas. (Although both species seem to be so rare that the apparent absence of overlap may be an artifact of the brevity of my observations.)

May 19, 1965
Pigeon's Furnace

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

Various sub-oscine and Ocnth sounds Then one burst of what may be Scan song 5:27. Shuts up immediately. Then I hear lots of Otur songs. From normal areas. Neighbors overlapping.

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

The Otur I am listening to now are not the same individuals he

Alter
and yesterday.

Alters seem to pay no attention to Mixed and sub-oscine sounds. Cont
inue fugues no matter how noisy the latter are.

5:33. One Militant sang uttered while Alters are in full chorus.
Complete overlap. Alters continue. Many Militants sing again, twice.
Again complete overlaps. Then Alter shuts up. Militant sings again. No
overlap. Shuts up. Alter sings again. Shuts up. Militant sings. Alter
sings again. Partial overlap. Then both Alter and Militant sing off and
on at irregular intervals. Lots of partial and complete overlaps. As far as
I can tell, the 2 types are sung at random by any one another. Neither
stimulating nor inhibiting one another.

Alter
There seem to be a lot of Alters around here. I am certainly hearing
more than I have seen often. Also at least several Militants singing di
fferent areas Presumably 2 or 3 pairs.

5:44. I have yet to hear any songs which I recognize as Or
any other type phrases.

Heavy set Scen-type Quitters 5:46. Overlapping both Alters
and Militants. Then hear Scen song (i.e. indeterminate notes "clunk" Ho
wever distance. Overlapping both Alter and Militant songs. Then both Alter
and Militant shut up. Scen continues for a few seconds. Then shuts up.
Then another Scen begins to sing Alone for some seconds. Then Militant
utters one phrase Complete overlap. Militant shuts up. Scen continues

Scen
First Scen vocal display 5:49.
First Attempted Mixed Song 5:50.
Absolutely no Alter song now. But I do hear one R 3 or 4
5:51. Attempted Mixed Song. In Alter, Militant, or Scen Scen

Sean
so audible at the time. Then Scans begin to sing. Partial overlap Attaquites shuts up. Scans continue.

Well — at least there is some "segregation of song" here. Except for the Atten — Whitetail relationship!

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

Sec mule Atten feeding alone on usual white feathers.

6:01 Now only Scans are audible.

It is a lot colder today than yesterday!

Scans silent 6:03. And I can hear Attaquites 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 Attaquites sings a number of Whistle songs. shuts up. Whitetail sings. shuts up. Attaquites sings again. Then Whitetail and Attaquites alternate phrases in quite regular fashion. They certainly are being very scrupulous toward one another. Then both shut up.

Then Scan begins to sing! shuts up. Attaquites sings again.

It is really quite incredible, but it looks as if Atten is the only one of my species here which is not much affected by mutual song substitution!!!

Attaquites shuts up. Scan sings again.

Result area where Atten - Scan dispute was yesterday 6:15 a.m.

Scan singing and performing aerial displays. Don't see Atten. Scan shuts up. Then I see Atten flutting through woods. Then Atten sings usual phrase! Then Scan sings again. Large overlap Scan shuts up. Atten continues. Shuts up.

Cloud cover increasing 6:22.

Scan singing again. The favorite song perch of the Scans is approximately 100 yds from the song perch of the Atten. (And so far, today, the "rain

ges" of the Ators and Scau here have not overlapped!)

Scau 215 Scau still singing quite steadily c. 28. Then Ator appears usual long perch. Just sits there silently while Scau continues to sing. Then Scau stops, for a second. Immediately Ator utters 1 long phrase. Then Scau resumes singing. But Ator continues also. Utters several phrases. Complete overlaps. Ator shuts up. Scau continues. Shuts up.

It is turning cold and windy, now - c. 33

Scau 216 Scau singing again. Then Ator flies up to usual long perch. Sits there for some minutes, quite silently, while Scau continues singing. Then flies down into scrub.

Scau See 3 Scaus chasing one another furiously. Lots of harsh twitters

Going to move on down road c. 7:40 a.m.

Lots of Scaus still singing all over the place c. 7:46

7:00. Wind is so strong now that all the Ators seem to have taken cover. But Scaus are still vocalizing and displaying vigorously. Then I hear Whitethroat utter two long phrases, separately, just as intervals when Scaus are silent. Again. Then two, the Whitethroat began while Scau was still singing. But Scau shut up immediately. Little overlap. Then Whitethroat shut up. Scau resumed singing immediately.

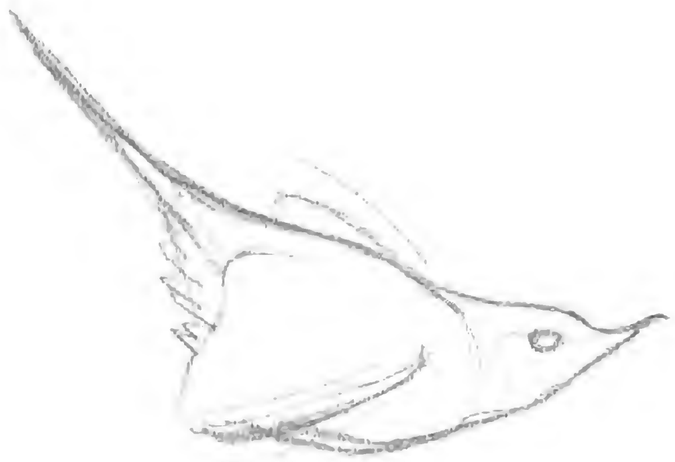
7:15 Come to area of allotment gardens - like scrub more small pastures

Ator 217 Scau See single Ator alone feeding usual white flowers. Utters 1 long phrase, while eating, else is silent. Then flies off. Then Scau starts singing nearby.

Wind better, and it is getting warmer, 7:35.

Everything except Scaus very quiet now.

Ator 219 7:50. Rainham where CL - rufescens flock seen every day. See 2 Ators flitting about. Lots of R's, with more on the distant terminal fences.



Bill dark or opened only very slightly.

Ater

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. Body feathers probably fluffed, but probably not extremely. ♀ I think that the bird at least 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 ✓

Then the singing bird shot 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 Audean Sparrow. Flowing down hill, there same region of low scattered scrub. All birds very quiet. Sparrow on ground. Others ranging 1-5 ft up. Ater apparently stays with flock for only a few seconds, then disappears. Sparrow also disappears soon. Then cyanocephala flies away. Definitely not followed by anybody. But flock continues moving downhill. For a time, at least, CC's definitely 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!)

Thus unidentified new flocks I have been seeing in this area every day. It seems to be at least semi-permanent. Undoubtedly, I have now seen three birds at various sites over an expanse of at least several hundred yards square. If they are not associating with one another simply because they are always feeding on exactly the same plant.)

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

While with flock, the CC pulsed insects off leaves, and also got nectar from lavender radiation flowers (very common here — but I have not seen either Atlis or Icaris feed on them)

There were lots of Icaris not far from the flock at various times, but none of them showed any tendency to approach and/or attack any of the members of the flock. Continued singing and aerial displays as usual.

8:40. Seen shining bright and weather beautiful in general

Atlis still singing and displaying vigorously.

It is now obvious, I think, that Atlis and Icaris do not usually dispute with one another here, at this time of year. I have now seen a quetzal as well as I know am inducted by both species, without seeing fights. It would appear that Atlis-Icaris relations here are not very greatly different from these relations in the Quito area.

8:47. Just slightly down hill. Come across 2 Ad's. Feeding in scattered bushes of the melastome with lavender flowers. 3-4 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 utters (s) twittery subsong, alone. Not too rapid. Quite musical. Different phrases could be transcribed as follows: "Sa-ta-see-ta-ta-see-ta-ta-see-ta-ta-see-yee"

"Ja-ta-nee ta-ta-nee ta-ta-nee" "Ja-ta-see ta-ta-nee ta-ta-see-ee-Sir,-yoo"
D.E. basically composed of triplets.

Then was nothing else audible while these phrases were uttered. Then the A's move on and fall silent. Within a few seconds, Scaup resume singing. And then an Alter, not too far up hill, utters 2 or 3 long phrases. Completely overlapped by Scaup songs. Scaup finally shuts up. Then Whitetail sings one phrase. No overlap.

Alter 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 Scaup. The swoops were not accompanied by characteristic Scaup vocalizations. This is the area where Cinnamon was seen a few days ago. I suggest that Cinnamon was the aggressor during this incident.

9:05. Whitetail sings while all other birds are silent. Then shuts up. Then both Scaup & Alter sing. Complete overlap. Shut up. Whitetail sings again. Shuts up. Scaup sings again. This sort of behavior seems to be very stereotyped here now.

Undoubtedly, the Alter, Scaup, CC, and Whitetail territories all seem to be completely overlapping here.

9:15 a.m. See mixed flock. Probably pretty much as before. 2 Yellow-rumped Whitetarts, 5-15 ft up in trees of "hedge". Cyanocephala ↓ ——→ Whitetarts. 2 Alters also ↓ ——→ Whitetarts. 1 Alter ↓ ——→ Whitetarts. 1 Scaly Mouth (!) ↓ ——→ group.

Alters stay with group for some time. Feeding quite close to one another, at times, with no obvious sign of hostility. But once one supplants the other with R-3a3a.

Undoubtedly, all the Alters I have seen in this area have been in adult

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

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 Punce

Arounic 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
Punce – Tijeras

Going further along road to Tijeras and Nueva this morning. Eastern side of mountain. Mostly humid main western side. Arounic area scrub and forest 2825 m, 9225 ft, 5:55 a.m. Weather good. Only a little cloud.

Blank 6:12. See Black Diglossa flitting by low in second growth scrub

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

fol 7:12 Near unmistakable Laf long way of low second growth scrub, interspersed with marsh-pasture. Not far from where mixed flock seen earlier. No other diglossa or Mitrestart audible at the time

fol 19 Back to area where first mixed flock seen 8:20 Light rain. Saw single Laf alone. Low in emitted petit scrub

plumage.

Dalo-Rand now reminds which may have been suffumelia in low-now (mean this last flock but) never actual, saw the birds.

226 9:35 a.m. Antler area. Low-mist-edge highway. Several alone W Merced ground by an elaeva Jones public, semi-dental. Affleron Elac min does not follow.

Flight now starting 9:40. Leaving 7:45 a.m.

NOTES AND COMMENTS:

Alen. I forgot to mention that the Alen which performed TV the morning did so while facing away from its opponent (or partner). I.E. the pattern appeared to be "designed" to reveal conspicuous white tail coverts. In this subspecies, of course, the white tail coverts are colored the same as the rest of the plumage. But they are different colored in another subspecies, i.e. carbonaria s.o. I think that it is quite likely that the TV pattern originated as a form which was colored more like Carbo than like Alen. If so, the TV (and associated visual displays) may be displacement, i.e. in process of disappearance, in Alen. This might help to explain why the Alens 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 Alen. At least one individual observed, and probably more, appeared to have a very slight trace of gray on the rump!

II. After thinking things over, I have come to the conclusion that there is a permanent ecological segregation among Anglemus (and associated forms) of this region. It is true that there are 3 species of Anglemus (Rad, Cy, Alen) in the area I worked in part, but only 2 (Rad & Cy) are

Alen
Rad
Cy

Ag Zuelle HO

Men here Ag Sengungi distant Dig otter diglossus on substrate and ibis. 2nd Men see Ag. 15 ft up in small tree thick scrub edge river. And three are 2024 Yellow bellies in same tree Ag 1 ft away. No significant height between species. All silent now. Men & me that there are a lot of other birds in scrub 2 Bd below-tree. Including 102 Adaptates (relatives, very dark underwatts).

21st Thread last to view 8:30 a.m. IIIIIIII 4567

As far as I know I was able to determine so far this morning, there is only 1 Ag and 1 Laf there. And three territories were not overlapping. Diglossini seem to be rare here — presumably simply because it is no very humid here.

8.40 Catch glimpse same group further down stream. Ag and Yell overlap, together in small tree. Ag 1 ft ⟶ Yellow belly.

Rain stopping 8:45 a.m.

Leaving 8:55 a.m.

Men worked in various other areas at lower elevations

NOTES:

I. The last Laf seen with the last mixed flock was in an area which looked perfect for the Albs of Munchique. Perhaps Albs and Laf are nearly mutually exclusive.

II. At no time this morning did I have any overlaps between Ag, Laf, or Substratus songs. This may be correlated with the fact that both Diglossus, at least, seem to be relatively rare in the areas visited this morning. It must be easier to prevent overlapping of songs when populations are sparse than when they are dense.

III although both a Laf and a Ag were seen with the last mixed flock this morning, I am not sure that they were with flock simultaneously. I.E. I am not certain that the territories of the 2 birds ever

Appel.

May 22, 1965
Ujenas

Going to work in area where Aquaimus – Pyrrula – Tanager a nigro-viridis was yesterday morning. Arrive 5:30 a.m. Just getting light. Cloudy.

Hear just song which may be Yellow-faced Flycatcher 5.43. No other glaucus audible at the time.

SEE TODAY'S NOTES GENERAL MIXED FLOCKS

Arrive area where last big mixed flock (with Laf, Lutti, and Cg) was seen yesterday. Cloudy. No rain. Just below fog level. 9:30 a.m.

Hear or see 1 Albi with flock. Obviously largely same flock seen yesterday, in almost exactly same place, but it does not, apparently, include Laf, Cg, or Luttis.

My observations this morning do not prove that this Albi's territory or range overlaps those of the local Laf or Cg, but they do indicate that it is at least adjacent (borders meeting) to the latter.

According to my recollection, this is the first time I have seen Laf and Albis in same area and environment.

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

C. or Caprimulgei n. C.) Presumably flowers and insects under trees are different from those in the open. (This is, in fact, quite obvious — even to my ignorant eye.)

Note that Cyo were the only Diglossinae seen near Tejeras. Apparently quite common there. Were evidence that the local Diglossa 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 Cyo alone. Yes, my 1962 notes in the northern part of this cordillera.)

May 23, 1765
Puente-Tejeras

Going to work same place where I was yesterday. Arrive 5:30 a.m. Just starting to get light. Rain + fog!

There is some bird noise already. Thrush and sub-oscines. Can-pus t-twee that may be Atlapetes 5:38. Buf. Then perhaps a buf quality of A. atricapillus DC.

Lots of bird noise 5:45 a.m.

Lots of R's 5:47. Probably all fly catchers.

Birds moving around active, and still warbling frequently 5:55. Light is too bad to permit identification, but it is obvious that mixed flocks have not been formed yet.

Near first watch Muteciat song 5:58. Buf. No diglossine and the Men another plus a few minutes later. Again no diglossine audible. Men more Muteciat songs. Seconds 20-25 ft up in isolated tree. Two Atl chatters. Also Both fly-by. One attempted flycatcher sally but it be

Merced Diglossia, May 23, 1965, II (42)

surprised if the Whitetants here are feeding now.

Now getting lighter 6:03

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

7:19. Hear what sound like Cg songs in distance. No other Diglossia or Whitetant audible at the time (Whitetants have been "muted" out of the area with enormous mixed flock.) Cg sings and Cg a few phrases. Then shuts up.

After 12 7:55. See small black Diglossa fly across road. Near where Allo was seen yesterday. This also is not far from where second large mixed flock seen a few minutes earlier. This flock included Cg. It is interesting that Allo did not join. Are Allos less likely to join flocks than Cg or Xanthura?

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

May 24, 1965
Merced - Tijeras

Going to work same place as yesterday. Arrive 5:25 a.m. Also foggy! Cold! And still very dark

6:10. Hear high thin Diglossa in distance. Sort of "tsli-tsli-tsli-seeeee-ee-ee-yoo". Possibly diglossine? (This is area where Cg seen yesterday) Or possibly wren??? Only a few phrases. No other Diglossa, Whitetant, or Allapetes audible at the time.

Now hear first Whitetant song 6:12. No overlap. Again only a couple of phrases.

Also observed Wilsonia pusilla simultaneously. See one, apparently a low, 30 ft up in tall tree. Seen shut up.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

9:55 Foggy now. Cloud cover getting heavier. Getting warmer. Mere faint but unmistakable smell of Raf doing up hill. Nothing else audible at time so there are at least 2 Raf in the area. (See also below).

Often in large mixed flocks, including Setto, Raf, and Cy (described in mixed flock notes)

I have not yet 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 dig Corvina — unlike the tanagers, finches, and warblers — have remained hidden.) But my tentative impressions are as follows:

I. Raf(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 Raf(s) and Cy(s), at least, this last point would seem to be conclusive. I.E. individuals can not encounter territorial rivals frequently.

Setto probably are relatively common (for Setto).

II. Setto ranges (with flocks) certainly overlaps those of all 3 Diglossa spp.

III. Today's observations prove conclusively that Setto compete with Raf(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 Setto being largely arboreal

IV. It is interesting that the Diglossa spp. here have been seen

very little apart from mixed flocks. This might suggest that they are associated with mixed flocks more or less all the time. I rather doubt this, however. I think that they probably are resident on territories, and appear when mixed flocks are present simply because that is the only time when they come out of their "hiding" places (presumably to "escort" the flocks).

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

Qfs I certainly have seen only 1 Albi. A or.

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

If there is only 1 individual of either one or both species, its territory or home range must be very large. I certainly have seen Laf(s) and Cy(s) on both sides of area where Albi was seen. Thus, if there is only one individual of either Laf and/or Cy, its (their) territory(ies) must overlap that of the Albi completely. If there are two individuals of either Laf and/or Cy, they may have separate territories on either side of the Albi territory. In which case, there may be little or no Albi-Laf and/or Albi-Cy territorial overlap.

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

VI How the 4 species seem to encounter any other pair to form. (Possibly Cy and Laf sometimes are not far apart, when both are associated with the same mixed flock.) I haven't been able to determine if this is because one species retreats before another and/or one species refrains from approaching another.

VII How the local Diglossini, or the local Yellow-faced Whitestart

ts, is singing frequently now. Perhaps the o'Albi and the Lutts are not singing at all at this time of year. The songs of Laf (s), Cy (s), and Whi tetants apparently are not overlapping at all.

VIII. It has just struck me that D may have seen relatively more angle Cyp (as distinguished from pares) in the Central Cordillera than anywhere else in the Andes. This is a point which must be checked very carefully!

May 25, 1965
Papagayo

Going to work on area near town where both CC's and Scan were seen a couple of weeks ago. Arrive 5:18 a.m. Still quite dark. Big parts cloudy.

(y) Hear just two Lutts which may be by BG 5:45 a.m. Coming from 2 directions. Quite long. Thin bands about 1 sp.

BG Small hummingbirds, feeding on Quiva flowers. Also fighting among themselves.

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

See single BG singing. 15-20 ft up on small tree. Phrases extremely variable in length. Started something like "Ja ta ta ta ta zee-eh". Longer phrases with lots of "Ja"s. Some with sub-terminal R. A couple of long phrases without any sense of repetition — somewhat reminiscent of double phrases of Florida birds. This BG then shuts up and flies away.

Hummingbirds (other) present, feeding on Quiva flowers.

but I have been able to identify most of them yet.

6:47. Mean what probably are more BG plumes in distance. Not overlapping anything of interest.

6.55. See single beam above Parallel upward, silent, top dead tree. Pleiones. Mist floats on adjacent Grass-flowers. Mts in about 150 yds from where a beam was seen a couple of weeks ago. I have not seen BG's in this particular area. Beam eventually flies away.

7:16. See a pair of CYR's, definitely above, definitely feeding on Grass-flowers. Have must be a lot of competition for these flowers!

7.30 See what may possibly be a beam flying and perching in tree about 50 yds from where BG's seen a couple of weeks ago. Silent. No display.

7:35. See what appears to be ♀ Barn. Silent. 15 ft up in tree 25 ft from where BG flew earlier this morning. NOD. Bird disappears almost immediately.

7:58. See BG flying upward to top tier quite near where presumed beam seen a couple of weeks ago. Silent plumes. NOD. No hummingbirds near.

Leaving 8:05 a.m.

This morning's observations would suggest that BG's and beams (and Bares, 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 (usually).

REMARK. Zebrawood has collected the local WCC's (the white-capped form) at or just above 7 ft (probably in the exact same place where I have made some observations). These WCC's were in a mixed flock, which also included Blue-Black (and possibly Parzudaki).

NOTE: According to Schwarz, the generic name of the "Gaur" is Bos. Apparently, there are several species.

Central Cordillera Colombia (64)

Mixed Dyglossia, I July 17, 1965
Piedras Blancas

Arrive 8050 ft 6:00 a.m. Area low-moderately thick scrub. Apparently native

Hear what sound like Abi R's in distance.

Then see and hear songs by Blue Dyglossa. All songs phrases essentially similar "feee seee seee nrrryoo". Sung loud pushed exposed 20 ft up top conifer. Ordinary oligonal posture. Tail depressed conspicuously beginning each "feee". Intro Note. Bird apparently is Coer. Apparently none of its phrases overlap with Abi-type R's.

Lots of humming bird sounds around. Not a species I recognize 6:20. No Dyglossas audible when hummingbirds in full song.

Then hear some songs in distance which might be Mixed-tart or Dyglossa. 2 or 3 phrases.

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 above. Hitting then scrub 3-6 ft above ground. Eating red berries in "ordinary" way, i.e. chewing — not pecking and sucking like Up on Pico de Espejo near Merida. Utters long phrases in intervals. Songs more or less as before. But somewhat more variable than with only 2 Intro Notes "feeee seeee". Measuring ten then variable in length and complexity, but all comparatively short. Overlapping hummingbird sounds at random, but nothing else. Then bird shuts up. Flies away.

Coer
Alb

Also hear more Coer type songs distance Also 1 Alb-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.

Alb 30 6:45. A few feet further along road, single Alb flies from one side of road to the other, silent and alone. Vegetation here overhead identical with that of areas where Coer seen.

31 Then see single Atlapetes rufinucha same type song, soft further on. Above. Utters a couple of SW-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.

Alb 7 Everything, but hummingbirds silent 7:02 a.m.

Further along road, same type vegetation, hear and see what appear to be Colibri displays. Species not identified.

Alb Also see lots and lots of single dusky Thrushes, and pairs, quite alone, from time to time

Drive along road to another area, a mile or so away. Vegetation similar, but some taller native trees present.

Hear what may be unidentant in distance. Presumably Mute-fronted or Mute-spectacled or related type. Sof-like songs. No diglossia audible or visible at the time.

Then everything very quiet.

33 7:30. Flock a pair of Basileuterus - Types from low bamboo-

scrub edge of road. Poecile nigrocristatus loud SHN's. Disappear immediately. Hey! Humberto Alvarez sees tanager in tree 40 ft away.
7:4 Poecile Blue-Black silent flies off. Poecile was not associated w the Basileuterus-types.

Very cold and windy now

Men go on at least 5 miles further down road. Reach area
8100 ft 8:15 a.m.

Catch glimpse of what is probably Blue Diglossa, probably flitting thru thick low scrub near pines. Silent and alone.

Everything very quiet. And there seem to be remarkably few birds of any species around! (See comments below).

Back to first area 9:15. Still cold and windy

Alvarez catches glimpse of 1 Albi in thick scrub. About 15 yards from where Coer seen earlier. Silent and alone.

Hummingbirds still prevalent.

9:30 a.m. See single ♂ Albi. Silent and alone. In bush 2 ft up. Between 2 notes where Coer (contact same individual Coer) seen earlier this morning. 9?. There is at last some territorial overlap of the two species here NOD while the Albi is audible. Albi flies away almost immediately.

9:39 Men coming out 9:50 And there is a burst of Albi-type K's in the neighborhood. No other diglossine audible or visible at the time.

Albis seem to be quite common here.

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

Then see single ♀ Albi, 1½ ft up in thick scrub. Silent and alone.

NOTE: The Albs now today have not been in scrub-under tall tr
Albs ees. This is not surprising, in a way, as tall trees are very scarce and sca
ttered here.

fundamentally — although the Con(s) has (have) been seen in
Albs Con among high trees — they certainly are not separated from Albes by comp
lete or perfect stratification. The Con seen feeding on berries certainly
was low and in what appears to be perfect, typical Alb habitat here

Albs A few more Albi songs 10:05 a.m. NOD.

Leaving 10:20 a.m.

SUMMARY AND COMMENT:

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

The vegetation here is rather distinctive. Mostly thick scrub of moderate height. Perhaps not as thick as some scrub-just below the Jacaranda 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 - Alb 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 Alb and Cocos would support the theory that the area is very humid. This color is what I have been told to, always.)

Possibly extreme humidity is the reason why carbonaria

s.l. is rare here (as well as in the northern part of the Western Cordillera). But, if so, why is it that buenaventura is the local subspecies ??? Mixed, an historical accident ??? (The range of D. lafresnayei glaucosoma may also be relevant in this connection — altho I don't see exactly how.)

The general situation in the forest area visited this morning may be summarized as follows. Only 2 species present. Albigula Coer. Albis common. Coers less common (population much less dense). At least partial overlap in tones of the 2 species. Two indications exist inter specific hostility. Mutual inhibition of song appears to be perfect. (The local Albigula almost certainly involved in this mutual song inhibition. As far as I could tell this morning, its songs did not overlap those of either Albis or Coers.)

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

July 18, 1965
Santa Elena

Across one of the trails where I worked in 1962, 8300 ft, 5:25 a.m. Just starting to get light. Quite a lot of bird sounds. Appears to be largely Andean Sparrows

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

(Single Albi alone, several Ags in mixed flocks)

The assemblage of Diglossas here is very reminiscent of the corresponding assemblage at Mucubaji. In both regions, Albis and Ags are comparatively common (the Albis being essentially non-migratory while the Ags associate with mixed flocks relatively frequently). Coers are very scarce

for alb, and both caribouvia s.l. and Cafresnayei s.l. are rec. rare or abs
ent. Both these assemblages also resemble the assemblage on the Tara
loues (which seems to differ only in lacking deers).

These types of Diglossa faunas obviously are "marginal."
Probably one of the reasons why these faunas are impoverished in the
"extra" humidity of the regions in which they occur.

But humidity, by itself, is not a sufficient explanation. I don't
think that Humbique, the Tamaloues, and the northern part of the Cen
tral Cordillera really are more humid than parts of Peruvia (or the Cordi
llera de Huánuco) where other species of Diglossa (also) occur.

Probably the crucial factor is a combination of humidity and rel
atively little land at very high elevations (say, above 7000 ft).

Probably such species as caribouvia s.l. and Cafresnayei s.l.
cannot survive at relatively low elevations during particularly unfav
orable (i.e. particularly humid?) years. But they can survive at rela
tively high elevations at such times. Thus, wherever there is a relatively
large amount of high altitude land available, the populations of caribo
uvia and Cafresnayei which survive periods of stress probably will be
relatively large and can "easily" re-invade lower elevations when more
favorable conditions return. When the amount of high land is small,
however, the surviving populations may be so small that they may
become extinct "by accident", and/or be so altered (e.g. reduced vari
ability 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 Hum
bique and the Tamaloues in lacking (or almost lacking) Conirostrum

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

July 19, 1965
Boquerón de Palmitas

Arrive area 7750 ft 5:35 a.m. Just getting light. Miscellaneous scrub around. Some bird movie. Largely Andean Sparrows.
SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS
(Cg as "obligate" commensals of mixed flocks)

(1)

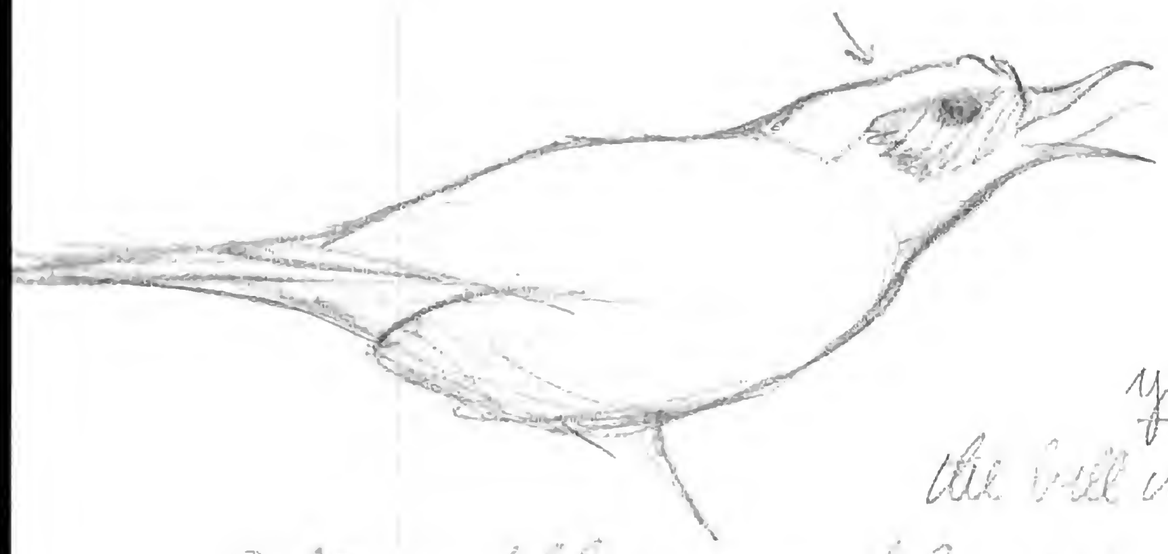
July 20, 1965
Finca "La Montaña"

Arrive 5:35 a.m. 7900 ft.
SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS
(Cg(s), Albi(s), and Scans.)

July 27, 1965
Finca "La Montaña"

Going to work when Sean, Cy, and Alb arrive last week
Arrive 5:40 a.m. Clear and cool
A few birds are audible when we arrive. But very few And
certainly no Diglossa or Sears
Then in fact very few but Sean "dunk" song, in distance, 5:48
Thrush Sean or nearby parula (title same or Fawcett last week)
altering "dunk" song 5:52 a.m. Long recital and overlapping distant
Sears at random.
Thrush Sean and display 5:55
5:57 Dust R's. Approximate area where Alb Fawcett was
R. R's actual, altered by Alb or Dives. Then more R's. All complete
by overlapped by "dunk" song pc/several Sears in neighborhood Then
R's stop 5:59. Then start again. All R's quite far off. Down hill on
path around gorette woods Then R's approach, stopped again.
Several Sears continue, full blast.
Sears here obviously prefer forest high perches, or more or less
isolated trees or clumps of trees, with relatively wide view of surrounding
open areas, for their songs and other displays. If they are not usually
in side the forest and scrub (where the Alb's and Cy presumably
usually are) Remember also the Sears in the Paramo at Frontino?
Sears still continuing to sing frequently, 6:21 a.m. NDWA.
Then I hear another R in distance. Again completely overlapped
by Sean "dunk" song.
6:30 a.m. At least 2 (up) with [illegible]

wood. One a few yards from where Ag seen last week. Ranging a-
10 ft up. One or (more probably) both singing frequently. All songs
composed of rapid Twitters, preceded by 2 or (more often) 4 Intro
Notes. Commonly: "Tut tut tut-tut" [illegible]
Song given from unrivaled diagonal-horizontal posture.



Front part of crown sometimes
depicted "ruffled", but this app
ears to be largely "accidental".
More important, the tongue is always
upward during the Twitter. (Mouth
the bill is kept wide open throughout the Twitter
But mandibles presumably move a little with the notes.)

All these songs appear to be "Greeting" and/or "Courting" calls.
It is interesting that they include Intro Notes, altho (or in spite of the
fact) that the two birds usually are close together.

All the Ag songs are complete, overlapped by "Chuck" songs of
several Scouts. But more of the Scouts are very close. At least 50 y
ards away.

Up more quickly thru vegetation — apparently not feeding —
and then disappear from view.

At one time, there certainly was a third bird near these Ag's
About 6 ft up. Unfortunately, I couldn't identify it. It might have
been a third Ag

6:55 a.m. There is a medium-small green hummingbird feeding
on the purple flowers favored by Albo. Apparently no 2 present at
[illegible] at the time

6:56 Many more R's. Again completely overlapped by Scout "Ch

ule "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 "avoidance".

Then, suddenly, a ♂ Albi appears in bush quite close to me. Feeding on small purple flowers. Quite high. 8–15 ft up. This individual is quite silent throughout. But the R's I have been hearing continue, in distance. The ♂ Albi seems to ignore them completely.

While the ♂ Albi is feeding, I can hear a hummingbird flying around 15 or 20 ft away. Presumably, the medium small green species. The ♂ Albi seems to ignore this bird, too — for some minutes — but then suddenly swoops down and attacks and chases it furiously. Apparently drives the hummingbird completely out of the neighborhood. Then the ♂ Albi hops around low in bush, only a few inches above ground. Then disappears.

The attack by the ♂ Albi was quite silent.

As soon as the ♂ Albi disappears, the medium small green hummingbird comes back! Feeds and perches quite unconcernedly. Certainly not afraid of me!

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 ♀!!! Furiously aggressive. Then supplant also silent. ♀ flies away and disappears. ♂ apparently follows

A second later, a single Cy appears! Solitary and alone. Feeds on green and orange fruit in tree c. 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 quickly. Color-less sight of hummingbird.

During these various appearances here, the Cys, Allens, 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. Slightly curved. Plumage generally dark, rather dull green all over. Primaries brownish. Tiny white spot behind eye. Adult ♀ or juvenile? Away flying. ??>>

7:28. Three Cys (re) appear in bushes of scrub zone 30-40 ft away. Ranging 2-12 ft up. Perhaps insects off leaves. Also feeding on berries. One individual apparently also pecks at some purple flowers. Some trees favored by Allens and hummingbird. Thus in this fruiting 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 Allens and the medium-small green hummingbird. Two of these Cys are quite bright, while the third is dull. Obviously a family group. All three birds staying quite close together. Utter lots of "Jui" notes, in singlets or doublets, but no long songs.

Then I lose sight of the birds. But a few minutes later, I hear several unmistakable Cy songs in neighborhood. Again, coup-

letely overlapped by Scau "Chuk" Long.

NOTE: At no time, when the Allen, Ags, or medium-small green hummingbird have been here, have there been any Scaus closely. All Scaus up on perches violated were 50-100 yds away. I am not sure that the Scaus have ever been able to see the other birds

7:48. Here Ag Songs overlapped by Scau "Chuk" Songs. Ags gradually come closer. Then I see the ♂ Allen again, feeding on clusters tubular red flowers. Perhaps 30 ft from the Ags. Also a medium-small green hummingbird in area. Perhaps 30 ft from ♂ Allen But somewhat closer to Ags.

Ags continue to advance. And ♂ Allen moves off. Apparently retreating before Ags (altho they have been no obvious hostility toward it.

Dominance hierarchy here presumably is Ag > Allen > medium-small green hummingbird.

Then I see right of the medium-small green hummingbird. A few seconds later, another hummingbird, apparently Scau, flies through area. Very rapidly. Does not feed. Ignores Ag approximately 5-10 ft away.

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

Overlaps Ag and Scau Songs here partially, incompletely, and on

It also looks as if the Scaus here are not members of the local diglossic complex in any way

Scaus singing "Chuk" Songs appear to be NDWA

Allo MSGH 175

8:15 a.m. ♀ Allo lands. Feeds on purple flowers 10 ft up. Then medium small green hummingbird appears. Flies to same bush as ♀ Allo starts to feed on flowers. Immediately, the ♀ Allo supplants the hummingbird. Both birds quite silent. Hummingbird retreats. Then flies back toward same bush with purple flowers. Just about this time, Cg (s) begin to sing again. About 20-30 ft away. And ♀ Allo just disappears. Presumably moves off. Hummingbird stays around for a few seconds. Then also disappears. Cgs shut up. (Are none of these Cg songs provoked by presence other species ???)

Cg Sean Allo

All these Cg songs were completely overlapped by Sean "Chuck" songs in distance.

8:27 a.m. ♂ Allo back for buffet. Feeding on purple flowers 8-10 ft up. Quite silent.

Allos here certainly do not seem to be on breeding (or at least courting) mood now!

Allo MSGH

Then medium-small green hummingbird back. Flies around near ♂ Allo. Perhaps 5 ft away. ♂ Allo seems to ignore it. But hummingbird flies away after only a few seconds. ♂ Allo remains for some minutes. Feeding purple flowers 3-6 ft up. Then also disappears.

Sean still singing 8:38 a.m.

Sean Allo 96

♂ Allo back again a few minutes later. Alone and still silent. Feeding purple flowers small bushes.

Allo (♂)

The way in which the ♂ Allo keeps reappearing at frequent intervals would suggest that its territory must be rather small. The fact that the Cgs appear less frequently would suggest that their territory is larger than that of the ♂ Allo.

Allen The Allens and Anna have certainly do not appear to be stratified (N) in any way. (Of course, the scrub and wood here is so low that there is hardly room for stratification.)

Hell! well! well! 7:45 a.m. Single Scan (identification definite) appears very close by. No displays or other hummingbird around at the time. Scan yards at least a minute, defends feeding on purple flowers, same species favored by Allens and medium-small green hummingbird (MSGH). Quite silent. The particular bush in which it is feeding is not one of the ones which the Allens visit most frequently, but I definitely have seen ♂ Allen, one or more Anna, and MSGH in it occasionally.

MSGH Then MSGH suddenly appears. Swoops at, and chases, Scan. Scan Attack is silent Scan leaves without resistance!!! (Alike the MSGH is very appreciably smaller than it is).

Are the Scans less aggressive here than in some other parts of the Allens??? Or is this particular area "marginal" for the local Scan????

Scan Scan begins hovering, circling & buzz, and separated by moments long periods of silence 8:55 a.m. Probably the Scans also are past the peak of display now.

I wonder why there are no Allen tenants in this area? The area looks as if it could support at least a small population.

Allen 9:08 a.m. ♂ Allen back. Silent and alone. Feeding purple flowers & up. Then there is now loud of warped battle encounter between the ♂ Allen and a hummingbird, probably MSGH. Hummingbird retreats, the aggressor. Apparently swoops at ♂ Allen. The latter holds its ground, does turn from it. And the hummingbird flies

off and disappears.

Leaving myself 9:20 a.m.

Some fairly full utterings "chuk" songs in distance.

COMMENTS:

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

As a general rule, I suppose that overt hostility between different species is directly and positively correlated with the amount of competition for food between them. Thus, the MSG-H tend to feed on the purple flowers favored by Albs more frequently than do the Cyp; and, therefore, it fights with the Albs more frequently than do the Cyp.

July 26, 1965
Region of Belmira

Working around area called El Hierbal Ca. 8400 ft.
SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS
(Both Brun and Cy with mixed flocks. In low scrub D. Brun territories are at least partly overlapping here too. And both may be "semi-communals" here.)

7:35 a.m. Same area. Most of flock seems to have moved on. But Cy has remained behind. Now uttering many long flights. In scattered mature-looking trees above scrub. Usually 15-30 ft up. All phrases composed of "Jet" Intro Notes followed by long, rapid, Jerkless Twitters. Both sexes alone. Songs uttered from unperched semi-

horizontal postures. Seen once in a while, one or more Yellow-faces in di
Maine also utter(s) long phrases. Between phrases of Cy. No overlap.

9:55 a.m. Flights below fruit flock area. Catbi glimpse Colibri sp.
feeding pink flowers in scrub Also hear buff wattle "chuk" long. Same
as little Scan.

Scan

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

July 29, 1965
Region of Beluwa

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 Tuina. Best presumed Scan in
isolated tree not singing yet.

First Yellow-face songs heard 5:55 a.m. Below where fruit
flock was yesterday. NOWA

No singing where first presumed Scan seen and heard yesterday
Arrive area fruit flock 5:58 a.m. Cy singing in bush & fly up.
US76 Long phrases. Twitters with "Jut" Intro Notes. Yellow-face(s) also
singing in distance. Long phrases of the two types generally alternate; bu
t there are at least 2 or 3 partial overlaps. Cy beginning a phrase before
Yellow-face is completed through. Also Yellow-face(s) beginning phrases bef
ore Cy is completed through.

US Then Cy shuts up. Flies away. Yellow-faces continue.
One Attapetes White-lore counted between Yellow-face bouts

es. No answer. Many Yellowfaces shut up.

Many are more Cy plumage in distance. NODWA. Many more Yellow
faces NODWA. Many more Adapteles Multe longs NODWA. Many more Yell
owfaces. NODWA. Many silence 6:05 a.m. Many more Yellowfaces long
at irregular intervals NODWA.

6:30 a.m. Area around flock Cau bear Cy dengung in distance.
NODWA. Others only 3 or 4 plumages. Many shuts up.

It would appear that Cy is the dominant species of Dyglamini
here — just as in other parts of the northern section of the Central Cordillera

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

Continually further on. 8600 ft. 7:05 a.m. See single Brown. Brown
Yet particularly good view of it. Looks just like Browns near Paramo 179
Frontino, except that mountains are smaller, thinner — perhaps even
partially interrupted. (Also notice that when the bird faces me directly, its Infra brant is "framed" by a stripe of light gray on either side.)
This bird cannot be same individual seen yesterday. When first see
n, it was sitting 3 ft up, on exposed perch, in scrub. Looking from
side to side. Also uttering "Sit" Utters at quite regular, rapid, inter
vals. Continues doing this for some time. The general effect is quite
DC-like !!! Many goes to feed on purple bird. Like flowers.
Defoliated quite above

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

Brem
Alba

Are Brem and Alba mutually exclusive ??? Vg both Frontin
o and the southern Andes.

NOTE: The doglomm population as a whole seems to be relat
ively very sparse here. Even less dense than near Bicarno Frontino.

7:23. About 20 yds further on. Hear Cg utterings typical longs,
with Intro Notes, in distance. NODWA About 3 phrases. Then silence.
Then some Yellow-face longs same general area. NODWA.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS —
Cg attaching and probably chasing Brem !!!

8:50 a.m. On way back down hill. Area where record flocks seen
yesterday. Hear Cg lunging in distance. NODWA.

Further down, I notice that none of the presumed Icaros is lung
ing

Leaving 9:18 a.m.

Mural Diglossum. I August 1, 1965
Pereira

Going to work this morning in the forest plaza I worked a few minutes ago — i.e. the plaza where Cy, Ater, Raf, and I all assembled together.

Arrive 5:31 a.m. Still quite dark. Cold. Sky partly cloudy. Some fog in distance, coming up from Marcopati.

Everything very quiet at dawn.

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS

6:08. See green hummingbird, presumably no. VIII, feeding on purple tubular Vaccinium (wind Andean type). Lowering & curving puts bill to base of green tubular part of the flower — not into purple petals!!

VIII

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 fewgs in distance which probably are uttered by ill-defined Miniatarts. NODWA

6:18. Hear what probably is Lafresnaya — in very great distance. NODWA. Hear it twice. Then one more Yellow-faced Grassq. NODWA. Hear it twice again.

6:23. Hear nice sidle utter. Silent. 12 ft up in second growth tree in scrub. Not very far from swamp (but invisible) Pseudotriccus

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 Eq song phrases up hill. Again NODWA. Then some Yellow-face song downhill. NODWA. Then near Laf song downhill NODWA

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

NOTE: I have yet to see a single Cuniculcon Hummingbird here today. This would suggest that all or most individuals of this 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 "permitted" on Dyglossus — and thus can utilize a greater range of flowers than the Cuniculcons ???

8:15 a.m. Slightly down hill. Hear there Laf-Ater fight seen a couple of months ago. Hear lots of Dyglossus Twitters. Then after phrase. All Twitters brief and formless. Not particularly "trilling". Then with trace of sub-terminal R. No Intro Notes. Singing bird is perched 4 ft up in bush; but unfortunately cannot be identified from where I stand because of intervening vegetation. But presumably Ater. This certainly is within the known territory of an Ater. And quite close to where I saw the first Ater this morning.

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

3 ; Eventually this bird flies away and shuts up. Then I hear some
buffalo long about 100 yards away. No response
4 ✓ 8:43. Some more Laf long. NODWA
Leaving 9:25 a.m.
COMMENT: I saw, and heard, surprisingly little of Cy this
morning. Does this mean that the local Cy's are "migratory," like
the local Cinnamon Hummingbirds ??? If so, it means that
the only nectar-eating birds left here, now, are the nectar-eating
Doglomms (i.e. Laf and Ater) and the hummingbirds "parasitic" upon
them (i.e. no VIII).

August 2, 1965
Ponce'

Across area where Laf and (probably) Cy were the only non-
communal Doglomms 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.
1st Heard first Laf long 6:01 a.m. NODWA. Then silence. Then some
Doubly long distance. Then silence again.
Quite a lot of Doubly long 6:05. Big at least 2 individuals.
Probably more.
6:20 a.m. Heard first Yellow-face longs NODWA.
VIII 6:28. See a single hummingbird VIII perched soft-up in bush on
south.
6:30-6:35. Quite a lot more Yellow-face longs. NODWA But

the Yellowface songs do seem to overlap Swainson's songs completely at (It is my general impression that none of the Wilsonia's are imitated by any Parula Warbler songs whatever.)

6:40. More Saf songs. NODWA

6:55. I have now heard several more buffmatties of both Saf and Yellowface songs. No overlaps. And NODWA

SEE ALSO TODAY'S NOTES ON GENERAL MIXED FLOCKS.

COMMENT: I believe that I said — somewhere in my notes of observations at the Finca "La Montaña" — that the amount of overt hostility between species of the Diglossa "vocal complex" probably is directly proportional to the amount of competition for food, between them. Of course, there probably are exceptions to this general rule. Particularly when one species is parasitic upon another. (E.g. see my discussion of hummingbird VIII in my notes of yesterday.)

August 3 1765
Region of Ponce

Going to work where Albi seen a couple of months ago.

Arrive 5:50 a.m. Cloudy. Just getting light. Everything quiet

SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS

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

9:34. Catch very brief glimpse of Albi. Silent. Alone. 15 ft up on ratter isolated tree in second growth area edge road. About 100 yds from where Albi seen a couple of months ago.

COMMENT: Apparently the Dyglossa are not breeding anywhere in this region now!

August 4, 1965
Region of Ruitoque

Going to work at a finca called "Canaan", just above the town of Ruitoque Viejo. Not very far from where Ater - Scan reactions were observed a couple of months ago:

Across bar of road leading up to house 5:35 a.m. Moderately clear. Fairly warm. Altitude 2725 m., 8925 ft.

Road house. Working in garden full of the orange tubular flowers, growing in clusters, which are so common around Bogota.

Canm Also full of Cinnamon Hummingbirds. And at last one Black Dyglossa, presumably Ater. SEE TODAY'S NOTES ON GENERAL MIXED FLOCKS.

Canm Cinnamons quite noisy. Then, 6:01, hear Yellow-fau Songs. Only a few phrases. NODWA.

Canm Cinnamons fighting among themselves. Aerial chases.

This garden is not very close to any large patches of forest. Pasture surrounded by sparse hedge. Next pasture

Ater 6:05, see Ater (again). Identification dispute. Feeding orange flowers may help. Silent. Alone. Apparently not molested by Cinnamons. Actually, the part of the garden visited by the Ater does not seem to be visited by the Cinnamons very frequently.

Canm See several single feeding females alone.

Canm Cinnamons are stealing their bills up into centers of the orange f

Commas. 9 E Men are not using Dyglossia habits

Men Yellow face Aten in distance c. 12 o'm. NODWA

Aten in Ates in Indigo across road from garden Cumamon co-

Aten mons and Aten mon et. Ates clean & meet for some seconds. Men

Aten flies away, Cumamon flies after Aten. Approach, battle close. Bat

does it not use close. 9 E Cumamon apparently reluctant to pro-

long attack

Aten flies up to front of garden where Cumamons are. Latest

Cumamons ! Salute, Cumamons leave without reentan-

ce ! Aten exit

Men have some more R-Zazas c:20. Men are at least two

Black Dyglossa here, R-Zazas seem to be scattered during battle among

the Dyglossas, rather than during Dyglossa-human-Cumamon encount-

ers ! Men more R-Zazas c:21

Both Black Dyglossas have new-era Ates. One supplants

the other shortly.

One Aten utters R (no Zaza) when flying over the other

The Cumamons seem to get out of the way when Ates approach

But then do they while Ates are still several feet away. And the "re-

treat" of the Cumamons is not particularly hurried or "panicky"

looking. Thus, these encounters can hardly be classified as "sup-

plants". But it does seem to be correct to say that the Cumamons sh-

ow a tendency to avoid the Ates !

Also, it would appear that the relations between Cumamon

s and Ates here now may be somewhat different from the relations be-

tween the same two species in March, even 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 noted that the Cinnamons have now-
Cinn on very aggressive among themselves.)

6:30. Lee Cinnamon and Ater perched out a foot apart. Both
Cinn Ater about. Then Cinnamon makes a tributed movement toward Ater. Steps.
Then Ater flies away.

6:37. Then Dubuna long distance.

The two Aters here are not standing close together. But they
Ater do sometimes occur only a few feet apart without overt hostility.
And they seem to have ranges (but not complete) overlapping home
ranges? I doubt that they must be mates - but obviously not in
breeding condition.

Both Aters show a tendency to keep to the parts of the garden
adjacent 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 seen consider-
able time since) Blue headed R-3 3a pattern.) Again, another
silent intra-specific supplant.

6:47. Ice Black Diglossa feeding on orange flowers near bed
of Lobelia quite carbonara I.C. in shape, but definitely has human
dexterities (of medium size). Presumably, Ice. Or could it be Human
???? I certainly saw at least one unidentified Ater in same area earlier
But there is no Ater closely now.

Then me long & vigorous fight between Cinnamon and Bla
ck Diglossa — apparently Ater. Both birds aggressive Ater feeding
on orange flowers. Cinnamon forages at Ater at least 11 times. Sur-

ops vigorous. Pruned home. Amauron sometimes comes within a foot
or so of a couch of the Ater. Engages in a while, Ater stops feeding, to
chase and/or supplant the Amauron (supplants occur when Amau
ron has perched between Ater.) Some of the chases accompan
ied by R. Ito 3 or 3x. Other chases, and supplants, silent. Amauron si
lent throughout.

Ater Then I see an adult Ater chasing a juvenile of same species
(Identification of both dependent) & exit

Ater Then, 6:55, see an adult Ater fly away when presumed Laf
Laf appears 5 ft away. Both birds silent

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

Ater 7:10 a.m. see both presumed Laf and adult Ater perched qui
Laf te 3-4 ft apart in same bush of hedge. Then presumed Laf supplants
adult Ater. Both birds silent during supplant study. But then adu
lt Ater utters R or 2 flies away!

Ater Then see another buff-but vigorous Ater - Amauron displace
(Amau Flees or less a "draw"

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

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

Ater These groups have might almost be called a "flock" of Diglos
Laf as — like the much larger groups at the Prune Eucalypts near Bogta

7:25 a.m. I have now got several more glimpses of the "pre
Laf sumed" Laf. It is barely Laf - like in proportions. And the humeral

patches defrutta are blued.

Of the bird really in Laf, I'm uttering that it has not sung this morning. Probably it will sing Laf around here. And hopefully toward Ates does not seem to be enough to provoke song by Laf — at least here and now-

Both Ates and Laf defrutta are feeding at the bases of the corollas of the orange flowers. And the Cinnamons defrutta are not using Dyglossa holes. One wonders if the Cinnamons and Dyglossas are getting nectar from different parts of the same flowers.

Thus it, I think, a remarkably low-altitude for Laf. Presumably this individual comes here as a result of the attraction of a superabundant food source.

Incidentally, I have seen Cinnamons in all the areas where the Laf has been seen. But I have not yet seen any overt reaction between the 2 species. The Cinnamons probably are avoiding the Laf, whereas they are avoiding the Ates

NOTE. In spite of the Ates-Laf encounters noted above, the Ates continue are avoiding the Laf most of the time

Cinnamons still fighting among themselves 7:35 a-m

One adult Ates repeatedly supplants another. Both birds identical

7:45. Go over to another side of the garden. Here also is bordered by "hedge". But this "hedge" really is upper edge of a wooded ravine. Trees here fairly tall (20 ft) and thick

See apparently single Ay feeding in one of these trees right at the edge of the garden. 6 - 12 ft up. Apparently alone. (Also I saw here B. nigrocentatus not too far away) Ay utters a number of short phrases. Long rapid chatter with "shit" intermixed. Also

by perhaps insects off leaves. Also tries to eat some small green berries. But these seem to be too hard to cope with. Then ay eventually moves off. Down range.

At no time did this ay show any interest in the garden. Ays apparently do not like dark orange flowers. (This may also be further evidence that ays do not cut into corollas of flowers. Perhaps they cannot ???)

After ay leaves, a small green hummingbird appears in tree. Apparently smaller than VIII Erasemeus spp.?

Then are several Cinnamons 6-10 ft away during whole period ay 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. Then 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 Parana Trontino.)

Violet-back eventually moves on. Then, 8:06 a.m., a single adult ater flies into same tree. Silent. Then. Also feeds on small yellow flowers. Perhaps exactly the same individual flowers as the Violet-back ended. (These flowers are far too small to be cut into. Bird just sticks bill into center.)

So perhaps the Violet-back is like the swan — in far as it may be used as an "indicator" of the probable presence of Coeligena s.l. in the area.

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

There certainly are some tall isolated and semi-isolated trees scattered about in the neighborhood. Presumably it is just that the right species of flowers are not present.

8:20 a.m. Violet-back back. Same tree. Supplanted by Cinnamon. Flies off without resistance. Cinnamon also leaves.

Then Alder flies in (again). Feeds amid yellow flowers. Not attacked by local Cinnamons.

Ranges or territories of Cy and Alder here are at least adjacent.

Then Violet back flies back into tree with small yellow flowers. Alder still there. The two birds feed 5 ft apart. Apparently ignoring one another. Then Violet-back flies off. (Violet-back is mated another Alder. Perhaps it is too small to be intimating ???)

Then Alder also leaves.

A few minutes later, 8:31 a.m., hear Cy song phrases nearby. Twitters with Intro Notes. Lots and lots of phrases. Singing bird(s) invisible at first. But certainly in tree right next to the one with small yellow-flowers visited by Alder and Violet-back ("VB")

After the Cy songs have continued for a few seconds, Alder flies (back) into tree with small yellow-flowers. About 2 hops around in an excited manner. At least some times, it must be within 5 ft of the Cy(s). At the same time, a male Cinnamon appears. Flits about the tree in which the Cys are. Does not attack Alder. Apparently does not try to deliver actual attack on Cys either. Then Alder 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 male Laf, 1 ft up, at the base of the tree from which the Cy songs are coming. (Thus must be a different individual from the one seen

(Lef Cinn VB) earlier today.) Silent Approaches, ignores, and is ignored by, both the Cinnamon and the VB. Lef disappears again almost immediately. Cinnamon & VB approach, move off a few seconds later

Then, I see that there are 3 Cyo present in the area!!!

(Cy) All 3 fly into tree with small yellow flowers!!! Hopping about very actively indeed. Approaches, disputing. Possibly a single bird "pursuing" a pair. Territorial boundary dispute? One or more birds singing furiously. (Interestingly enough, all or most songs with Outer Notes.) And one bird repeatedly does slight Belly-fluffing. Here or less common

(Cy)

I think that the bird that does this Belly-fluffing is the most aggressive individual. Gradually driving the other two out of it.

I don't know if the Belly fluffing is accompanied by songs or not.

Then all 3 Cyo fly away.

(Cy Cinn VB Lef) Approach, back a few minutes later. Birds invisible. But lots of songs in neighborhood. And, immediately, after, VB, and Cinnamon all fly back into trees. Silent. Ignore one another. Then Cyo approach, move off. And so do Cinn, VB, and Cinnamon!!! (Probably scattered in different directions.)

Obviously, after, Lef, VB and Cinnamon are "attracted" by sight and/or sound of Cyo. And, although I did not see any actual fights during these particular "encounters", it seems quite probable that the "attraction" is eventually hostile.

Obviously, territories or ranges of Ater, Laf, VB and Cumanensis must overlap that (or those) of the Cy at least partly.

And the Ater, Laf, and Cumanensis (and probably VB) approach the Cy(s) closely at least occasionally.

Ater back feeding in tree with yellow flowers 9:05 a.m. Silent. Apparently alone.

Then see Ater in tree where Cy recently fed, earlier this morning. The territories of Ater and Cy(s) here must be at least locally overlapping.

Then see 2 Ater feeding clumps small white flowers slightly down hill. One adult. One juvenile. Only a foot or so apart. Silent. Then adult attacks juv. Juvenile crouches. Adult on top of juvenile. Pecking downward. Adult apparently silent. Juvenile responds to attack by spreading its wings and S-wing them vigorously. At same time, utters lots of hoarse, harsh "Znarh" or "Znaarh" notes. Apart from the Wing-S, the juvenile's postures and movements seem to be unretaliated. (Actually, the posturing is been trying to defend itself. Probably pecking back at adult.) Then feeble steps. Juvenile probably has flown away.

The Wing-S probably should be classified as "Appeasement" rather than "Food-begging".

9:21. Hear Dubusia singing again in distance.

Saw Ater back in same bush. Feeding on small white flowers. Adult seems to have gone now.

Saw Cynanes, and is generally, small green hummingbird with rufous tail feeding 6" - 1' away

It is getting cloudy and cooler now. 9:25 a.m.

9.31. Near one Ater R-3a3a in neighborhood. Then one Ater Juvenile. Can't see circumstances. Then see single adult Ater, alone, perched no more than 6" from where (accord) Laf seen earlier.

Back to other side of garden 9.38 a.m. Cicadas still on and. Still fighting among themselves. But quieter now than earlier.

See single Laf and single Ater about 5 ft apart in hedge.

Both silent. No obvious hostility.

See single Cinnamon hovering over head of feeding Ater. Then Cinnamon flies off without actually attacking.

9.46. Again see Cinnamon hovering over head of adult Ater. Repeatedly. One 3"-4" above Ater. Ater makes inhibited attack movements. But Ater ignores it completely.

Light sprinkle of rain beginning 9:50 a.m.

Probably only 1 or 2 Aters here now. Certainly no trace of any "flock".

NOTES:

The orange flowers here are Kniphofia uvaria, Hook.

All references to Aters, without qualifying adjectives, in the above pages, refer to apparently adult individuals (this is the general principle followed throughout all my field notes).

SUMMARY: On the basis of this morning's observations the interspecific relations within the local "diglossine sexual complex" might be summarized as follows.

Laf × Ater. Juveniles at least broadly overlapping. Ater's show a definite tendency to avoid Laf's. But individuals of the two species sometimes do occur fairly close together. Quite possibly, Laf's have no tendency to avoid Aters. If so, the occasion

al encounters between the two species must be due to "lapses" by Afers. Probably usually (not necessarily always) failures to move away "in time"? Sometimes, Lafs and Afers seem to ignore one another when close together. At other times (more often?), Laf(s) supplants and/or chases Afers. Afers do not resist

Laf × Cy. Territories at least partly overlapping. Laf apparently attracted by sight and/or sound of Cys. Attraction probably eventually hostile.

Laf × Cunanuon. Territories completely overlapping. But I have yet to see an overt reaction between individuals of the two species

Laf × VB. Territories at least adjoining. No reaction seen between the two species.

Afer × Cy. Territories at least partly overlapping. Afer apparently attracted by sight and/or sound of Cys. Attraction probably eventually hostile.

Afer × Cunanuon. Territories completely overlapping. Lots of overt hostility between the two species. Sometimes Afer chases Cunanuon. Sometimes Cunanuon chases Afer. It is my impression that the Cunanuon is the more "active" partner in this relationship. Probably more likely to avoid Afer than Afer is likely to avoid it. Probably usually the initiator of overt fights. Possibly Afers seldom or never attack Cunanuons unless the latter attack first.)

Afer × VB. Territories at least broadly overlapping. Apparently no hostility between the two species.

Cy × Cunanuon. Territories at least partly overlapping. Cunanuon apparently attracted by sight and/or sound of Cys. At

traction probable, eventually beatific. (NOTE: Laf, Ater, and Cunn
mon all seem to bear the same relationship to Ag.)

Ag x VB. Territories at least adjacent VB's probably
attracted by sight and/or sound of Ags.

Cunnamon x VB. Territories at least partly overlapping.
VB Cunnamons frequently aggressive toward VB's.

COMMENTS:

Cunnamon may well be openly aggressive toward all oth
er nectarivorous spp. that it can attack, or chase, with relativ
e impunity.

Laf, Ater, & Cunnamon all compete with one another for
food. Probably competing very strongly now. Probably most indi
viduals of all three spp. prefer, or depend upon, Kuplophora
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 bantula s.l.? ?? And why are
there no Coers ???

The absence of bantula s.l. is particularly remarkable.
Much of the countryside on this western side of Pierce looks
very suitable for it. Open scrub. And lots of suitable flowers
(Remember that the Baris in Bogota seem to specialize on Kuplo
phora !!!). 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. (bautula s. l. certainly occur in some of the same regions as Glory, Flumen s, southern Bruno, and "Carbo" s.) Is bautula s.l. unsuccessful in competition with Ater, but successful in competition with all other forms of carbonaria s.l. ??? If so, why ???

I am quite baffled by the distribution of Coer. It also is absent from regions inhabited by Ater. But it does occur in one regions where bautula s.l. is absent (i.e. Manchique). And it is absent from some regions where bautula s.l. occurs (e.g. Norther n 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 Pucra 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 bautula s.l. here is another point of resemblance between the sigilarmis faunas of this region and the Quito region.

I was surprised to see no Cc's here today. The area looks fairly suitable for them. Certainly there are a couple of melastome bushes with lavender flowers on one side of the garden here. Is something during Cc's away from here ???

Certainly the Lafs and Ateos are not breeding here now. Probably the Amaurons 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
Furnace

Going to work in same place as yesterday. Avenue house time of 5:30 a.m. Still dark. Occasional light sprinkles of rain on way up; but sky looks largely clear.

Some miscellaneous bird sounds began 5:40 a.m. Also some cat-gut rain! But rain almost stopped 5:46.

Working in the part of the garden where Cys were seen yesterday.

Faint Cinnamon sounds 5:50 a.m. Then here some Ateopeles Whistle Songs in distance. NODWA. (Actually, there have been more bird sounds around here this morning — especially down in the woodland ravine — than in adjacent areas on previous days — this trip. Perhaps some birds here are in breeding condition? Or maybe their sounds are carried over to the ravine?)

Cinn

Sets of single Soots Thrushes as usual.

Near faint Yellow-face Songs in distance 5:55 a.m. Apparently NODWA. Brief singing phrase after phrase. Then several Yellow-faces singing. Still NODWA

Now going over to area where faint Laf. seen yesterday.

Cinn Black Amaurons seem less active and noisy today than yesterday.

Se faint Black Diglossas feeding on orange flowers 6:03.

Mono Yellow-fac Tanager in distance 6:05. NODWN

6:06 Two Aters perched 2-3ft up in bush which was partial
ly covered by leaf yesterday. Adult One individual repeatedly suppl
ants the other. Supplants alternate

Cinnamon Hummingbird near nest.

One Ater (again) repeatedly supplants another in hedge. Suppla
nts with R's and R-3a's.

Apparently, there are only two Aters (both adult) here near
just like yesterday morning at the same time. Also would suggest that
the other Aters seen yesterday, and the Jaf(s), spend the night some dis
tance away from the garden.

Ater attacks Cinnamon feeding on orange flowers. Attack adult
Cinnamon flees off without resistance. Also Ater feeds on same orange flo
wers briefly.

Wind coming up and it is getting colder now 6:21 a.m.

Cinnamons fighting among themselves. But not very vigorous.

Ater supplants Cinnamon. Supplant is adult. Cinnamon doesn't
resist.

Jaf back in favorite bush 6:27 a.m. Adult. Also feeds on orange
flowers. Ignores, and is ignored by, single adult Ater perched in bush
8-10 ft away.

Mono Yellow-fac Tanager in distance. NODWN

One Ater repeatedly supplants another in bush. One supplant
with R-3a-3a. Others adult

There seem to be many fewer insect (bristle) interactions between
the nectar-rose birds in the garden today than yesterday. Presumably the
one brief "shower" right at last sunset was enough to [illegible]

feeding!

6:35 a.m. Hour Yellow face lunges in distance. NODWA. Then I also hear Nodwa a lunging in distance.

Cinnamon flowers over head of Alter feeding on orange flowers.

Alter quite upset at Hour Cinnamon perches a few feet away. Then via one Alter supplants group of 3 Cinnamons! Supplant is silent.

6:44. Alter feeding orange flower. Cinnamon comes on flowers overhead. Alter upset at Cinnamon perches a ft away. Then, the same Cinnamon makes at least 3 vigorous, fierce swoops at the Alter swoops pivot home. Perhaps actual contact(s) made! Alter responds to swoops by stretching wings out horizontally. These responses are beautiful. But unidentified, a trace of "Butterfly Pattern" Wings appear by not Opened or waved. Whole dispute quite silent. Then Cinnamon flies away.

Also see Yellow feeding quite in distance. On orange flowers. A Alter birds seem to keep away from it.

One more stirring 6:45. Then none comes out (until 7:00 a.m.). Wind still increasing.

Alter supplants Cinnamon. Both birds silent

Back to arena where Alpha seen yesterday 7:00 a.m. Some Cinnamons around. Then VB appears and feeds on small yellow flowers. It is not attached by Cinnamons

Yellow face still lunging 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. Intermittent little "Beeps" sounds. Apparently also fighting among themselves. Very rapid aerial chases — almost impossible to follow

with the human eye.) In the course of these disputes, the VB's return pass through the tree in which Lys and Kaf were seen yesterday. Then then two trees or ranges do overlap those of the latter 2 species — at least partially.

After appears briefly in tree with small yellow flowers 7:20.

Then VB is absent.

There also seem to be several other species of small hummingbirds around here. All pretty or Cerge, green.

Back to other side of garden 7:40 Everything quiet. Then no one more disputes among the Cinnamons. They ignore an After feeding not very far away.

Observations interrupted while I get some coffee!

Back to Ayana 7:55.

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 Cinnamon on about 10 ft away.

Adult After feeding in bush with clumps small white flowers. Silent and alone. Then flies off.

Sun coming out again 8:05 a.m.

8.10. Now there is a small green hummingbird feeding on clumps small white flowers. After entomb, has a lot of competitors around here!

8:22. VB back tree with small yellow flowers. Attacked and supplanted by small greenish hummingbird.

Back to other side of garden. One Kaf, two Afers, and lots of Cinnamons around. All feeding on small flowers.

8:44. Laf supplants and chases Oter at least three times in re
peated succession. Both birds silent throughout. Next dispute began
when Laf flew to attack Oter approximately 8-10 ft away. As far as
I could tell, the Oter did nothing "provoke" to provoke the attack.

Amaui flies into forest Laf bush where Laf is not there.
The Amauis seem to be very careful to avoid the Laf

Amauu swoops at Oter 8:58. Both birds silent

9:10. One Oter repeatedly supplants another. & supplants with
R's, R-Zaza's, and R-Twitters!

Back to Ag side garden. See both adult and juvenile Oters feed
ing in bush with small white flowers. But not simultaneously.

Amauu perches in tree with small yellow flowers. Then single
Oter flies in. Feeds on flowers only a couple of feet from Amauu. The
two birds ignore one another.

Then I see 2 juv. Oters 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 Oters here may tend to conform our expect
ations of behavior which I thought I established near Quito. Juvs and adu
lts of Oter seem to associate with, or encounter, one another more frequen
tly than juvs and adults of any other form of Diglossa with which
I am familiar.

Remaining juvenile Oter in bush with white flowers repeatedl
y ignores tiny ground hummingbird feeding same flowers only a few
inches away. I.E. small birds do not provoke the hostility of Oters

9:35 a.m. Now a juv. and an adult Oter are both feeding in
bush with white flowers. No sign of overt hostility. Then adult flies

away.

Speak of the devil! Adult Ater repeatedly (at least 4 times) supplants and chases small green hummingbird. Ho Aters do not always refrain from attacking much smaller birds!

Ater

Then have outlined "Zone" "Nates in bush with white flower
Ater n. Catch glimpse of two birds flitting about. Adult Ater chasing juv
enile of same species?

Then see adult Ater feeding tree with yellow flowers. Silent and alone. Then single Fembird (?) flies into same tree. Lands about 6 ft from Ater. Silent. Fembird flies off. Ater does not follow.

Ater

VB Then VB lands in same tree. Feeds yellow flowers 6-8 ft fro
Ater m Ater. The two birds ignore one another. Ater flies off in one direction. VB in another.

Light rain again 9:45.

A few minutes later, both adult Ater and single VB back in tree
Ater VB with yellow flowers. Must have arrived almost or exactly simultaneously. Both silent. Again feeding 6-8 ft apart. Then VB flies away. Ater does not follow.

It has been my impression, both today and yesterday, that Ater and VB may have slight tendency to "synchronize" their visits to the tree. I.E. they are in the tree simultaneously somewhat more frequently than one might expect by chance alone — judging from the general amount of time they spend in the tree, compared with their time away from the tree. Possibly the sight of one feeding attracts the other. There is no reason to suppose that this attraction is hostile (although there is no reason to suppose that it could not be hostile either).

VB Ater

10:00 a.m. Now there are two Aters and two VB's in tree and

attentively! All 4-6 ft apart from one another. Then one VB chases the other. The latter leaves

Then I hear 1 Cy long phrase not too far away. NODWA

Both Ateles in tree with yellow flowers are adult.

One VB still in tree with both Ateles 10:05.

I suppose that the VB may secure a certain amount of protection by "associating" with Ateles. There are, for instance, several Cuniculus in the general area of this tree with yellow flowers. Some times perch on the tree itself or immediately adjacent to it. But they (usually) do not approach the tree very closely when the Ateles, 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 Ateles 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 Ateles 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 Ateles!

This may help to explain why VB's tend to occur in the same general area as Cuniculus i.e. — 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 Big Cuniculus have many forms/sizes.

The fact that Cys have been seen so rarely here is further

evidence that Ags have comparatively large terrestrics. (Parade the legs at this particular locality who are associating with nu xed feeds.)

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Ponce

Going to work same place today. Arrive at house 5:31 a.m. Moderately clear. Cool. Little wind (as yet).

Going to try to concentrate on VB - Ater - Cinnamon relations this morning - if possible.

A moderate amount of bird noise 5:40 a.m. Lots of mourning dove hooting bird noises. Market else where. 5:46

NOTE: In general, the bird noises around here seem to be less today than yesterday. I.E. none of yesterday's sounds probably were up resp ond to the rain.

Cinn 5:48. First Cinnamon sounds.

First Yellowfaced Tanager 5:51 a.m. NODWA.

Ater Cinn Mon Lion Ater R-3 area is on far side of garden.

Cinnamon flitting about in the vicinity of (but not actually on) the tree with small yellow flowers ("TI").

Still plenty of footy thrushes about.

VB Cinn 5:58. VB in TI. alone. No Cinnamon ("Cinn"). Then Cinn appears, perches in nearby bush, and VB disappears, more or less simultaneously.

for 6:01. Single Ref appears in nearby small bush. Alone. Flies off into garden.

VB Arr

6:04. VB back on T1. Alone. No Conn nearby. Then Conn comes, perches with orange flowers 10 ft away. VB does not react at all! Continues feeding. Conn flies away. No reaction. Then VB flies away. Into narrow thicket.

Alter Arr CC

Will! Will! Will! 6:07. Alter flies into T1. Alone. No Conn nearby. Then Auburn Sparrow ♀ ——→ Alter! Then Ag suddenly appears. Ag ♀ ——→ group. At one time, Alter & Ag only 3 ft (Sapsucker) apart. No reaction but thicket. Then Conn appears. Perches nearby in garden. No overt hostility. Then Alter, Ag, and Auburn Sparrow all disappear more or less simultaneously. Then Conn flies off.

CC Alter VB Conn

Then CC suddenly appears!!! Flies into T1. Alone. Feeds on small yellow flowers. Then Alter suddenly flies into T1. Also feeds on small yellow flowers! Alter and CC sometimes only 1-2 ft apart. No reaction between the two birds. Then Alter flies off. CC does not follow. Then VB flies into T1. Feeds yellow flowers 3-5 ft from CC. No reaction between species! Then Conn appears. Perches in garden 6 ft from T1. Shows no sign of hostility toward either VB or CC. VB flies off. CC does not follow. Conn flies off. CC eventually moves off too. But in same direction as Conn. But more or less in the direction that both Alter and VB went (further into the thicket).

CC VB Conn Ag Alter Aub Sp

CC terminates, or range contains, overlaps those of VB, Conn, Ag, Alter, and Aub Sp.

A few minutes later, see CC perching in adjacent tree. Appears actively picking insects off leaves. (Min in tree where Ag first seen a couple of days ago.) Conn perched 3-4 ft away. No reaction between the two birds. It is interesting that the CC has not been

attacked by Ann — especially as the two species are similar in color
ation.

Ann

Anns central au foglatus among themselves
Mon Yellow-face Solitys in distance. NODWA
Fee single maroon crested montane coturga. 15 ft up in tree e
dge running. Defunctes alone.

6:20 et seq. VB runts TI three times. Each time alone, at
first. Once, small green hummingbird (with white breast — presuma
bly ♀ 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. On
first, certain that the Ann did not appear in these circumstances be
cause it was hostile to VB, or wanted to "escort" the VB. It did not ev
en look at the VB.)

VB
?
(Ann

Then a single Cy flies into TI. VB immediately flies away into
adjacent tree! Obviously a reaction to the Cy! Cy flies off. VB goes
back into TI.

Cy
VB

6:30. Looks up to find both Ann and VB in TI. Feeding
4-6 ft apart. Then Ann appears. Attacks and chases Ann. Appar
ently ignores VB. Ann flies off. Ann in hot pursuit. VB continues to
feed peacefully. Then flies off too.

Ann
VB
Ann

6:41. Small green hummingbird in TI. Flies away immediately
when Ann flies in. Ann alone. Feeds. Flies off. Back a minute later.
Alone. Flies off. Ann attacks and chases Ann first as it takes off!
Both birds disappear. Ann back again a minute later alone. Fee
ds. Flies off.

Ann
?
Ann
Ann

6:47. Small gren hummingbird back TI. Alone flies off.
Back. Cannon appears. Lands on TI 2 ft from gren hummingbird.
Latter flies away. Cannon flies off in opposite direction
Ater flies into tree adjacent to TI. Lebat. Alone flies off a
gren

Sun rendering Ater area 6.52 a.m.

VB back to TI. Alone & Ater flies into tree. Apparently engaged in hostile chase. Ater then 6-8 ft from VB. Cannon appears. Hovers over the Ater. Ater flies away. Can goes in another direction Perches. Then VB flies off in still a third direction.

6:55. VB back TI. Lands. Can appears. Also lands in TI. 6 ft from VB. No overt reaction between the two species. Can flies off. VB continues to feed flies off. Small gren hummingbird ("SGH") appears in TI. Alone flies off.

Ater feeding in adjacent tree. Exactly where CC seen earlier. Apparently also pinching insects off leaves. 6:58. Alone is at least 1 Can flitting about the area, also pinching occasionally. Ca 10-15 ft from Ater. No reaction between the two birds. Then 2 are total the VB is back in TI. Feeding. The Can(s) is (are) just about the same distance from the VB as from the Ater. But there are no Can-VB reactions either! Then SGH flies into TI. VB and SGH appear to ignore one another, feeding 5-6 ft apart. Then gradually come closer together. Then there is a brief fight 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 TI. Just the same individual as the one seen feeding in adjacent tree (The latter is still there.) No reaction between Ater and either VB

or SGH Nor do any local Amis show any particular interest in the group in T1. After flies off. Nothing follows. Both VB and SGH disappear some minutes later.

NOTE: Amis apparently never feed on small yellow flowers of T1 tree (or other trees of same species). Also they are perfectly willing to perch in these trees

7:15 a.m. Look up to see single After in T1. Alone. Select Seeds flies off.

Dilluvia singing in distance 7:18.

7:19 a.m. VB back in T1. Feeds there steadily for a long time. There also are several Amis in the neighborhood. Very active. Frequently fighting among themselves. At least 5 times, Amis fly very close past the VB. These "approaches" do not seem to be responses to the VB itself. The Amis 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 "effective" supplants. The VB is forced to retreat a" to 2! And once 2 Amis land and fight on branch less than 1' from VB. They also "forces" VB to retreat.

One an SGH lands in T1 while VB is feeding. 6 ft away. No overt reaction between the two species. Then After lands. SGH flies away immediately. Apparently as response to After. After and VB feed 4-6 ft apart. No overt reaction between the two species. Then After flies off. VB does not follow.

During next few minutes there is some disputing between 2 or more Amis all over general neighborhood. Lots of R-3a 3a's. One, one After chases another from T1. Pair very close to VB. This also forces VB to retreat a little.

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VB eventually flies off.

A few minutes later, single Alter, alone, lands on T1. Feeds. Flies off.

7:38. Single SGH on T1. Alone. Feeds. Flies off.

Can hear more Alter disputes - lots more R3y3es — ai sound closer/louder. Alters in this round and along edge seem to be more aggressive among themselves now!

7:45. SGH back T1. Alone. Feeds. Flies off. Same thing again, a few minutes later.

Getting hot now, 7:55 a.m. And birds in general much less active than earlier

Then VB back T1. Alone. Feeds. Immediately, a Cmin comes. Perches on T1 3ft from VB. VB retreats a foot or so. Continues feeding. Cmin apparently not looking at VB just perching quietly. Then Cmin flies off. But, as it goes, it makes a small "detour" to fly right over head of VB. Possible, an intention movement of hovering, but not actual hovering. VB doesn't seem to react at all. And Cmin then flies off. VB leaves a few seconds later (when dog appears).

NOTE: I am beginning to think that Cmins approach T1 too frequently when VB is present for the reaction to be "coincidental". Even though Cmins have not attacked VB's this morning, and even though the Cmins do not seem to look at the VB's, I think that at least some of their approaches must be exerting.

8:01 a.m. Hear one unmistakable Alter/Junior far side of garden. NODWA. A few seconds later, hear Yellowface song not far off in marsh. NODWA.

Then see single Alter on T1. Alone. Preens and feeds. Flies off.

The VB(s) today certainly do not tend to go to T1 when Ater(s) is (are) there !!! (But I do have some indications that Aters may tend to go to T1 when VB is there !!!).

Well! Well! Well! More complications. 8:14. There is a Cunn sitting on tree adjacent to T1. Then VB flies into T1. Feeds. No reaction between Cunn and VB. Between sittings which could be an ultra cution monument of "exerting". (Cunn does dispute with other Cunns from time to time, however.) Then Ater flies into T1. Ater supplants VB!!! Both fly off. Then an SOH appears in T1. Feeds. Alone. Flies off just as Ater flies in. Ater feeds. Flies off. Immediately, the SOH comes back. Then the SOH is attacked and driven off by another hummingbird — I think a VB. Both birds disappear.

8:25 a.m. Ater back in T1. Silent. Alone. Feeds. Flies off. Same thing happens again a few minutes later.

8:36. Aha! VB flies into T1. Alone. Feeds. Then Cunn comes and defiantly swoops at VB. Swoop proved hoax. Both birds fly off.

A minute later, see Cunn chasing Ater in flight over garden. Cloud coming up 8:43 a.m.

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.

8:47. Adult Ater flies into T1. Alone. Feeds. Flies off. Immediately a VB flies into T1. Alone. Feeds. A Cunn appears. Flies closely VB. VB doesn't appear to react. Cunn flies on. VB continues feeding. Then also flies on.

A few minutes later, Ater (or) appears in T1. Alone. Silent

Feeds 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 lands almost immediately, silent. Alone. Cinn appears. Perches adjacent tree. Then SCH 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 pursuer near SCH — 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

tacks when a VB is present. (Probably Cinn's are similar to Aters with this respect.)

In spite of the fact that Aters compete with VB's, and may even attack them, VB's do derive some advantages from association with Aters. (1) VB's are not likely to be attacked by Cinn's when Aters are present. Many Cinn's probably are usually reluctant to approach the feeding tree if an Ater is present and, if they should approach in a hostile manner, they are more likely to direct their attack toward the Ater than toward the VB. (2) Similarly, VB's are less likely to be "disturbed" by Cinn's or the "normal course of their (Cinn) activities" when Aters are present than when they are absent. (3) The presence of Aters may tend to inhibit, or prevent, approaches by SOH's — another important competitor of VB.

II. As the frequency of overt inter-specific hostility in this area. On the whole, the area must be considered very open. At least the garden part of the area. The 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.

III. Many Diglossas often are garden birds in many areas. This may help to explain why they seldom or never are "integral" members of mixed flocks of tanagers, warblers, and finches. The latter are not garden birds.

IV. I am not sure that there is more than one Lafresnaya individual in this area. If there is only one, its territory or home range must

be relatively very large

ADDITION: Re point I above.

I have no real evidence to prove that VB's derive some benefit(s) from association with Acacia. Theoretically, this association might be advantageous if Ateles were more likely to attack Acacia than VB's. But I have no evidence that Ateles ever attack Acacia unless attacked first.

(I am not sure that there was any Acacia very close by when the Ateles supplanted the VB this morning. But there certainly were several Acacia not very far away!)