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An Annotated List of the Birds of Cerro Urutaní on the Border of Estado Bolívar, Venezuela, and Territorio Roraima, Brazil

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ABSTRACT

The avifauna of the subtropical forests on the summit of Cerro Urutaní, a previously uncollected isolated tableland or "tepui" of 1280 m. elevation on the Venezuelan-Brazilian border, is reported. A total of 82 species was collected in March and April 1977 during a fieldtrip sponsored by the Colección Ornitológica Phelps of Caracas, Venezuela, and joined by the American Museum of Natural History. Cerro Urutaní is near the middle of the east-west trending Sierra Pacaraima. This collection permitted the first analysis of the role

of the Sierra Pacaraima as an avenue of dispersal between the tepuis of the Gran Sabana on the east and the more isolated tepuis of Territorio Amazonas on the western side of the region. Geographic variation is analyzed for several Pantepui species (as defined by Mayr and Phelps, 1967) with several populations reidentified, and populations needing further study noted. Forty-four (51%) of the 82 species collected represent Pantepui species, although Cerro Urutaní is a relatively low tepui.

INTRODUCTION

The history of the ornithological explorations of the isolated peaks and tablelands or "tepuis" of southern Venezuela, the Pantepui region, was summarized by Mayr and Phelps (1967). The subtropical forest habitats on the tepuis are like isolated islands surrounded by the oceans of rainforest of the Orinoco and Amazon river lowlands. The avifauna of the

tepuis is depauperate in number of species in contrast to comparable habitats on the flanks of the Andes, but the Pantepui region is rich in endemic taxa. Mayr and Phelps (1967) noted that even with the 65-year history of ornithological research, much remained to be learned from the lesser known tepuis and many were unknown ornitholog-

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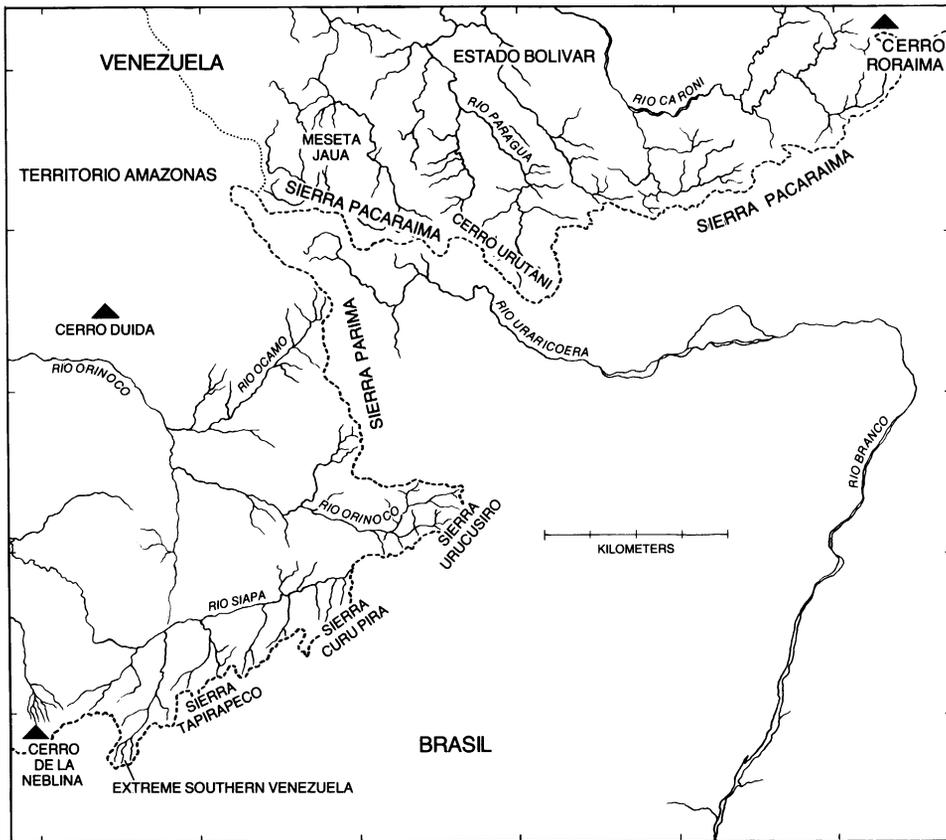


FIG. 2. Map of Sierra Pacaraima.

Cardona were all exceedingly helpful in facilitating work in the field.

The American Museum of Natural History Department of Ornithology expresses its appreciation for the invitation to participate in the Uritani fieldwork, for the support provided RWD by the Phelps Collection, and for the many courtesies of Sr. Ramón Aveldo H., Curator of the Collection, and his assistant Sr. Luis Pérez.

MATERIALS AND METHODS

Gilberto Pérez and Manuel Castro, collectors for the Phelps Collection, with the aid of Indian hunters, Estéban Neri and Mario La Costa Silva, collected on Cerro Uritani February 24 to March 13, 1977. Dickerman joined them for the period 9 to 13 March

when Pérez and Castro returned to Caracas, and Dickerman returned to the base camp. On March 24 Dickerman, Neri and La Costa Silva returned to the survey base camp on Cerro Uritani and collected there until April 3. On April 4 they hiked to the advanced work camp about 15 km. northwest at a slightly lower elevation in more tropical forests and worked there until April 7. The vast majority of birds were shot by the skilled hunters who daily ranged out 3 to 5 km. from the base camp. They routinely collected any species not previously taken on the Cerro and other species as directed. As an example of their skill, they selectively collected (without the use of field glasses) *Amazilia viridigaster* from a tall flowering tree in which it formed the minor element in a mixed aggregation of

five species of hummingbirds. Specimens prepared by Pérez and Castro are labeled "Urutaní, Cabeceras Río Paragua elev. 1365 m." Those prepared by Dickerman are labeled "Bolívar, Sierra Pacaraima, Cerro Urutaní, elev. 1270 (or 1150) m." The elevations 1270 and 1150 m. were provided by Heinz Cardona of the Dirección de Fronteras.

A total of 511 bird specimens of 82 species was prepared as study skins and 11 specimens were preserved in formalin. Unless noted, specimens were taken within walking distance of the base survey camp. Elevation at the base camp near the highest area on the Cerro was 1270 m. A few specimens as noted were taken at the advanced work camp at 1150 m. elevation.

Although the elevation of Cerro Urutaní is lower than many of the major tepuis of the region, the subtropical vegetation was typical of that found at medium elevations throughout the Pantepui region. It consisted of dwarf forests rich in mosses, lichens, bromeliads, and orchids with areas of canopy forests of medium height. These were interspersed with patches of a more open, scrubby ligneous vegetation. A few small streams were present in March at the end of the drier season. A partially flooded area was seen from the helicopter but unfortunately it was inaccessible from the few trails made by the survey teams.

Mayr and Phelps (1967) listed the 96 species they considered to be Pantepui taxa, i.e., zoogeographical taxa that are absent from surrounding lowlands or that have developed endemic taxa on one or more of the tepuis. Phelps (1977) noted *Coereba flaveola roraimae* should have been included, and we here suggest *Chlorostilbon mellisuga duidae* be added to the Pantepui taxa.

Because Cerro Urutaní is centrally located within the Pantepui region it was necessary to reevaluate the geographical variation found within the entire region of southern Venezuela for a number of species in order to identify to subspecies specimens in the present collection. Information that might aid in the interpretation of the biological importance of Cerro Urutaní (and thus the Sierra Pacaraima) or if it provides a better understanding of the geographic variation within a species, is included in this report.

Pantepui forms have been indicated with an asterisk in the Systematic List. Common names are those of Meyer de Schauensee and Phelps (1978).

SYSTEMATIC LIST

TINAMIDAE

Crypturellus soui soui. Little Tinamou. 1 F., largest ova 5 mm., March 30, 240 g.

ACCIPITRIDAE

Chondrohierax uncinatus uncinatus. Hooked-billed Kite. 1 M., 310 g.; 1 F., 350 g.

CRACIDAE

Ortalis motmot motmot. Little Chachalaca. 1 adult M., testes 6×19 mm., 455 g.; 1 immature M., 350 g.; 1 immature F., 330 g.

The three specimens were collected March 29 from what was presumably a family group. All three birds were in general molt.

Penelope jacquacu granti. Spix's Guan. 1 M., 1000 g.

This specimen is typical of *P. j. granti* in lacking all trace of rufescent on the belly and in its measurements of wing chord (287 mm.) and tail (290 mm.).

Aburria pipile cumanensis. Blue-throated Piping Guan. 2 M., 1 adult, testes 10×20 mm., 455 g.; 1 immature, general molt, both April 6.

This species, *Crax alector* and *Crax mitu* were shot for food by the border survey crews at the advanced work camp at 1150 m. elevation.

Crax alector erythrognatha. Black Guan. 1 adult F., ova not enlarged, April 5; 1 immature F.

PHASIANIDAE

Odontophorus sp. (cf. *gujanensis*). Wood-quail. 1 natal chick.

This chick, at most a few days old, was found on April 7 lying in a path near the advanced work camp.

COLUMBIDAE

**Columba fasciata roraimae*. Band-tailed Pigeon. 3 M., 1 = 349 g.; 2 F., 346 and 247 g.

Males collected in late February and in March had testes moderately enlarged. Two females taken February 25 had enlarged ovaries.

Leptoptila rufaxilla dubusi. Gray-fronted dove. 1 M., 295 g.; 1 F., 295 g.

We refer these specimens to the subspecies *L. r. dubusi* as they are essentially identical to recently taken specimens from Cerro Duida. Although we lack recently taken series of the nominate form, we consider the validity of *dubusi* dubious.

Geotrygon montana montana. Ruddy Quail-dove. 1 M., testes 9×17 mm., March 27, 120 g.

PSITTACIDAE

Ara chloroptera. Red-and-green Macaw. 1 F., ovary slightly enlarged March 25.

Pyrrhura picta picta. Painted Parakeet. 1 F., ovary not enlarged, April 4.

This female was taken from a pair that appeared highly territorial.

STRIGIDAE

**Otus guatemalae roraimae*. Vermiculated Screech-Owl. 1 M., 102 g.; 1 F., 100 g.

These specimens were shot within the base camp February 28 and March 1. Others were heard in late March calling about a half km. away.

STEATORNITHIDAE

Steatornis caripensis. Oilbird. 2 F., 440 and 486 g.; 1 formalin.

A colony of approximately 200 birds was nesting in a wet cave near the edge of the escarpment. The brood patch of one female caught March 8 was well developed, and at

least one corpus luteum was present in the ovary. The shells of recently hatched eggs were scattered on the accumulated mounts of palm nuts, but young could not be seen on the high ledges.

CAPRIMULGIDAE

**Caprimulgus whitelyi*. Roraiman Nightjar. 1 M., testes 6×9 mm., light head molt, March 28.

This bird was taken at late dusk when it landed on a low stump in the cleared helicopter landing area. One or two others were seen, but could not be collected. Calls were not heard.

APODIDAE

**Cypseloides phelpsi*. Tepui Swift. 2 M., 20 and 23 g.; 3 F., 19, 20, and 23 g.; 1 juvenile M., 21 g.

Two immature males (one labeled "juv.") of *C. phelpsi* in the Phelps Collection are similar to comparably aged *C. rutila*, but have all dark ventral feathers, including toes of the chin, edged with paler gray. This is in contrast to the immature plumage of *rutila* where the scalloping, when present, is restricted to the belly region.

**Aeronautes montivagus*. White-tipped Swift. 1 F., 21 g., ovary slightly enlarged.

Although this species is supposed to have white-tipped rectrices, only two of the 16 females in the Phelps Collection have well-marked white tipping on the tail; in four it is reduced, and in 10 it is entirely absent.

TROCHILIDAE

**Doryfera johannae guianensis*. Blue-fronted Lancebill. 15 M., 3–5 (4.4) g.; 6 F., 4–6 (4.7) g.

Four females, two of which have brilliant green feathers on the forehead, were sexed as males by the experienced preparator Manuel Castro. The females of this subspecies fox dramatically within a few years. One in the Phelps Collection collected on Cerro Neblina in 1970 is already distinctly browner, less gray on the ventral surface as compared with females from Cerro Urutaní, whereas the browning in specimens collected in the 1940s

is even more pronounced. No changes could be noted in dorsal coloration.

**Phaethornis bourcieri bourcieri*. Straight-billed Hermit. 4 M., 4, 4, and 5 g., testes not enlarged.

These four specimens all differ from the eastern Pantepui race *P. b. whitelyi* in having well-marked paler midthroat streakings, and grayer, less buffy underparts. They are the easternmost known specimens of the nominate subspecies. The lower mandible was noted to be "deep orange" and "amarillo ladrillo" (=deep orange-yellow) with a black tip.

Colibri delphinae delphinae. Brown Violet-ear. 5 M., 5-7 (6.6) g.; 2 F., 6 and 7 g.

One male in worn plumage has rich copper-colored feather edgings only on the rump and under tail coverts. All the other specimens are in fresh plumage and have the edgings on all dorsal feathers, including the crown. The lightest weight male has an extensive copper-colored wash over the lower abdomen and may be an immature.

Chrysolampis mosquitus. Ruby-topaz Hummingbird. 1 F., 4 g.

South of the Río Orinoco this species was previously known only from elevations of up to 500 m. This specimen was taken at about 1280 m.

**Lophornis pavonina pavonina*. Peacock Coquette. 1 M., 3 g.; 1 juvenile, 2 g.; 1 sex unknown.

Three subspecies have been described from the Pantepui region: *L. p. pavonina* Salvin and Godman, 1882 (type locality Cerro Roraima), *L. p. duidae* Chapman, 1929 (type locality Cerro Duida) and *L. p. punctigula* Zimmer and Phelps, 1946 (type locality Ptari-tepui). We have compared the three specimens from Cerro Urutaní with the series of the species in the Phelps Collection, with the type series of *duidae*, the type of *punctigula* and a series of eight males, three females and two immature males of *pavonina* in the American Museum of Natural History. The only distinctive character of *duidae* is the narrower midcrown stripe of adult males. Six males of *pavonina* from Cerro Roraima and the adult male from Cerro Urutaní have a distinctly wider stripe than the type of *duidae*,

whereas two others from Cerro Roraima have somewhat narrower stripes. Two of four adult males in the Phelps Collection from Cerro Chimantá-tepui on the Gran Sabana have crown stripes as narrow as in *duidae*.

Female *duidae* are supposed to have the feathers of the throat not margined with black laterally, whereas the only diagnostic character given for *punctigula* is that the female type specimen has finer and purer white throat markings with pronounced black margins on the chin feathers. However, the extent of edgings of the throat feathers is variable, two females from Cerro Roraima are inseparable from the type of *punctigula*. The whiteness of the throat is due to wear; one female and two immature males of *pavonina* in fresh plumage have buffy throats, two females in more worn plumage have white throats. The female from Cerro Urutaní which is in worn plumage has a predominantly white throat with reduced black edges, but new feathers at the base of the lower mandible are buffy. The whiteness of the tips of the outer rectrices of the type of *punctigula* is apparently also a matter of wear or fading.

**Chlorostilbon mellisuga duidae*. Blue-tailed Emerald. 5 M., 2-3 (2.8) g.

On the basis of the longer wings and tail of *duidae* *C. m. duidae* was separated from *C. m. subfurcatus*. Specimens from Cerro Duida also have a more deeply forked tail. Unfortunately, all specimens in our series are in heavy molt and the wings of only two birds and the tail of one are complete. Their measurements are wings 46.5 and 48 mm., tail 27 mm., fork 2.7 mm. The exposed culmens of the five specimens are 13.7, 14.3, 14.5, 15.2 and 15.5 mm. The birds of the Cerro Urutaní population are large like those of Cerro Duida.

Thalurania furcata fissilis. Fork-tailed Woodnymph. 8 M., 4-6 (4.9) g.; 7 F., 2-5 (3.4) g.; 1 formalin.

The males of this series differ from near-totypes of *T. f. orenocensis* Hellmayr by having the iridescent band across the back more complete (broad in some individuals) and in being a deeper, more purplish blue; they represent typical *fissilis*. Although half of the males in this series are in conspicuous

molt, the gonad sizes of molting birds (ranging from tiny to about 3 mm.) are similar to the range of sizes in non-molting individuals. All females are in molt.

Amazilia versicolor milleri. Versicolored Emerald. 1 M., 3 g.

This specimen is typical of the subspecies *A. v. milleri* in having the back darker green than in the subspecies *hollandi*, and in having blue iridescent feathers on the side of the neck instead of green as in *hollandi*. We find the crowns to be highly variable within series of both *milleri* and *hollandi* with some males of each subspecies having crowns bright blue, greenish blue or variably intermediate in color.

**Amazilia viridigaster cupricauda*. Green-bellied Hummingbird. 5 M., 3.5–5 (4.3) g.; 4 F., 3.5–4 (3.7) g.

William H. Phelps, Sr. wrote in notes made at the American Museum of Natural History in 1951 "the most notable difference (and the only one I can see) is that the tails, above in both mine and the Museum's are of uniform bronzy color (as Chapman says) [for *A. v. duidae*] while *cupricauda* have reddish rectrices with 5–8 mm. of bronzy tips, quite different and unmistakable." The tails of the specimens from Cerro Urutaní are dramatically reddish and thus are similar to the tails of *cupricauda*. The tails of specimens of *cupricauda* taken in the 1940s have lost much of their rich reddish cast and have become duller. However, they still differ from the even duller tails of specimens of *duidae* also collected in the 1940s. All specimens from Cerro Urutaní are in the terminal stages of molt.

**Heliodoxa xanthogonys*. Velvet-browed Brilliant. 14 M., 6–9 (7.3) g., testes 3 mm. or less; 6 F., 6–7 (6.7) g., ovaries somewhat enlarged to well developed.

Some of the males of this endemic Pantepui species were in the last stages of molt.

Calliphlox amethystina. Amethyst Woodstar. 1 M., 2 g.

TROGONIDAE

Trogon collaris collaris. Collared Trogon. 5 M., 54–60 (56.2) g.; 2 F., 46 and 62 g.

The Sierra Pacaraima forms the easternmost extension of the range of the nominate subspecies. It reaches the Río Icabarú (Minas Faisca, Cerro Pauri-tepui) at the eastern extremity of the Sierra, but does not occur on the tepuis of the Gran Sabana. Three of the males from Cerro Urutaní match specimens of *T. c. collaris* with the black bars of the outer tail feathers being narrower, equal in width to the white bars. In the other two males the black bars are wider than the white bars, thus being intermediate in this character toward the subspecies *exoptatus*.

CAPITONIDAE

Capito niger aurantiicinctus. Black-spotted Barbet. 2 M., 62 and 66 g.; 1 F., 58 g.

RAMPHASTIDAE

**Aulacorhynchus derbianus whitelianus*. Chestnut-tipped Toucanet. 1 M., 134 g., testes slightly enlarged; 1 F., 140 g., ovary slightly enlarged.

Repeated evaluations of the subspecies *A. d. duidae* and *whitelianus* at the Phelps Collection by W. H. Phelps, Sr. and by R. Avelledo (ms. notes), by E. R. Blake in his description of the subspecies *osgoodi* (Blake, 1941), and now by ourselves, indicates that size provides the only consistent character useful in the separation of the taxa. The measurements of the culmen from the posterior edge of the nostril (a good fixed point from which to take uniform measurements) of all 71 adult specimens with sex in the Phelps Collection are presented in figure 3. It will be noted that: (a) males provide a greater degree of separation of *duidae* and *whitelianus* than do females (b), the eastern subspecies *whitelianus* extends west in the Sierra Pacaraima at least to Cerro Urutaní, and (c) three males and two females from the isolated Cerro Guaiquinima (fig. 1) identified by Phelps and Phelps, Jr. (1958) as *whitelianus* are large and should be reassigned to the subspecies *duidae*.

PICIDAE

Picumnus exilis undulatus. Golden-spangled Piculet. 1 F., 10 g.

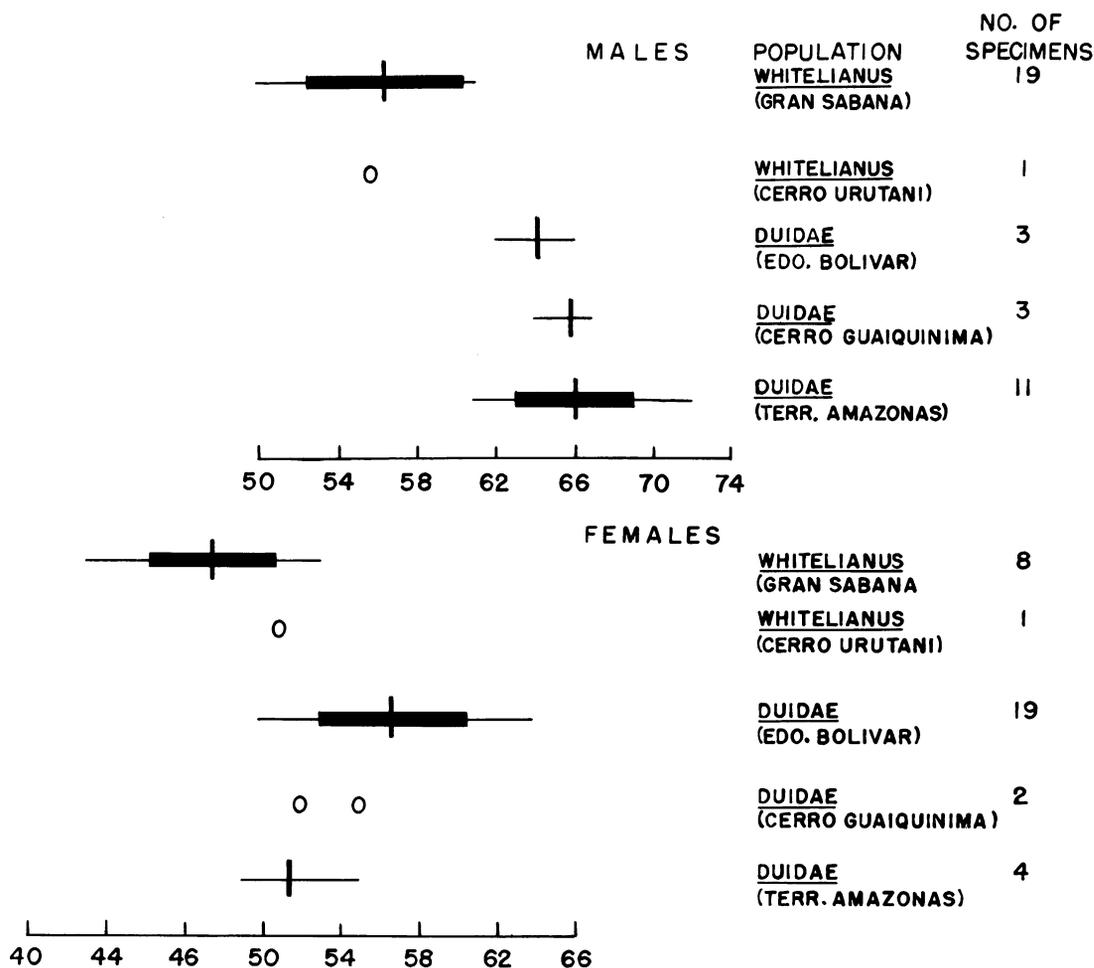


FIG. 3. Geographical analysis of culmen measurements from posterior edge of nostril for *Aulacorhynchus derbianus* from the Pantepui region. For each population the range, sample mean (vertical line), and one standard deviation on either side of the mean (broad black bar) are presented.

Piculus rubiginosus paraquensis × *P. r. guianae*. Golden-olive Woodpecker. 3 M., 66–71 g.; 2 F., 66 and 72 g.

Given the central geographic position of Cerro Urutaní in the Pantepui region, it is not surprising that this series shows characters of both subspecies *paraquensis* and *guianae*. One specimen is inseparable from a large series of *paraquensis*, whereas three fit well in a large series of *guianae*. One was labeled *guianae*, intermediate toward *paraquensis*. The specimen identified as *paraquensis* from Meseta de Jaua (Phelps, 1977) is in worn plumage, especially dorsally, but

appears to conform better to *guianae* when unworn portions of the rump and wing coverts are compared.

Campephilus rubricollis rubricollis. Red-necked Woodpecker. 1 M., 234 g.

DENDROCOLAPTIDAE

Sittasomus griseicapillus axillarlis. Olivaceous Woodcreeper. 3 M., 12–17 g.; 1 F., 13 g., ovary tiny.

These specimens are all in fresh plumage. The female had irregular skull windows and may still be partially in juvenal plumage.

Xiphorhynchus pardalotus caurensis. Chestnut-rumped Woodcreeper. 3 M., 36–40 (38.7) g.

Ventrally these specimens appear slightly grayer than a large series in the Phelps Collection, but this is probably due to their recent collection date as compared with older foxed material. In any case, they fall well within the variation found within this subspecies.

FURNARIIDAE

**Synallaxis moesta macconnelli*. Dusky Spinetail. 1 M., 19 g.; 2 F., 19 and 22 g.

The subspecies *S. cabanisi (moesta) griseipectus* Zimmer and Phelps was earlier found not to be separable from *macconnelli* (Phelps, 1973).

**Cranioleuca demissa demissa*. Tepui Spinetail. 3 M., 15–16 (15.6) g.

To survey possible variation within the range of *C. demissa*, small series from the extremes of the range in Venezuela (Cerro Roraima, the tepuis of the Gran Sabana, and Cerro Guaiquinima) were compared for variation in measurements of wing chord and exposed culmen, and in coloration. The only variation in size found was due to sexual dimorphism. Males have on the average longer wings with an average of 64.1 (standard deviation 1.3, $n = 9$) than females with a mean of 62.6 (standard deviation 0.9, $n = 14$).

In coloration specimens from Cerro Guaiquinima and the cerros of Territorio Amazonas are more olive, less clear gray ventrally than are specimens from Cerro Roraima and the tepuis of the Gran Sabana. They were described as *C. d. cardonai* by Phelps and Dickerman (1980). Mayr and Phelps (1967) suggested *demissa* was a very distinct subspecies of *Cranioleuca curtata*, and this is logical zoogeographically as *curtata* is also an upper tropical foothill species. Vaurie (1971a) did not recognize the genus *Cranioleuca* and combined it with *Certhiaxis* and also (1971b) proposed that *C. demissa* be recognized as a full species. J. V. Remsen in reviewing this

manuscript wrote that *Cranioleuca* and *Certhiaxis* are very distinct behaviorally and vocally.

**Margarornis adusta mayri*. Roraima Barbtail. 6 M., 12–18 (15.8) g.; 6 F., 12–20 (16.7) g.; 3 juvenile M., 13–15 (14.6) g.; 1 formalin.

This large series amplifies our knowledge of the geographic range and variation in the subspecies *mayri*. The type series is in unworn plumage, whereas the series from Cerro Urutaní was taken late in the nesting season and is in worn plumage. Because of wear, the birds from Urutaní are redder than the Mesa de Jaua series. The Urutaní series differs from *duidae* and *adusta* (as does *mayri*) in being darker dorsally although it is less dark than *obscuradorsalis*.

The species was regularly seen in small groups, apparently families, traveling slowly through the low forest in mixed flocks with other furnariids, dendrocolaptids, flycatchers, warblers, and *Atlapetes*. Vaurie (1971a) synonymized the genera *Premnoplex* and *Roraima* with *Margarornis*.

**Automolus roraimae urutani*. White-throated Foliage-gleaner. 5 M., 3 F., 3 juveniles.

It is interesting that the subspecies *urutani* (Phelps and Dickerman, 1980), the palest form of *A. roraimae* should occur geographically between a darker, richly ochraceous subspecies (*duidae* of Territorio Amazonas) and a darker brown subspecies (*roraimae* from the Gran Sabana), and that it should be well isolated from the morphologically most similar subspecies *paraquensis* from Cerro Paraque. The series of *urutani* from the Mesetas de Sarisarinama and Jaua is somewhat more variable in color because feather wear of some specimens causes them to be darker, yet, the darkest and richest of the Jaua birds is an unworn specimen that is as red on the back as specimens of *duidae* but it is somewhat paler ventrally.

The measurements of the culmen from nostril of eight males from Cerro Urutaní and Meseta de Jaua are significantly shorter than those of *roraimae* (table 1). The bills of five females of *urutani* are smaller (12.5–13.1) but one from Meseta de Jaua is large (14.1).

TABLE 1

Measurements (in Millimeters) of *Automolus roraimae* from the Pantepui Region of Venezuela with Range, (Mean), Standard Deviation (SD), and Number of Specimens (n) for Each Population

	MALES		FEMALES	
	Wing Chord	Culmen from Nostril	Wing Chord	Culmen from Nostril
<i>albigularis</i>	80–89 (83.6), SD 2.1, n = 26	12.6–14.2 (13.5), SD 0.4, n = 20	75–85 (79.8), SD 2.4, n = 19	12.9–14.9 (13.9), SD 0.5, n = 13
<i>urutani</i>	78–85 (82.3), SD 2.4, n = 9	11.8–13.4 (12.3), SD 0.5, n = 8	74–83 (77.0), SD 4.1, n = 6	12.5–14.1 (12.9), SD 1.0, n = 6
<i>duidae</i>	80–86 (84.2), SD 0.3, n = 11	12.5–13.4 (12.9), SD 0.3, n = 11	76–82 (79.6), SD 1.7, n = 13	12.2–14.1 (13.2), SD 0.6, n = 13
<i>paraquensis</i>	78, 82, 85, n = 3	11.9, 12.7, 12.9, n = 3	—	—

Xenops minutus ruficaudus. Plain Xenops. 1 sex?, 12 g.

Sclerurus caudacutus insignis. Black-tailed Leafscraper. 1 F., general molt, 1150 m.

FORMICARIIDAE

**Dysithamnus mentalis spodionotus*. Plain Antvireo. 3 M., 12 and 15 g.; 2 F., 12 and 15 g.

The two females are rich buff on the breast band and flanks and thus are like *spodionotus* rather than *ptaritepui* in which those areas are duller, more olive. The males are of no value in the separation of the two forms.

Myrmotherula behni yavii. Plain-winged Antwren. 1 M., 8 g.

This male, like one recently taken at Alto Ocamo, Territorio Amazonas, agrees with series of the subspecies *yavii* in having the crown distinctly darker than the back and in being clearer gray dorsally than the three males of the subspecies *inornata* from the Gran Sabana in the Phelps Collection. The species was not taken on Meseta de Jaua.

**Herpsilochmus roraimae kathleenae*. Roraima Antwren. 4 M., 10–13 g.; 4 F., 11–12 g.; 1 formalin.

Females from the tepuis of Territorio Amazonas, from Cerro Guaiquinima and from the Sierra Pacaraima east to Mina La Faisca, Río Surucum, differ from females from the tepuis of the Gran Sabana in being pale gray on the breast and in lacking a

creamy buff breast band. They were named *H. r. kathleenae* (Phelps and Dickerman, 1980). In specimens that are well prepared the interscapulars are also grayer, less buffy than in nominate *roraimae* of the Gran Sabana. Males of the two forms are indistinguishable. As in *Trogon collaris collaris* the specimens from the Mina La Faisca represent the easternmost extension of the range of a western subspecies.

Hylophylax poecilonota poecilonota. Scaled-backed Antbird. 1 M., 1150 m.

The nominate form of this species is dramatically differentiated in that the females and immature males always have gray venters, whereas in *H. p. duidae* they have ochraceous venters. The immature male from Cerro Urutaní is gray on the breast and belly.

**Chamaeza campanisona obscura*. Short-tailed Antthrush. 2 M., 102 and 104 g. (testes of one 6 × 13 mm.); 1 F., 112 g. (ova 10 and 15 mm.)

The species was common at elevations of about 1150 m. slightly below the subtropical cloud forest. The specimens from Cerro Urutaní are characteristic of the subspecies *obscura*. This indicates that the Sierra Pacaraima has been an avenue of movement between the disjunct populations of *obscura* on the Cerro Neblina and those of *obscura* on the tepuis of the Gran Sabana. The Cerro Neblina population should be reexamined with better material to reconfirm that this unexpected distribution pattern is correct.

TABLE 2
Measurements (in Millimeters) of *Myrmothera simplex* with Range (Mean), Number of Specimens (n), and Standard Deviation (SD) Presented for Each Population

	MALES			FEMALES		
	Wing Chord	Tarsus	Culmen/Nostril	Wing Chord	Tarsus	Culmen/Nostril
<i>simplex</i>	77-83 (80.6), n = 29, SD 1.9	39-44 (41.6), n = 29, SD 1.5	11.2-13.3 (12.0), n = 23, SD 0.6	76-82 (78.1), n = 14, SD 1.7	39-43 (41.5), n = 13, SD 1.3	11.0-12.3 (11.6), n = 13, SD 0.4
<i>pacaraimae</i>	81-85 (83.1), n = 15, SD 1.3	41-45 (42.6), n = 14, SD 1.2	11.8-13.0 (12.4), n = 15, SD 0.4	—	—	—
Cerro Jaua	83-87 (85.1), n = 8, SD 1.6	43-46 (44.5), n = 7, SD 1.1	12.5-13.6 (12.9), n = 7, SD 0.5	82-85 (83.3), n = 6, SD 1.0	41-43 (42.0), n = 5, SD 1.0	11.5-12.8 (12.1), n = 6, SD 0.6
<i>guaiquinimae</i>	80-84 (82.4), n = 5, SD 1.8	40-43 (41.6), n = 6, SD 1.4	12.1-13.6 (12.9), n = 6, SD 0.5	77-83 (80.8), n = 5, SD 2.4	39-43 (41.4), n = 5, SD 1.5	11.4-12.6 (11.8), n = 4
<i>duidae</i>	81-90 (84.9), n = 16, SD 2.5	42-46 (44.3), n = 15, SD 1.0	11.9-13.1 (12.8), n = 9, SD 0.5	78-84 (80.6), n = 9, SD 1.9	40-44 (43.0), n = 9, SD 1.2	11.5-13.0 (12.0), n = 8, SD 0.5
Cerro Paraque	82-85 (83.6), n = 3	43-44 (43.6), n = 3	12.8, n = 1	81-84 (82.3), n = 6, SD 1.4	43-45 (44.3), n = 6, SD 0.8	11.9-13.5 (12.4), n = 5, SD 0.7

**Myrmothera simplex*. Brown-breasted Antbird. Specimens from Cerro Urutani are listed under the subspecies *Pacaraimae*.

The disjunct, isolated patches of subtropical forest perched on the upper slopes and tops of the mountains of the Pantepui region have permitted development of non-clinal patterns of geographical variation in some endemic species such as *M. simplex*. The variation in this species, based on specimens in the Phelps Collection is summarized below (see also fig. 2, Phelps and Dickerman, 1980). Measurements of the wing chord, the tarsus, and of the culmen from the nostril are analyzed in table 2, and measurements of the wing chord are presented in figure 4.

Myrmothera simplex simplex

TYPE LOCALITY: Cerro Roraima. Distribution: Tepuis of the Gran Sabana. The nominate subspecies is distinguished by its dark, near chocolate-brown dorsum, and reduced, or more usually, obsolete breast band. As examined in August 1978, the large series in the Phelps Collection assembled in the 1940s appears to be the most uniform of any of the named subspecies with no obvious subpopulations.

SPECIMENS EXAMINED: 43. *Estado Bolívar*, Cerro Roraima 11, Cerro Cuquenán 2, Cerro

Uei-tepui 4, Acopán-tepui 2, Cerro Chimantá-tepui 7, Cerro Auyán-tepui 1, Cerro Ptari-tepui 6, Cerro Uaipán-tepui 1, Cerro Aparada-tepui 9.

Myrmothera simplex duidae

TYPE LOCALITY: Cerro Duida. Distribution: Isolated mountains of the Territorio Amazonas from Cerro Neblina north to Cerros Paraque and Yavi.

The western forms of *M. simplex* are more ochraceous dorsally, less brown than the Gran Sabana populations and in general have a stronger wash across the breast.

Specimens from Cerros Paraque and Yavi are closest to *duidae*; however, they are somewhat paler dorsally and on the flanks and have a paler, less well developed breast band.

SPECIMENS EXAMINED: 30. *Territorio Amazonas*; Cerro Duida 8 (5 in AMNH), Cerro Neblina (Cerro Jimé) 13, Cerro Paraque 7, Cerro Yaví 2.

Myrmothera simplex guaiquinimae

TYPE LOCALITY: Cerro Guaiquinima. Distribution: "Bolívar central" (Phelps and Phelps, 1963), Cerros Guaiquinima and Tabaro, and Meseta de Jaua, but the latter were noted to be not typical by Phelps (1977). *M.*

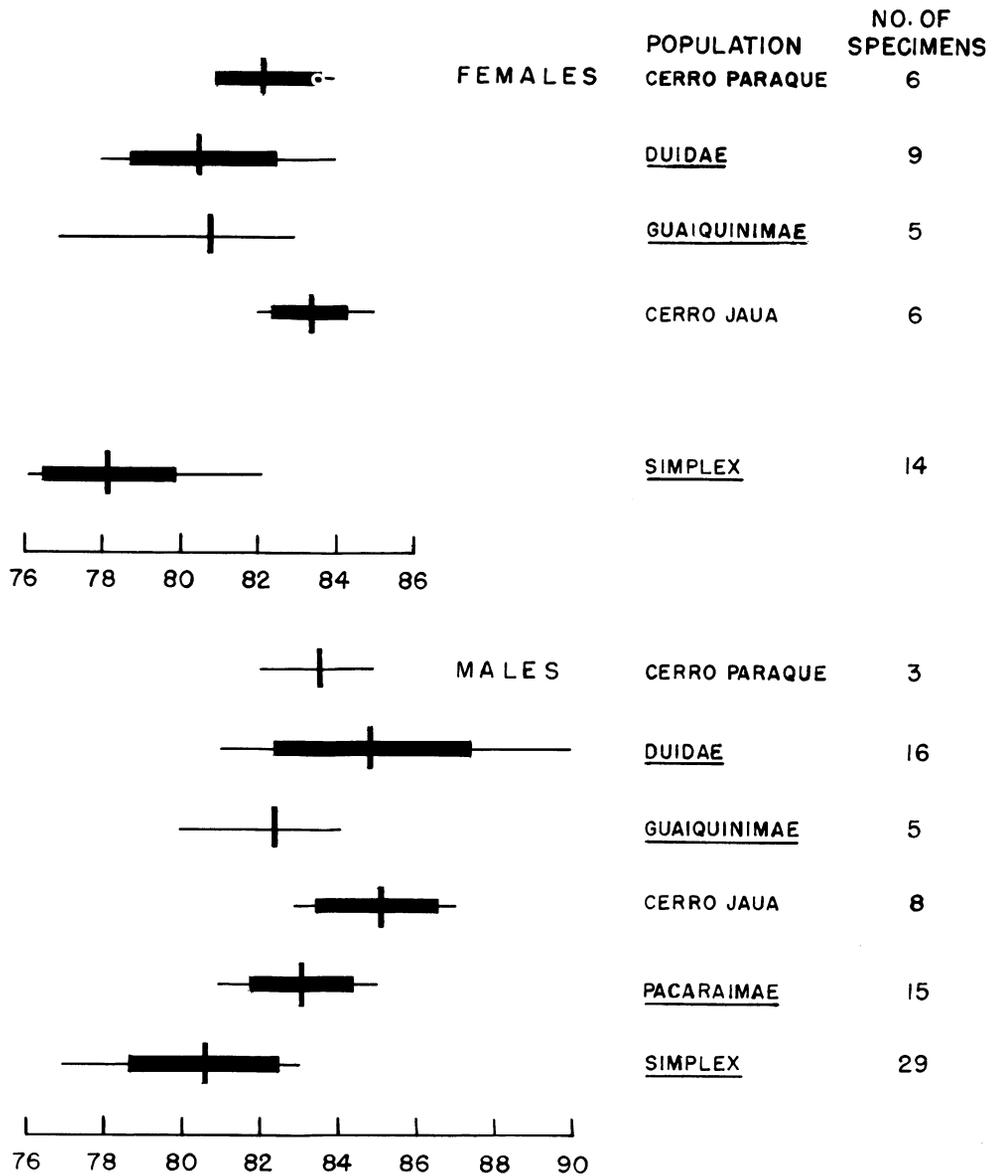


FIG. 4. Analysis of measurements of the wing chord of *Myrmothera simplex*. For each population, the range, sample mean (vertical line), and one standard deviation on either side of the mean (broad black bar) are presented.

s. guaiquinimae populations differ from *duidae* in being slightly duller, "greener," less ochraceous brown on the flanks and the wash across the breast. In reality, only specimens from the type locality exactly fit that description.

When the subspecies *guaiquinimae* was

described by Zimmer and Phelps (1946), a pale specimen from distantly disjunct Pauraitepui was assigned to it. On re-examination that specimen proved to be a typical example of *pacaraimae*, defining the eastern extension of the range of that subspecies.

The Cerro Tabaro population is most sim-

ilar to *guaiquinimae*, but dorsally is brighter ochraceous, and the four specimens available have a strongly developed ochraceous breast band.

The series of 16 specimens from Meseta de Jaua has a combination of characters found in the subspecies *pacaraimae*, *guaiquinimae*, and *duidae*. Most are as pale dorsally as *pacaraimae*, yet ventrally have a well-developed brownish breast band similar to *duidae*. Two are most like *guaiquinimae* dorsally; one is darker and more like *duidae*, whereas the rest are as pale as *pacaraimae*. The Meseta de Jaua birds were considered to represent *guaiquinimae* by Phelps (1977).

SPECIMENS EXAMINED: 31. *Estado Bolívar*, Cerro Guaiquinima 11, Meseta de Jaua 16, Cerro Tabaro 4.

Myrmothera simplex pacaraimae

TYPE LOCALITY: Cerro Urutaní. Distribution: Sierra Pacaraima from Cerro Paurai-tepui (Mina La Faisca) west to Alto Ocamo, Territorio Amazonas.

This subspecies with an extensive east-west range has the following combination of characters: It is the palest dorsally of all subspecies except for some specimens from Meseta de Jaua, whereas ventrally the breast is pale gray and lacks the breast band (or it is poorly developed when present), thus *pacaraimae* resembles nominate *simplex* in this character (Phelps and Dickerman, 1980).

SPECIMENS EXAMINED: 16. *Estado Bolívar*, Cerro Pauri-tepui, Mina La Faisca 1, Cerro Urutaní 13 (also 2 in formalin), *Territorio Amazonas*, Camp No. 3, Alto Ocamo 2.

COTINGIDAE

Querula pupurata. Purple-throated Fruit-crow. 1 M., 89 g.; 3 F., 88, 90 g.

These three birds were collected March 26 from a group of four that was apparently a family.

Perissocephalus tricolor. Capuchinbird. 2 M., testes 8×12 (both birds), molt (both), 1150 m.

Procnias averano carnobarba. Bearded Bellbird. 3 M., 150–168 g.; 2 F., 111 and 132 g.; 1 juvenile sex,? 78 g.

The ringing calls of the Bearded Bellbird were heard throughout the day about the base camp, but the birds were seldom seen. The short-tailed juvenile was caught February 27. An immature male is in heavy molt, going into the definitive plumage.

RUPICOLIDAE

Rupicola rupicola. Guianan Cock-of-the-Rock. 4 M., 202–220 (209) g.; 3 F., 172, 190, 226 g.; 1 formalin.

Cocks-of-the-Rock were common on Cerro Urutaní and collecting was stopped after the above series was obtained. The ovary of one female was noted as greatly enlarged; the ovary of another contained "old corpora lutea," and the belly skin was noted to be thickened, thus suggesting nesting was in progress.

PIPRIDAE

**Pipra cornuta*. Scarlet-horned Manakin. 1 M.

The only individual of this species obtained was an immature male molting into the red-headed definitive male plumage.

**Chloropipo uniformis uniformis*. Olive Manakin. 2 M., 19 and 19 g.; 8 F., 15–18 (16.8) g.; 1 juvenile M., 20 g., 1 formalin.

The birds of this series are dull green like those of the large series from nearby Meseta de Jaua and birds from the tepuis of the Gran Sabana. The one juvenile obtained March 29 is fully grown and in light molt.

TYRANNIDAE

Conopias parva parva. White-ringed Flycatcher. 1 M., 20 g.; 1 F., 20 g.

Both specimens are immatures in advanced post-juvenile (prebasic) molt.

Myiarchus swainsoni phaeonotus. Swain-

son's Flycatcher. 1 M., 24 g.; 4 F., 22–26 (23.5) g.; 2 juveniles, 1 F., 24.5 g., 1 sex,? 20 g.

Short-tailed juveniles were collected March 9 and 10. A fully grown juvenile in the Phelps Collection was taken at Simarauochi, Alto Metacune, Territorio Amazonas on February 4, 1972. The adults from Cerro Urutani are in fresh plumage.

**Contopus fumigatus duidae*. Greater Pewee. 1 M., 14 g.

This specimen is an immature based on plumage characters and was sexed as a male by the preparator Manuel Castro. It has the smallest measurements of any of 46 *C. f. duidae* in the Phelps Collection. Its measurements are wing chord 83, tail 69, and culmen from nostril 10.0 mm. The three smallest of 13 female *duidae* have wing-tail measurements of 83–71, 82–71, and 80–72 mm. Their respective culmen measurements are 10.6, 11.6, and greater than 11.5. The third specimen in the series is a juvenile.

**Myiophobus roraimae*. Roraima Flycatcher. 4 M., 14–18 (15.1) g.; 4 F., 12–14 (13.0) g.; 2 sex,? 13.5 and 14 g.

This species is common and widespread throughout the Pantepui region without apparent geographic variation.

**Hemitricus margaritaceiventer auyantepui*. Pearly-vented Tody-tyrant. 5 M., 10–12 (11.0) g.; 1 F., 11 g.

Five specimens from Cerro Urutani are separable from seven specimens of *H. m. auyantepui* in the Phelps Collection only by the usual differences of recently taken specimens as compared with older material. Dorsally, the Urutani specimens are washed with green, whereas this has foxed to brownish in the specimens taken in 1937 and 1938. Also, the throats are clearer gray, less tan. The other specimen from Cerro Urutani is intermediate toward *H. m. breweri* (Phelps, 1977). Ventrally, the yellow of its belly is a darker (although a clearer) yellow than in *auyantepui*, and approaches the color of *breweri*. The crown is more dusky as in *breweri*. No geographic differences in wing chord, tail, culmen from base or tarsal measurements were

found among 12 males and 10 females available. Males measure slightly larger than females. Wing chord 50–54.5 vs. 43.5–50, tail 36–44.5 vs. 33–40, culmen from nostril 15–16.5 vs. 14.5–15.8, and tarsus 18–21.5 vs. 17.8–20.5. For use of *Hemitricus* instead of *Todirostrum* or *Idioptilon* see Traylor (1977).

**Phylloscartes chapmani*. Chapman's Tyrannulet. Specimens from Cerro Urutani listed under subspecies.

Phelps and Phelps (1951) described *P. c. duidae* as differing from the nominate subspecies in having a lighter colored, more yellowish green crown, and, in the description of the type, as having the belly a richer yellow. The type of *duidae*, a juvenile in prebasic molt, is similar in the color of the dorsum and the belly to an adult from Cerro Neblina (Cerro Jimé), but is duller on the throat where it has not lost its juvenal feathers. Using the described characters, 67 specimens of *P. chapmani* in the Phelps Collection (including the types of *duidae* and *chapmani*), all collected in the 1940s may be separated into four groups with two intergrading populations. Because of the lack of fully comparable series in which the effects of foxing can be evaluated, formal descriptions are not presented.

Phylloscartes chapmani chapmani

The nominate subspecies from the tepuis of the Gran Sabana is dull olive-green above, with the crown darker than the back and the belly pale yellow. Phelps and Phelps (1963) included Cerros Guaiquinima, Tabaro, Paraque and Parú in the range of the subspecies *chapmani* (but see beyond).

Cerro Paraque. Seventeen specimens from Cerro Paraque are duller both dorsally and ventrally than birds from the Gran Sabana region when laid out in series, but individual specimens cannot consistently be picked from large series of *chapmani*. Thus, until additional fresh material is available from Cerro Paraque this population is assigned to *P. c. chapmani* although Cerro Paraque is disjunct by 500 km. from the nearest populations of *chapmani* (*sensu stricto*), and the Sierra Pacaraima population occurs in the intervening ranges.

Phylloscartes chapmani duidae

Eight specimens are available from Cerro Paru. One is like *duidae* on the back and crown, while seven are nearer *chapmani* of Cerro Paraque, although two of these have paler crowns as in *duidae*. The Cerro Parú series is considered to be *chapmani* × *duidae*.

Sierra Pacaraima. Thirty-two specimens from the Sierra Pacaraima, the Meseta de Jaua, and Cerro Tabaro are more like *duidae* but are darker green dorsally with the crown contrastingly darker than the back as in *chapmani*. They are greener, less olive on the back than *chapmani*. Ventrally, they are brighter yellow than *chapmani*, but this is more tinged with green than in *duidae*. Four specimens from Cerro Tabaro are greener above and brighter below than *chapmani*, and there is a suggestion of a green tinge to the yellow. Thus in overall characters they resemble the Sierra Pacaraima series. Four specimens from Cerro Guaiquinima are like *chapmani* (although darker and duller on the crown), and are considered to be intermediate between *chapmani* and the Sierra Pacaraima population, here cited as *duidae*.

SPECIMENS EXAMINED

P. c. chapmani 44. *Estado Bolívar*: Cerro Roraima 1 (type); Acopán-tepui 1 M., 1 F.; Aparada-tepui 4 M., 1 F.; Ptari-tepui 4 M., 5 F., 7 sex?; Uaipán-tepui 2 M., 1 F. *Territorio Amazonas*: Cerro Paraque 7 M., 4 F., 6 sex?

P. c. chapmani × *P. c. duidae* 11. *Estado Bolívar*: Cerro Guaiquinima 4 M., 1 F. *Territorio Amazonas*: Cerro Parú 5 M., 2 F.

P. c. duidae 41. *Estado Bolívar*: Cerro Urutaní 10 M., 3 F., 1 sex?; Meseta de Jaua 4 M., 4 F., 1 sex?; Cerro Tabaro 3 M., 1 sex?. *Territorio Amazonas*: Cerro Duida 1 (type); Cerro Neblina 1 sex?; Cerro Jiménez 3 M., 1 F., 3 sex?; Alto Ocamo 4 M.; "Frontera" 1 sex?

**Phylloscartes nigrifrons*. Black-fronted Tyrannulet. 9 M., 9–13 (11.1) g.; 5 F., 8–11 (9.2) g., 2 sex,? 8 and 11 g.

Phelps and Phelps (1951) described *P. n. maguirei* based on a unique specimen from Cerro Paraque. Subsequently collected material from Cerro Roraima proved the color

TABLE 3
Wing Chord Measurements (in Millimeters) of *Phylloscartes nigrifrons* from the Pantepui Region of Venezuela, with Range (Mean), Sample Size (n), and Standard Deviation (SD)

	Territorio Amazonas and Cerro Guaiquinima	
	Gran Sabana	Cerro Guaiquinima
Males	63–67 (64.8), n = 8, SD 1.3	59–65 (62.5), n = 11, SD 2.0
Females	54–56 (55.7), n = 10, SD 1.2	53–56 (54.5), n = 6, SD 1.0

differences to have been the result of either foxing or discoloration of the Salvin and Godman type of the species.

To determine if *maguirei* might be recognizable based on size, all adult specimens with identified sex in the Phelps Collection were measured. Wing and tail measurements are usually about equal for any individual bird, and only wing length is presented in table 3. Specimens from the Gran Sabana average only slightly larger than specimens from the western part of the Pantepui region, and should not be recognized subspecifically.

**Elaenia ruficeps*. 3 M., 18–20 (19.0) g.; 4 F., 17–22 (18.5) g.; 2 sex,? 17 and 18 g.; 1 juvenile.

A short-tailed juvenile was taken on April 1 near an adult female that was in prebasic molt.

**Elaenia pallatangae olivina*. Sierra Elaenia. 6 M., 13–18 g.; 8 F., 13–20 g.

Among recently collected specimens in the Phelps Collection are two from El Dorado, Estado Bolívar taken in 1975 that are far darker dorsally than one bird from Meseta de Jaua (1974) and three taken at "Frontera," Sierra Pacaraima, Territorio Amazonas (1972), and that are only matched in their darkness by three of the series from Cerro Urutaní. No consistent differences could be detected between series of specimens taken in the 1940s and the 1950s from the Gran Sabana region when compared to similar aged material from the cerros of Territorio Amazonas. Perhaps a dark lowland form ex-

TABLE 4
Culmen (Length from Nostril) and Wing Chord Measurement (in Millimeters of *Oxyrunchus cristatus* from the Pantepui Region of Venezuela with Range (Mean), Sample Size (n), and Standard Deviation (SD))

	Culmen from Nostril	Wing Chord
Gran Sabana	11.3–13.1 (12.2), n = 30, SD 0.5	85–96 (90.4), n = 32, SD 2.0
Cerro Urtaní and Terr. Amazonas	10.4–11.7 (11.0), n = 8, SD 0.5	88–92 (89.8), n = 8, SD 1.5

ists in the southwestern Pantepui region that intergrades with *olivina* on Cerro Urtaní.

**Pipromorpha macconnelli roraimae*. McConnell's Flycatcher. 3 M., 10–12 (10.7) g.; 1 F. juvenile, 9.5 g.

A newly fledged short-tailed juvenile was collected March 29. Four recently taken specimens from Cerro Duida (1975) and Cerro Neblina (1970) appear to be more intensely colored on the belly than the three adults from Cerro Urtaní; however, observed differences may be due to variation in specimen preparation. No differences were seen when series of older specimens from Territorio Amazonas were compared with comparably aged birds from the Gran Sabana.

OXYRUNCIDAE

**Oxyrunchus cristatus hypoglauca*. Sharpbill. 4 M., 34–39 (37.5) g.; 2 F., 34 and 40 g.

We find that Chapman's original series of eight specimens of *O. c. phelpsi* from Cerro Auyan-tepui differ in the whiteness of their venters from his series of eight specimens of *H. c. hypoglauca* from Cerro Roraima because of the reduced exposure of the belly feathers of the Roraima series due to the manner in which the specimens were prepared. We do not find the Auyan-tepui specimens to have more heavily marked underparts (in size or in amount or darkness of the spotting) than specimens of *hypoglauca*. Specimens from Cerro Urtaní, one from "Frontera," and one from Cerro Calentura, both Territorio Amazonas, are whiter ven-

trally with somewhat smaller spots on the breast and flanks, when compared with the series of *hypoglauca*, with the Cerro Auyan-tepui series and with most of the series of 15 adults available in the Phelps Collection from the Gran Sabana. (cerros Uaipán-tepui 1, Chimantá-tepui 1, Ptari-tepui 6, Upuigmatepui 1, Paurai-tepui 2, and Sierra de Lema 1). We agree with Mees (1974) that *O. c. phelpsi* should be regarded as a synonym of *O. c. hypoglauca*.

Six specimens from Cerro Urtaní, and one each from "Frontera" and Cerro Calentura, Territorio Amazonas, have significantly shorter bills than specimens from the tepuis of the Gran Sabana (table 4). There is no difference in wing size. Measurements for males and females are similar, and they are combined in table 4.

Chapman (1939) described the color change of the crests that takes place in time in museum specimens. The six specimens from Cerro Urtaní have bright red crests corresponding to Geranium Pink, Scarlet, or Flame Scarlet of Smithe (1975). One adult in the Phelps Collection taken on Sierra de Lema in 1959 has a red crest (Flame Scarlet), whereas crests of 19 adults taken between 1937 and 1947 have faded to Spectrum Orange.

TROGLODYTIDAE

Thryothorus coraya caurensis. Coraya Wren. 2 M., 16 and 18 g.

Henicorhina leucosticta leucosticta. White-breasted Woodwren. 1 M., 14 g.

**Microcerculus ustulatus duidae*. Flutist Wren. 12 M., 18.5–22 (20.7) g.; 3 F., each 22 g.; 2 formalin.

Allowing for a slight degree of foxing due to museum age, the above series matches well the large series of *duidae* in the Phelps Collection. Recognition of the extension of *duidae* eastward in the Sierra Pacaraima brought attention to the odd distribution of the subspecies *lunatipectus* Zimmer and Phelps (1946) known from the isolated Cerro Guaiquinima and from three specimens from Cerro Pauri-tepui far to the south on the divide between the Rio Orinoco and the Am-

azonian drainages. On re-examination, those specimens were found not to be *lunatipectus* in that they are paler dorsally and on the sides and flanks and lack the prominent squamations extending onto the chin of that form. They fit well in the series of *duidae* in all characters and are the easternmost specimens from the Sierra Pacaraima extension of the range of that subspecies. One of the four specimens of the species from Meseta de Jaua is deeply colored and is nearly typical of *lunatipectus*.

TURDIDAE

**Turdus ignobilis murinus*. Black-billed Thrush. 15 M., 52–66.7 (61.0) g.; 12 F., 60–81 (66.7) g.; 1 M. juvenile, 54 g.

This large series includes 14 adults and 12 immatures in all stages of molt, and one short-tailed juvenile. Adults and immatures in very fresh plumage are dramatically darker than specimens in fresh plumage taken 30 years earlier, indicating an extensive amount of foxing in that period of time.

The wing and tail measurements of this series are large and are similar to measurements presented by Chapman (1931) for *murinus*.

VIREONIDAE

**Hylophilus sclateri*. Tepui Greenlet. 2 M., 10 and 12.5 g.; 1 F.

When the 80 specimens of *H. sclateri* in the Phelps Collection were segregated geographically, specimens from the cerros of Territorio Amazonas proved to be darker yellow (more mustard-colored) on the breasts in contrast to the clearer yellow breasts of specimens from the tepuis of the Gran Sabana. The color differences observable in series were difficult to see when individual specimens were compared, and only the richest colored of the western birds were readily sorted from the series of eastern specimens. Fourteen specimen from the Gran Sabana in the American Museum of Natural History also have clearer yellow (less buffy) breasts when compared with five specimens from Cerro Duida.

The adult male from Cerro Urutaní is deeper (but not more buffy) yellow than the two immatures.

PARULIDAE

**Parula pitiayumi roraimae*. Tropical Parula. 3 M., 7–9 (7.7) g.; 4 F., one = 7 g.

Setophaga ruticila. American Redstart. 1 F., 7 g., March 10.

**Myioborus miniatus verticalis*. Slate-throated Redstart. 9 M., 7–12 (9.3) g.; 4 F., 6.5–11 (8.9) g.; 3 sex,? 8–11 (9.3) g.

**Basileuterus bivittatus roraimae*. Two-banded Warbler. 5 M., 12–17 (15.2) g.; 3 F., one = 14.5 g.; 1 F. juvenile, 7 g.

The ovary and oviduct of one female were apparently beginning to enlarge, whereas an immature female was in the last stages of prebasic (post-juvenile) molt.

**Coereba flaveola roraimae*. Bananaquit. 6 M., 9–10 (9.5) g.; 4 F., 8–10 (9.0) g.; 1 sex,? 9 g.; 1 F. juvenile, 7 g.

The juvenile is in an advanced stage of first prebasic molt.

THRAUPIDAE

**Tangara cyanoptera whitelyi*. Black-headed tanager. 7 M., 19–22 (20.6) g.; 7 F., 19–24 (21.4) g.

**Chlorophonia cyanea roraimae*. Blue-naped Chlorophonia. 4 M., 11–15 (13.5) g.; 2 F., 12 and 13.5 g., one with enlarged ovary; 1 M. juvenile (general molt).

Euphonia xanthogaster brevisrostris. Orange-billed Euphonia. 5 M., 11–18 (13.2) g.

Tachyphonus phoenicius. Red-shouldered Tanager. 14 M., 14–24 (19.3) g.; 10 F., 19–25 (21.0) g.; 2 M. juvenile, 14 and 20 g.; 1 juvenile sex,? 20 g.; 1 formalin.

Like the series of *Turdus ignobilis*, this series includes specimens ranging from short-tailed juveniles through all plumage and molt stages.

FRINGILLIDAE

**Atlapetes personatus duidae*. Tepui Brush-Finch. 22 M., 21–34 (29.5) g.; 13 F., 24–32 (28.6) g.; 1 sex,? 26 g.; 1 formalin.

This large series of birds in fresh plumage

extends the range of *A. p. duidae* eastward in the Sierra Pacaraima.

Arremon taciturnus taciturnus. Pectoral Sparrow. 1 M., testes enlarged, 1150 m.

A cup-shaped ground nest with newly hatched young found April 6, was identified as belonging to this species by a highly knowledgeable Indian hunter.

**Zonotrichia capensis roraimae*. Rufous-collared Sparrow. 1 M., 25 g.

DISCUSSION

This study reports the first major collection of birds from the Sierra Pacaraima and permits a preliminary analysis of the role that mountain range has played as an avenue of dispersal for the Pantepui avifauna. The Sierra extends east-west along the Venezuelan-Brazilian border and connects the tepuis of the Gran Sabana with the more isolated cerros of the western portion of the Pantepui region in the Territorio Amazonas. Cerro Urutaní is near the middle of the Sierra Pacaraima and thus near the geographical center of the southern edge of the Pantepui region. Two other groups of tepuis occur in the area between the eastern tepuis of the Gran Sabana and those of Territorio Amazonas. Those are Cerro Guaiquinima and the Mesetas de Sarisariñama and de Jaua (fig. 1).

Of the 82 species which were obtained on Cerro Urutaní, 44 are Pantepui species as defined by Mayr and Phelps (1967). Pantepui species are zoogeographic forms that are absent in the surrounding lowlands or that have one or more endemic forms within the Pantepui region. Mayr and Phelps listed 96 Pantepui species; Phelps added *Coereba flaveola* with the endemic form *roraimae* to the list, and here we suggest that *Chlorostilbon melisuga*, with its endemic form *duidae* be included as a Pantepui species. The 44 Pantepui species are represented by 492 specimens while we have 130 specimens of 38 more widely distributed species.

Although at present subtropical vegetation (i.e., cloud forest) occurs as disjunct patches on the higher ridges of the Sierra Pacaraima, undoubtedly during the late Pleistocene and even during cooler periods in post glacial

times the subtropical zones were far more extensive or even continuous. Furthermore, endemic Pantepui forms have often been found well below the subtropical zone on talus slopes along the sharp faces of the tepuis (Mayr and Phelps, 1967). Thus the talus slopes of the Amazonian facing drainage of the Sierra Pacaraima may form an avenue of dispersal, a filter barrier at most, between the discontinuous subtropical vegetation patches found today.

Of the 44 Pantepui species collected on Cerro Urutaní, 25 are represented in the tepui region of southern Venezuela by a single taxon throughout the region. In four species the subspecies on Cerro Urutaní is not obviously closer to populations found on either the eastern or the western tepuis. In eight species, the subspecies on Cerro Urutaní is closer to, or identical with, the subspecies found on Cerro Duida or a taxon widespread on the cerros of the Territorio Amazonas, whereas in six species the subspecies on Cerro Urutaní is closer to, or is identical with, the subspecies found on Cerro Roraima and the tepuis of the Gran Sabana.

In two species (*Myrmothera simplex* and *Margarornis adusta*) the subspecies on Cerro Urutaní is most closely related to those on the other tepuis of the central area. The Cerro Urutaní population of *Phylloscartes chapmani* like those on the other central area tepuis (including Cerro Tabarro) although more similar to the Cerro Duida subspecies than to the one from the tepuis of the Gran Sabana, probably represent an undescribed subspecies of the central area.

The isolated Cerro Guaiquinima, like the Cerro Urutaní, is about equidistant from the eastern and western groups of tepuis and also has an equal distribution of more eastern-like vs. more western-like subspecies (six vs. five) although the collections from Guaiquinima are relatively small considering the size of the range. In contrast, the Mesetas de Sarisariñama and de Jaua, which are geographically closer to, although still isolated from, the Territorio Amazonia tepuis have notably more western-like forms than eastern-like forms (13 vs. 1), whereas two additional forms are most closely related to those on the central Cerros Guaiquinima and Urutaní.

Mayr and Phelps (1967) recognized 96 species they considered to be Pantepui taxa (with *Myioborus cardonae* and *M. albifacies* being combined into the superspecies *M. bruniceps*). With those species being recognized as distinct, and with the addition of *Coereba flaveola roraimae* and *Chlorostilbon mellisuga duidae*, there are a total of 99 Pantepui taxa. Of the 55 Pantepui taxa not taken on Cerro Urutaní (omitting *Veniliornis kirkii* which was tentatively identified but not collected), 18 species have restricted geographical distributions (14 to the Gran Sabana, one to Cerro Guaiquinima, and three to the cerros of the Territorio Amazonas) and 12 species are restricted to much higher elevations and/or to habitats not sampled on Cerro Urutaní (table 5). The remaining 25 species may have been missed for a variety of reasons, including the relatively small percentage of the total area of the subtropical zone of the Cerro Urutaní sampled by us, the possible variations in local distributions due to seasonal fluctuations in food abundance or seasonal movements of non-breeding populations of birds (swifts and swallows), the brevity of the visit, and the inadequate use of mist nets. However, it should be noted that only 52 Pantepui species have been recorded from the much larger collections from the far more extensive Cerro Duida.

A final comment. During the course of the identification of the specimens in the Urutaní collection in the preparation of this manuscript, it became obvious that a great deal of ornithological exploration and selective collecting must still be done before we will be able to analyze the geographic variation in a number of Pantepui species. This is in spite of the fact that, as compiled by Mayr and Phelps (1967), over 10,000 specimens have been collected in the Pantepui region. When individual species are studied, one repeatedly finds a paucity of specimens from critical mountains, even from those from which a moderate total number of specimens are available. Especially in need of further attention are cerros Paraque, Parú, Tabaro, Guaiquinima, Jaua, the higher cerros of the eastern end of the Sierra Pacaraima and most especially the high ridges of the southern border of Venezuela, including Cerro Neblina.

TABLE 5
Pantepui Elements not Collected on
Cerro Urutaní

GEOGRAPHICALLY RESTRICTED WITHIN PANTEPUI AREA	
<i>Crypturellus pitaritepui</i>	Gran Sabana
<i>Pyrrhura egregia</i>	Gran Sabana
<i>Veniliornis kirkii</i>	Gran Sabana
<i>Philydor hylobius</i>	Cerro Neblina
<i>Pernostola leucostigma</i>	Gran Sabana
<i>Grallaricula nana</i>	Gran Sabana
<i>Pipreola whitelyi</i>	Gran Sabana
<i>Acrochodopus zeledoni</i>	Gran Sabana (Chimantatepui)
<i>Todirostrum russatum</i>	Gran Sabana
<i>Thryothorus coraya</i>	Gran Sabana (Auyan-tepui)
<i>Lipaugus streptophorus</i>	Gran Sabana
<i>Myadestes (Cichlopsis)</i> <i>leucogenys</i>	Gran Sabana
<i>Diglossa duidae</i>	Territorio Amazonas
<i>Diglossa major</i>	Gran Sabana
<i>Mitrospingus oleagineus</i>	Gran Sabana
<i>Haplospiza (Spodiornis)</i> <i>rustica</i>	Gran Sabana
<i>Myioborus cardonai</i>	Cerro Guaiquinima
<i>Myioborus albifacies</i>	Territorio Amazonas
MISSED	USUALLY HIGHER ALTITUDES WITHIN PANTEPUI AREA
<i>Otus choliba</i>	" <i>Nannopsittaca</i> " <i>panychlora</i>
<i>Glaucidium brasilianum</i>	<i>Caprimulgus longirostris</i>
<i>Chaetura cinereiventris</i>	<i>Polytmus milleri</i>
<i>Phaethornis augusti</i>	<i>Campylopterus duidae</i>
<i>Colibri coruscans</i>	<i>Mecocerculus leucophrys</i>
<i>Trogon personatus</i>	<i>Elaenia dayi</i>
<i>Xiphocolaptes promeropirhynchus</i>	<i>Troglodytes rufulus</i>
<i>Taraba major</i>	<i>Myioborus bruniceps</i>
<i>Thamnophilus insignis</i>	<i>Catamenia homochroa</i>
<i>Lochmias nematura</i>	
<i>Grallaria guatemalensis</i>	RESTRICTED TO GRASSLAND WITHIN PANTEPUI
<i>Pachyrhamphus castaneus</i>	
<i>Pipra serena</i>	
<i>Knipolegus poecilurus</i>	<i>Cistothorus platensis</i>
<i>Platyrinchus mystaceus</i>	<i>Emberizoides herbicola</i> (Cerro Duida)
<i>Hirundinea ferruginea</i>	<i>Carduelis magellanica</i>
<i>Atticora (Notiochelidon)</i> <i>cyanoleuca</i>	
<i>Turdus olivater</i>	
<i>Platycichla flavipes</i>	
<i>Macroagelaius (subalaris)</i> <i>imthurni</i>	
<i>Pipraeidea melanonota</i>	
<i>Tangara guttata</i>	
<i>Euphonia xanthogaster</i>	
<i>Tangara gyrola</i>	
<i>Piranga flava</i>	

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