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THE TROPICAL AVIFAUNA OF THE UPPER MAGDALENA VALLEY, COLOMBIA

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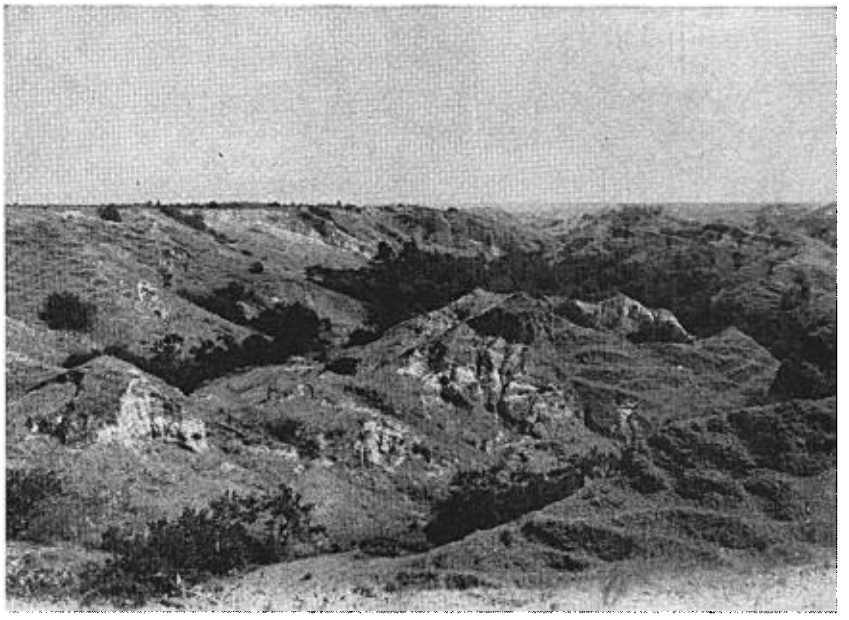
Plates 12–13

THE arid tropical area of the upper Magdalena Valley of Colombia extends from Honda, Tolima, south through the departments of Tolima and Huila to about latitude 2° N., a distance of 375 kilometers (*see* Chapman, Bull. Amer. Mus. Nat. Hist., 36: 84 ff., pl. 26, 1917). This large district is unforested and its xerophilous vegetation reflects a greater extreme of aridity than does that of the floor of the Cauca Valley which lies to the westward on the other side of the central Andes. Along the main water courses in the upper Magdalena basin are strips of woodland with tracts of savanna adjacent to them, but in large measure the area is covered with open thorn scrub, sometimes forming a chaparral, yet often broken or scattered. Clumps of cacti are frequent and there are areas of short-grass plains and of barren, clay or gravel-surfaced badlands.

This arid basin is bounded on the east, south and west by the eastern and central divisions of the Andes on which the Subtropical and Temperate zones appear. Only at Andalucia in southeastern Huila is there a moderately low gap leading eastward through the encircling mountains. This gap is stated by Chapman to be 7000 feet in elevation; it lies in the Subtropical Zone. The Tropical Zone occurs below about 5000 feet. To the north the upper Magdalena Valley adjoins the more humid middle section of the Magdalena drainage which, by reason of its climate and forests, forms a varyingly effective ecologic barrier between the biota of the arid upper region and that of the moderately arid Caribbean coast.

Chapman's report (*op. cit.*) on the bird life of Colombia dealt much more fully with the fauna of the arid tropical Cauca district than with



(*Upper*) EDGE OF PLAINS 10 KILOMETERS SOUTH OF VILLAVIEJA, HUILA, COLOMBIA, SHOWING EROSION EXPOSURES AND PATCHES OF SCRUB COVER.
(*Lower*) SLOUGH AT VILLAVIEJA, SHOWING WOODLAND BORDERS INCLUDING BAMBOOS AND BANANAS.

that of the upper Magdalena. He stated (p. 124) "that our work has been done about the borders of the upper Magdalena district. Of the fauna of the floor of the valley, I feel that we have still much to learn." More specifically, Chapman's parties worked at Honda, in a narrow part of the valley, where the arid tropical fauna is not typically developed, and at Chicoral, near Giradot. Even at Giradot the full measure of aridity is not encountered. In travelling south from this point, it may be seen that woodlands become more restricted, savannas more open and the grass shorter; scrub, open plains and badlands predominate. Chapman's parties also worked at San Agustín at the head of the valley at 5000 feet in the upper edge of the Tropical Zone, and below Andalucia at 3000 feet near the margin of the tropical area. Neither of these southern stations may be depended upon to afford an adequate representation of the fauna of the valley floor. A very few native-made skins were available to Chapman from Purificación, 50 kilometers south of Giradot.

In January and February of 1945 I had opportunity to collect and observe birds intensively at Villavieja, Huila, at an elevation of 435 meters (1427 feet), 30 kilometers north of Neiva. This is in the middle of the arid tropical district and represents its most extreme manifestation. Through the kindness of Dr. R. A. Stirton, I shared his quarters at Villavieja, where he was engaged in collecting fossils in the late Miocene beds of the near-by badlands; Stirton also in many other ways aided and encouraged my work in Colombia. I am further indebted to the Servicio Geológica of Colombia, to the Tropical Oil Company, and particularly to Dr. J. Wyatt Durham of that company, who generously gave various critical assistance to Dr. Stirton and to me. I was able to work uninterruptedly at Villavieja from January 12 to February 11, spending half of each day hunting and observing in the field. A total of 380 birds was taken; also there were six specimens taken by Stirton in near-by areas in Huila and Tolima. The specimens represent 123 species. Additionally seven species were identified adequately by sight so that 130 species may be recorded from Villavieja. In the summer of 1946 identifications were reviewed and critical specimens were compared directly with Chapman's and other collections at the American Museum of Natural History. I am much indebted to John T. Zimmer for the use of the Museum's facilities and for aid in taxonomic problems relating to South American birds.

A variety of habitats was accessible at Villavieja. About five kilometers northeast along Quebrada La Venta lay the large area of barren land where some of the best fossil exposures occurred. The

ground surface here was chiefly blue or brown clay, but in some areas the surface was covered with a residue of Pleistocene cobbles and gravel. There was little or no grass. Small mimosa bushes grew scatteringly in the intermittent water courses. South and east of town, six to ten kilometers, a short-grass plain could be reached. On this were several small, shallow playas, some with borders of tall grass, thorny brush and cactus (Plate 13, lower figure). The thorn scrub nearer town varied in height from three to 18 feet. Much of it could be traversed easily, but occasionally tracts of an acre or more proved impenetrable. Grass two feet in height was intermixed with the scrub. Closer to the river were bottomlands with open savannas with trees 15 to 30 feet tall, 50 to 150 feet apart, and with waist-high grass, except where it was overgrazed. In the Laja Valley, three kilometers northeast, a tributary of the Magdalena, there was a merging of thorn scrub and streamside woodland. The latter was often 60 feet in height and usually only 300 feet wide (Plate 13, upper figure). The woodland along the Magdalena River itself was somewhat less xerophilous and even taller than that of the Laja Valley. Tall bamboo clumps were frequent. Probably originally these woods were in places two kilometers across, but they were rather thoroughly broken up by pasture lots and small plantations of corn and bananas so that they usually consisted of narrow borders of trees. Just south of Villavieja was a slough two kilometers in length, the lower course of a small tributary, which had little flow and was overhung by trees. The water was choked with floating vegetation except for a narrow central channel (Plate 12, lower figure). This situation was particularly favorable for the naturalist, for the slough was attractive to marsh birds and by wading in it the species of the woodland borders were readily accessible. The Magdalena River was swift-flowing, with loose rock bottom in many places and with steep, muddy banks.

In the accounts of species which follow, taxonomic and distributional matters are included where new information has come to light, but primarily attention is devoted to observations on habitat and to fragmentary records of behavior, items which are particularly lacking for many South American birds. Data on sexual activity and weight are for similar reasons included. The breeding cycles of birds in equatorial regions are but poorly known. Specimens were taken within five kilometers of Villavieja and in 1945 unless otherwise noted. Some specimens saved as alcoholics or as skeletons were not weighed, and alcoholics were not sexed. Age has been determined from the condition of the skull unless otherwise stated.

Anhinga anhinga leucogaster (Vieillot).—Encountered but once, when one was taken as it was perched on a post standing in a muddy section of the slough where there were broad borders of water vegetation. The bird was fully exposed, as there was no foliage screen. When first seen, it was standing with wings outspread, possibly in preparation for flight. I follow Wetmore (Proc. U. S. Nat. Mus., 93: 232–233, 1943) with respect to the racial taxonomy of this species.

♂, February 3, wing 338 mm., tail 264, culmen 97.

Ardea cocoi Linnaeus.—One was seen flying along a wooded section of the Magdalena River on January 24.

Butorides striatus striatus (Linnaeus).—Of regular occurrence along river courses and sloughs and about ponds on the plateau. The adherence of these herons to foliage-screened borders, the character of their notes and their behavior in every way suggested the closely related Green Heron, *Butorides virescens*, of North and Central America.

♂, January 31, 163 gm., testis 7 mm., iris and face yellow; ♀, first-year, February 2, 10 km. S. Villavieja, 135 gm.

Theristicus caudatus (Boddaert).—These ibises proved to be fairly common on the plains and in the badlands where they worked along muddy stream banks, about playa lakes, in dry short grass, and well out on the stony slopes and mesas. In feeding they picked objects from the surface and did no probing or stone-turning. Often they were associated in pairs. Once two birds alighted in the top of a twenty-five foot tree after they were flushed from the ground. At times they flew high overhead, calling, often at such heights that their markings could not be made out. Chapman did not record this species in the Magdalena Valley.

♂, February 1, bare skin of face black, iris and feet red; ♀, same data; immature ♂, 10 km. S. Villavieja, February 8, iris dark, feet pink.

Anas discors Linnaeus.—A flock of about 50 frequented two shallow ponds on the plateau 10 kilometers south of Villavieja. These ponds were each about two acres in extent, well grown with water vegetation and bordered with some low thorn trees; they nowhere were more than two feet deep. Few male teals in nuptial plumage were noted.

♀, February 2.

Coragyps atratus (Bechstein).—Common about towns and dwellings and along the river.

Cathartes aura (Linnaeus).—Seen often in the open scrub country, soaring about the mesas and escarpments. In a small side valley, on January 18, an adult flushed from a nest when I fired into a tangle of trees and thorny bushes. The clump of vegetation was about 75 feet across, and near its middle was a boulder five feet high. Beside the rock, partly protected above by an overhang, was a single vulture egg on bare earth from which leaves had been cleared. The nest was clean, but immediately flies settled on the egg. Fifty yards away the adult sat on a low bluff, craning its neck. On January 23 an adult was covering the nest closely and had to be pushed off. The single egg had hatched and the young one gave a loud hiss. I judged it to be only about a day old; half egg shells were in the nest. Flies immediately swarmed on the young bird's head. The parent feigned injury, beating through the brush 15 feet away. On February 4 the adult flushed before I entered the thicket. The young was then the size of an adult Screech Owl and sat upright on its haunches, hissing.

Heterospizias meridionalis meridionalis (Latham).—These hawks, which behave and on the wing look like buteonines, especially rough-legs, were encountered regularly

on the plains south of Villavieja. They seemed confined to open grasslands and to borders of playas where they sat about in the occasional thorn trees or on organpipe cacti. One of the birds taken near a pond had remains of about six small toads in its gullet. This species was not reported by Chapman from Colombia.

♂, January 17, 6 km. SE. Villavieja; ♂, February 2, 10 km. S. Villavieja; ♀, February 8, 10 km. S. Villavieja.

Buteo magnirostris magnirostris (Gmelin).—An abundant and very tame hawk in the streamside forests and also in the moderately open scrub. Its sapsucker-like squalls sounded through much of the day in the woodlands.

♂, October 18, 1944, Carmen de Apicala, 400 m., Tolima, iris, cere and feet yellow; ♂, January 16, iris and feet yellow; ♀, January 21.

Geranospiza caerulescens caerulescens (Vieillot).—Twice encountered, on both occasions in bottomland where woods and tall grass were mixed. The wing beat is slow, but not labored.

This form was not reported from the country by Chapman; its occurrence west of the eastern Andes is significant, since Peters's (Birds World, 1: 268, 1931) statement of range is not explicit in this regard. The skin, which was saved, shows distinct, widely spaced cross-bars of white on the under parts and in this respect, as well as in light gray color, it agrees with *G. c. caerulescens* rather than with *G. c. balzarensis*. Wetmore (Proc. U. S. Nat Mus., 87: 186, 1939) maintains three species in this genus, but no reasons for this are given other than strong differentiation in color and pattern. In the material I have seen at the American Museum, all the species distinctions he gives are fairly well broken down by individual variation. It seems likely that full intergradation occurs (*see* also Peters, Proc. Biol. Soc. Wash., 48: 71, 1935); the forms are geographically complementary so far as known.

♀, January 31; ♀, February 2, 10 km. S. Villavieja.

Herpetotheres cachinnans (Linnaeus).—Two were noted on January 15 as they perched in the top of an exposed tree in scrub-covered terrain. They occasionally gave single notes of moderate intensity.

Milvago chimachima cordatus Bangs and Penard.—These small caracaras were abundant and of wide ecologic range. They were seen in the densest woods, in thorn brush and out on the open plains. Several groups of young were seen, which had but recently left the nest (January 19, 20, 21); such groups proved easy to detect by the continual yelping of the young; wheezing notes were heard from adults. One adult had corn kernels in the stomach. This species was attacked vigorously by Fork-tailed Flycatchers on one occasion.

♀ im., November 18, 1944, Coyaima, 450 m., Tolima, iris brown; ♂ im., January 14; ♂ im., January 18; ♀ ad., January 27; ♀ ad., February 6.

Polyborus cheriway cheriway (Jacquin).—Much less numerous than the small caracara, *Milvago chimachima*. On January 13 one perched on a large organpipe cactus and repeatedly gave a low rattling note as it threw its head up and backward. After the bird was shot, another individual flew to the same spot and gave the performance. The bird that was taken was not particularly active sexually; it was heavily infested with mallophaga.

♂, January 13, skin of body and face bright yellow; ♂, January 17, 6 km. SE. Villavieja.

Falco fusco-coerulescens fusco-coerulescens Vieillot.—This species was seen in open thorn scrub, although it at times ranged into adjoining streamside borders. The birds usually were seen perched on tops of organpipe cacti along the base of a rocky hill. One taken here had small chunks of bird meat in the crop.

♂, first year, January 26, 218 gm., testis 4 mm., iris dark; ♂, ad., February 1, 235 gm., testis 5 mm., iris dark.

Falco sparverius intermedius (Cory).—Seen frequently in open country. Two birds, apparently mated, were taken from the same section of a telephone line.

♀, November 20, 1944, Coyaima, 450 m., Tolima; ♂, January 24, 95 gm., testis 6 mm.; ♀, January 24, 108 gm.

Ortalis columbiana columbiana Hellmayr.—Found only in the Lajas Valley, where there was but sparse human settlement. Calling groups were twice encountered in tall, irregular scrub growth, 20 feet in maximum height, and once in heavy stream-side forest. On one occasion, at least six birds were present. They flew from one clump of trees to another, with labored, slow wing beat; usually they moved in couples. In preparing a specimen, the tracheal loop was seen to extend over the breast muscle to the posterior end of the sternum, the two limbs of the loop lying on either side of the carina. The rich strawberry red of the throat faded to dull pink within three hours.

This form is doubtfully conspecific with *O. guttata*. It contrasts strikingly in shape and markings of breast feathers and in size with an example of *O. guttata* at hand from Perú. Accordingly, I follow Peters's (Birds World, 2: 18, 1934) classification of these birds rather than that of Hellmayr and Conover [Field Mus. Nat. Hist., Zool. Ser., 13 (pt. 1), no. 1: 166, 1942].

♂, January 16, testis 12 mm.

Colinus cristatus leucotis (Gould).—Abundant in grassland, except where the grass was very short on the plains or where it was heavily grazed. Grass two feet high and where mixed with clumps of bushes seemed to support the greatest numbers. Males commonly called from bushes or from trees along the fence rows. The three-parted bob-white note seemed not to differ from that of more northern species of the genus.

The specimens from Villavieja agree fairly well with material from Honda, which locality has been designated the restricted type locality of this form. However, as a group they show a little more extreme pallor on the crest and forehead than do topotypes.

Two females and a male which I took 25 kilometers west (by road) of Leiva, Boyacá (120 km. NNE. Bogotá), 2500 meters, are evidently *bogotensis*. They agree well with Dugand's excellent description (Caldasia, 2: 194–198, 1943); however, I have not been able to make a direct comparison with topotypes. Dugand (*op. cit.;* Caldasia, 2: 202, 1943) indicates that *bogotensis* intergrades with *leucotis* at San Gil, Santander (specimens closer to *leucotis*), and at Boitá, 60 kilometers north of Bogotá (specimens closer to *bogotensis*). A specimen from El Carmen, 80 kilometers NNE. Bogotá, may not in fact be *leucotis* as reported by Chapman. I cannot be sure that my specimens from the Leiva area depart at all from *bogotensis* in the direction of *leucotis*. The throat of the male is dark reddish and black and the crown and crest are blackish. In general the dorsal dark areas are more extensive and blacker than in *leucotis*, with which the birds strongly contrast.

♂, January 15, 140 gm., testis 7 mm.; ♀, January 16, 127 gm.; ♂, January 26, 152 gm., testis 10 mm.; ♂, January 26, 152 gm., testis 10 mm.; ♂, January 26, 132 gm., testis 8 mm.; ♂, January 28, 142 gm., testis 8 mm.

Aramides cajanea cajanea (P. L. S. Müller).—This rail was widespread in the region and was not confined to marshes or sloughs. Occasionally it was seen there, but more often it was noted along the banks of intermittent stream courses, taking off, usually afoot, into the tall grass borders or through the undergrowth of the woodland.

When first met, on January 13, it was found in an area grown to opuntia and organ-pipe cacti with scattered patches of waist-high bushes; the ground surface was a hard gravel pavement and there was no watercourse within half a mile. Two birds were seen running among the bushes and one was taken, a juvenile, but fully grown. The other bird, an adult, circled in the bushes near me, giving a guttural chuckle. Finally it was taken when its bright yellow bill showed through the foliage screen; it was a male.

Birds from the upper Magdalena and Cauca valleys are paler on the neck and duller green dorsally than most other wood-rails of this species from northern South America. However, similarly colored birds occur in other parts of South America and even in the Guianas whence this form was named. There appears to be too imperfect a correlation of color type and geographic area to warrant recognition of continental races of this species south of Panamá.

♂ jv., January 13, feet dull orange, bill yellow horn, iris brown; ♂ ad., January 13, feet carmine, bill yellow, iris and eyelids dull red (same in subsequent specimens); ♂, January 20, testis 15 mm.; ♀, February 3; ♀, February 6.

Porphyrula martinica (Linnaeus).—On February 5 two were flushed from floating vegetation along the border of the slough. The one taken was an immature bird with a scattering of purple feathers on the neck and flanks.

♀, February 5, 179 gm.

Jacana jacana hypomelaena (Sclater).—Jaçanas were scattered along the slough, working on the surface of the dense water vegetation where the water ranged to three feet in depth. The birds were grouped in pairs. One pair showed sign of nesting on February 3, becoming much excited by my presence; a female which was taken on January 31 had yellow ova 4 mm. in diameter, and her mate was in breeding condition. Fully grown young were seen on February 5 in the same area. Jaçanas also were seen at a pond on the plains on February 2 and 8. Here they were in small flocks numbering up to five individuals. It seems to me that Wetmore (Proc. U. S. Nat. Mus., 87: 191, 1939) is correct in maintaining *J. jacana* and *J. spinosa* as distinct species. I have seen no evidence of intergradation among adults in the characters of the frontal shield and rictal wattles.

♀, January 31, 145 gm., moderately fat, wattles red, anterior bill and spine of wing rich yellow, feet green, iris dark; ♂, January 31, 80 gm., no fat, colors as in ♀; ♀, February 3, 150 gm.; ♂, February 7, 92 gm., testis 18 mm., brood patch.

Belonopterus chilensis cayennensis (Gmelin).—Found in the plains region southeast of Villavieja, where on January 17 about six individuals were noted. They frequented both dry ground and the muddy edges of small ponds. This species is remarkably tough-skinned and the flesh is likewise tough. Locally the species is called "Tonga."

3 ♂♂, January 17, 6 km. SE. Villavieja, testes 4 mm.

Charadrius vociferus Linnaeus.—Single birds were detected on February 2 and February 8 in the course of visits to the ponds 10 kilometers south of Villavieja.

Totanus flavipes (Gmelin).—Small groups, numbering up to six, were seen about the ponds on the plains 10 kilometers south of Villavieja on February 2 and 8.

♂, February 2, 80 gm., testis 4 mm.; ♂, February 8, 84 gm.; ♂, February 8, 89 gm.

Totanus melanoleucus (Gmelin).—A few individuals of this species were associated with *T. flavipes* on February 8 at the ponds south of Villavieja.

Tringa solitaria solitaria Wilson.—This sandpiper was the most numerous shorebird in the region. Single individuals appeared at isolated puddles along otherwise dry stream courses, at slough and river margins, and about playas on the plains.

All specimens are referable to the eastern race on the basis of characters ascertained by Taverner (Condor, 42: 215, 1940).

♂, January 17, 45 gm., testis 1 mm.; ♂, January 20, 44 gm., testis 1 mm.; ♀, January 30, 50 gm., ovary inactive; ♂, February 2, 10 km. S. Villavieja, 44 gm., testis 2 mm.

Actitis macularia (Linnaeus).—Only once detected, when a bird was taken at the slough on February 7. This individual, an immature, was undergoing a molt of the primaries and secondaries. Only the outermost old primary is present in each wing. A single fully grown black-spotted feather occurs on the otherwise immaculate breast.

♂, February 7, 33 gm.

Capella delicata (Ord.).—Snipe were occasionally flushed from the grassy borders of the ponds on the plains 10 kilometers south of Villavieja. All taken are of this North American species and are typical of it in the significant characters of width of outer tail feather and size of bill.

♂, February 8, 105 gm., fat, testis 4 mm.; ♂, February 8, 125 gm., excessively fat, testis 3 mm.; ♂, February 8, 105 gm., little fat, testis 2 mm.

Burhinus bistriatus vocifer (L'Herminier).—These birds did not frequent the wet places but were found in short-grass plains and on the rocky hill slopes and mesas in the badlands. The birds occurred in pairs or solitarily. Once when a pair was encountered and when one was shot, the mate stayed close by, although it had in no way been injured. The female of this pair had ova 5 mm. in diameter and was thus soon to lay.

Thick-knees were at times seen crouching on the ground; possibly many escape detection in this way. In flight they somewhat suggested large Willets, but most of the time they were silent. This species, like *Belonopterus*, is exceedingly tough-skinned, and the flesh is almost inedible because of toughness.

♂, January 17, 6 km. SE. Villavieja, testis 10 mm.; ♀, February 2, 10 km. S. Villavieja, ova 5 mm.; ♂, 10 km. S. Villavieja; ♂, February 9, iris yellow.

Zenaidura auriculata stenura (Bonaparte).—Extremely abundant in open scrub and about fields. At times flocks of fifty to one hundred congregated in fence-row trees. These doves fed on the ground much as do Mourning Doves.

♂, January 30, 120 gm., testis 13 mm.; ♂, January 30, 102 gm., testis inactive; ♂, February 4, 112 gm., testis 10 mm.; ♂, February 4, 110 gm., testis 8 mm.; ♂, 125 gm., testis 14 mm.

Columbigallina passerina parvula (Todd).—Abundant in the thorn scrub and about town. Scattered groups or pairs were flushed from trailways and roads every few yards as one passed along them. No nests were noted, but birds that were taken indicated readiness to breed. In the central plaza in Neiva, on January 12, Stirton and I watched two individuals fight in the presence of a third bird. The combatants flew up from the ground, vertically for three feet, and struck at each other with their wings. This was done at least three times. Between flights the birds crouched on the ground, rapidly flitting their wings.

♀, January 16, 32 gm.; ♂, January 24, 32 gm., testis 8 mm.; ♂, February 5, 32 gm., testis 10 mm.

Columbigallina talpacoti rufipennis (Bonaparte).—Not as common as *C. passerina*, yet seen frequently along trails in the thorn scrub.

♀, January 23, 45 gm.

Leptotila verreauxi verreauxi (Bonaparte).—Encountered in the thicker scrub, often under the bushes; also seen in woodland. One taken on January 14 was emaciated and apparently too weak to fly.

♀, January 14, 93 gm., thin, feet red, face blue; ♀, February 1.

Aratinga wagleri wagleri (G. R. Gray).—These extremely loud-voiced parrots flew overhead daily in bands numbering up to seventy. Only once were they seen at close range when a group of four stopped in a small tree at the edge of the woods after flying across the badlands.

♀, February 1, 162 gm., ova 2 mm.

Forpus conspicillatus conspicillatus (Lafresnaye).—This small paroquet was abundant in open woods and in thorn bushes even where these were widely spaced in the badlands. Flocks feeding in the trees suggested crossbills in their deliberate movements as also in their rapid departure by dropping steeply in their take-off. The flocking twitter resembled somewhat that of Tree Swallows. Pairs were often seen prospecting for nests about dead stubs and fence posts. On January 26 a female was flushed from a hole in a stub five feet from the ground. Twenty inches down were four white eggs, about one-third incubated; one was addled. The bottom of the cavity was covered with large rough chips of wood and there were a few feathers. The hole was not excavated but was irregular in shape and had rotted out. On January 27 another paroquet was flushed at close range from a nest hole in a fence post; this nest was not opened up. The hole was in the top of the post and the wood surrounding it was firm.

♀, January 13, 27 gm.; ♂, January 15, 26 gm., testis 4 mm.; ♂, January 19, 27 gm., testis 3 mm.; ♀, January 19, oviduct enlarged, mate of preceding male; ♂, February 7, 24 gm., testis 3 mm.; ♂, February 7.

Brotogeris jugularis jugularis (P. L. S. Müller).—Noted in the woodlands along stream courses, often in pairs but also at times in flocks of twenty or more individuals. A mated pair taken on January 27 showed no sign of breeding activity.

Our specimens do not differ from central American examples of this race and suggest no approach to *B. j. cyanoptera.*

♀, January 23, 54 gm.; ♂, January 23; ♀, January 27, 51 gm., ovary inactive; ♂, January 27, 58 gm., testis 2 mm.; ♂, February 3, 59 gm., testis 2 mm.

Amazona ochrocephala panamensis (Cabanis).—These parrots almost always were stationed in the crowns of large trees along the river bank. A favored kind of tree was one that rose to heights of one hundred feet or more and bore conspicuous, large orange flowers. The amazonas moved from crown to crown, characteristically in twos, and occasionally were seen in long flights across the open country. Their flight, in its steadiness and rate of wing beat, is remindful of that of a duck. In the distance their notes sounded like a group of crows. On January 25 three individuals came into some low trees along a fence on the crest of a hill.

♀, January 25.

Coccyzus melacoryphus Vieillot.—This was a common bird of the borders of grassy pastures, frequenting the fence-row trees and scattered thorn bushes. In the early morning these cuckoos sun themselves as anis do, with tail spread and wings partly spread and drooped. They have a weak Road-runner-like song consisting of half a dozen, downwardly inflected cooing notes. This was seldom heard, perhaps because few if any of the birds were breeding. All birds that were taken were young or were adults inactive sexually, and all were molting.

♀, January 14, 45 gm.; ♀, January 15, 44 gm.; ♂, January 15, 47 gm.; ♂, January 24, 45 gm.; sex?, January 30, 45 gm.

Crotophaga major Gmelin.—Found only along the borders of the slough where they were seen in trees overhanging the water and in the edges of the tall grass near the water. This species is gregarious like its smaller, widespread relative, *C. sulcirostris.*

Several times groups of three or four were seen perched facing each other uttering a rasping, snarling chorus of notes. A harsh squawk, like that of a Black-crowned Night Heron, was also heard. The white iris of this species is conspicuous at a distance. On February 7, one was seen carrying nesting material.

♂, February 5, 165 gm., testis 13 mm.; ♀, February 5, 156 gm.

Crotophaga sulcirostris sulcirostris Swainson.—Abundant and of wide ecologic range. Especially numerous in savannas. The densest woodlands were seldom entered and the open plains and badlands were unoccupied. On January 13 a nest with two eggs was found in a small isolated thorn tree in a grassy field. Two adults were in attendance. No other nests were noted and it is thought that few anis were actually breeding at this season. In the early morning, sunning was conspicuous, the birds sprawling on the tops of bushes with wings and tail spread. On January 14, anis became much concerned over the presence of a wounded *Buteo magnirostris*. The three anis taken on January 15 were perched so close together that they were taken with one shot; they were quiet and showed no aggressive behavior, although all were approaching breeding condition. Several other individuals were perched near by. Chapman listed specimens of this wide-ranging species under *C. ani;* one such specimen was a bird from Chicoral.

♂, January 15, testis 5 mm.; ♂, January 15, 75 gm., testis 5 mm.; ♀, January 15, 69 gm., yellow ova; ♂, January 26, 70 gm., testis 7 mm.; ♂, January 26, testis 5 mm.; sex?, January 30, 73 gm.

Tapera naevia naevia (Linnaeus).—The piercing but ventriloquial three-parted songs of this cuckoo were heard in open brush mixed with grass. The notes carry for at least a quarter of a mile. The birds proved shy and seldom were seen except as they flushed at a distance from a song perch. One such perch was but three feet above the ground.

♂, January 14, 54 gm., testis 4 mm.; ♂, January 19.

Tyto alba (Scopoli).—Heard occasionally at night in the vicinity of the town.

Otus choliba crucigerus (Spix).—On January 25 while I was walking beside a fence, an owl of this species flushed from a nest hole in the top of a post. The cavity opened straight up; 15 inches down were two young owls on the floor of the cavity. The young were well feathered, although still heavily covered with down. The young had a number of warbles, and the smallest bird was so infested in one wing, that there was some disturbance of the growth of the primaries. The adult flew off into a thorn thicket 75 feet down slope where it assumed the elongated "alarm" pose, with ear tufts erect. The stomachs of adult and young contained insect matter, orthopterons primarily; in one there was a trace of hair.

The adult specimens seem to differ in no way from the lowland race, *crucigerus*, of widespread occurrence in northern South America. Individual variation is extremely great in this species. One of the adults is in gray phase, the other in moderately red phase.

♀, Coyaima, 450 m., Tolima, November 20, 1944; ♀ jv., January 25, 120 gm.; ♂ jv., January 25, 108 gm., iris yellow; ♀ ad., January 25, 140 gm., iris yellow.

Speotyto cunicularia tolimae Stone.—Fairly numerous in the badlands district. On January 19 a group of owls was found about a burrow in the edge of a gully. The hole was 8 inches in diameter and the floor clean except for a large green elytron of a beetle. The adult female was sitting in the entrance; the adult male, which looked much paler, appeared across the gully. A single fully grown juvenile was taken near by. All three birds were in worn plumage and were molting.

In contrast, with respect to breeding cycle and molt, were two fresh-plumaged

birds, a pair, taken on January 23 at a nest hole. This burrow also was at the edge of a gully on a grassy shoulder where the ground began sloping away steeply. The floor of the burrow was well lined with horse dung two feet down. The hole swung to the left in a half circle and maintained its initial diameter of six inches. Eight feet in it terminated in a nest chamber 21 inches below the surface and only three feet from the entrance point. There was no dung in the enlarged nest cavity. Three heavily incubated eggs constituted the clutch. I suspect that the burrows are dug by the owls, as there are no large burrowing rodents in evidence in the area; the soil is soft and somewhat sandy.

This race of *Speotyto cunicularia* does not impress me as being dark to the degree described by Stone (Proc. Acad. Nat. Sci. Phila.: 303, 1899). The upper parts are as deep brown as those of *S. c. floridana* and *rostrata* and are darker than those of any *hypugaea* or *S. c. cunicularia*. However, the dorsal spots are purer white than Stone's description would indicate and are like those in *floridana*. The under parts are variable in pallor; all are much paler than *floridana* and some have larger pure white areas than *hypugaea*. The white of the tail is much as described by Stone. Wing length ranges from 158 to 172 mm., all somewhat in excess of the six-inch wing length given by Stone.

♂, Coyaima, 450 m., Tolima, November 10, 1944, iris yellow; ♀ jv., January 19, 92 gm.; ♂, January 19, 122 gm., testis 5 mm.; ♀, January 19, 123 gm.; ♂, January 23, 123 gm., testis 8 mm.; ♀, January 23.

Nyctibius griseus panamensis Ridgway.—On February 9 Stirton encountered one of these birds perched erectly in a dense streamside forest tangle. The specimen agrees in size and wing markings with *panamensis*. It is similar in all respects to a bird from Antioquia in the American Museum; both fall among the paler variants of this race.

♀, February 9, 177 gm., ovary inactive, iris yellow.

Chordeiles acutipennis acutipennis (Hermann).—Near town in an area of grassy pasture and scattered brush were a few small patches of gravel on elevated ground. These nighthawks were conspicuously limited to these localities. On January 21, after dark, one flew about one of these patches, diving shallowly and uttering the twanging note typical of the nuptial performance of this species (Miller, Condor, 39, 42: 1937). At other times it was heard, apparently on the ground, giving the guttural trill. These notes were typical for the species as known to me in North America, except that the trill seemed distinctly higher in pitch. This is perhaps to be expected in view of the extremely small size of this race. The bird that was calling proved to be a sexually active male. No nighthawks of this species were seen in daylight hours.

♂, January 21, 39 gm., testis 5 mm.

Podager nacunda minor Cory.—One of these striking white-bellied nighthawks flushed from under foot on a gravelly ridge in the badlands on January 23. It flew 30 yards and lit on the ground, then bobbed up and down. The ovary of this bird showed one empty follicle and no especially enlarged ova. Probably there was a nest which we failed to find, and it would appear that only one egg had been laid. The bird was exceedingly fat.

Sex? (male plumage), Coyaima, 450 m., Tolima, November 20, 1944; ♀, January 23, 162 gm.

Nyctidromus albicollis albicollis Gmelin.—Abundant in the vicinity of town. After dark six could often be heard at a time, giving their rather harsh, strongly accented calls. The form and quality of the note varied greatly, but apparently only the one species was involved. In grassy pastures they stayed near larger thorn

thickets, usually perching by dark above ground; they were shy in the beam of the flashlight. Twice birds were flushed by day, once deep within a thorn thicket and again in dark woods along a damp stream course. These birds had been resting on leaf litter. The pauraques evidently were breeding, yet all were molting.

♂, January 19, 60 gm., testis 17 mm.; ♂, January 21, 55 gm., testis 14 mm.; ♀, January 24, 58 gm., ovum 4 mm.

Streptoprocne zonaris albicincta (Cabanis).—Usually these swifts were seen in large numbers. They could be detected almost daily, but on some occasions, especially in windy and cloudy weather, they swung low over the fields and 50 or more could be counted at a time.

♂, January 27, 83 gm., testis 6 mm.

Anthracothorax nigricollis nigricollis (Vieillot).—On January 22 one of these hummingbirds was shot down from the crown of a flowering tree on the river bank. On January 29, the species was noted about a tree in a grassy field. The top of this isolated tree was dead, and the birds came to perch on the exposed twigs, apparently using them as lookouts. No noises were made, nor were insects captured, but the birds often looked about. Only one bird perched here at a time, although there were three males taken from the tree in a period of 15 minutes. Once there was a chase, then a return past the tree in bounding flight in the form of a horizontal figure eight. Some vocal notes accompanied this display.

♂, January 22, 7 gm., testis 5 mm.; ♂, January 29, 7 gm., testis 3 mm.; ♂, January 29, 7 gm., testis 3 mm.; ♂, January 29, 7 gm., testis 3 mm.

Chrysolampis mosquitus (Linnaeus).—Seen congregated about large flowering trees on the banks of the river. All taken were young males with a narrow stripe of metallic feathers on the throat.

2 ♂♂, January 22, testis ½ mm.; ♂, February 7.

Lepidopyga goudoti goudoti (Bourcier).—This hummer typically works about among twigs of trees, beneath or within their crowns, probably in search for insects. It was not seen visiting flowers. One was taken in forest understory near a stream and many were noted about mimosas standing in the open, where they moved slowly through the twigs beneath the umbrella-like tops of these small trees.

♂, January 14, testis 2 mm.; ♂, January 22, testis 2½ mm.; ♂, January 29, testis ½ mm.

Megaceryle torquata torquata (Linnaeus).—This kingfisher was seen along the banks of the Magdalena River occasionally and also along the slough. It seemed to select perches high in the trees. Two came into a fifty-foot dead tree near the slough and gave harsh sputtering notes, the elements of which were more spaced and less loud than in *Megaceryle alcyon*. This species was more wary than the members of the genus *Chloroceryle*.

♂, January 22, testis 5 mm.; ♂, February 5, testis 9 mm.

Chloroceryle amazona mexicana Brodkorb.—One was taken on a section of the slough where the water was clear and flowing slowly over rocks for a distance of 50 feet. The bird was using perches within 15 feet of the water in the shade, beneath overhanging trees. It gave a single *click* note. It was within 150 yards of this spot that the other two species of kingfishers were taken.

The wing and tail of this bird measure 141 and 80 mm., respectively. The difference of 61 mm. is diagnostic of *C. a. mexicana* according to Brodkorb (Auk, 57: 543–545, 1940). Also the supraloral white stripe is much reduced. The occurrence of a *mexicana*-like bird this far south in Colombia is significant.

♂, February 5, 120 gm., testis 5 mm.

Chloroceryle americana hellmayri Laubmann.—One was taken from some low branches of a tree overhanging the slough. The bird was about 12 feet above the water. The spotting of the under parts of this bird are sparse in degree comparable to that in other examples of *hellmayri* and in contrast to the condition in *C. a. americana*.

♂, February 10, 28 gm., testis 2 mm.

Galbula ruficauda ruficauda Cuvier.—Jacamars were frequently encountered, solitarily, in streamside woodland where they usually perched in open branchwork below the crowns of the trees. Once one sat on an exposed top of a dead tree. The birds attract the eye both by their odd elongated outline and the jerky movements of the head and bill. The bill is flicked about, apparently in order to catch insects moving in the foliage. The stomach of one contained flies and what appeared to be bees. Insects are evidently not taken while the bird is in flight but are seized by the long tweezer-like bill. Some individuals were breeding, but others apparently were not.

♂, January 21, 26 gm., testis 2 mm.; ♀, January 21, 30 gm., 1 empty follicle, 1 enlarged ovum; ♀, January 24, 27 gm., ovary inactive; ♂, January 28, 27 gm., testis 3 mm.; ♂, January 30, 28 gm., testis 7 mm.; sex?, February 4, 28 gm.; ♂, February 7.

Picumnus olivaceus olivaceus Lafresnaye.—Piculets were common in the streamside woodlands. I was at once impressed with the versatility of these generalized woodpeckers. In forage behavior they may perform like nuthatches, titmice, or woodpeckers, often in rapid succession, as occasion demands. Although the tail is not adapted for, nor used in, clinging, the birds may assume an upright posture on a trunk or limb surface and may peck vigorously, throwing the head with hammer-like strokes as do other woodpeckers; they are not limited to the jabbing head strokes of nuthatches. The tapping is as loud as that of sapsuckers. In landing from a flight, they may come to rest upside down, or vertically as a woodpecker on a flat trunk, or again in normal perching fashion on a horizontal twig. They not only can hang like a titmouse in small twigs, but actually can progress head downward on a trunk. It is difficult to see how they are inferior in any respect to these several specialized trunk and twig foraging types with which I have compared them, even though we have become accustomed to think of these specializations as divergent, somewhat incompatible modifications. The generalized ability of piculets as tree-surface foragers doubtless lies fundamentally in the large, zygodactyl foot; the foot is much larger relative to body size than in the nuthatches.

The note of this species consists of a high-pitched trill, somewhat like a warbler song, yet fundamentally it is nothing but a rapid, high-pitched Downy Woodpecker trill. A juvenile in company of adults was heard giving a single thin *peep*.

On January 30, two piculets were noted 30 feet above ground, exactly opposite each other in vertical position on a small upright limb. Both were pecking. When taken, they proved to be an adult male which was molting and a male in juvenal plumage with cream-colored spots on the crown; one new crown feather with a red spot, the adult male type, was still in its sheath.

On February 7 a piculet was flushed from a nest hole in a low-hanging dead limb four inches in diameter. The hole was five feet from the ground and was drilled in hard wood. Chisel marks from the bird's bill were in evidence all around the entrance and in the passage. The aperture was about three-fourths of an inch in diameter; the passage led inward about an inch before turning downward.

♀, January 21, 12 gm.; ♀, January 28, 14 gm., ovary inactive; ♂, jv., January 30,

12 gm.; ♂ ad., January 30, 15 gm., testis 1 mm.; ♀, January 31, 11 gm.; ♂, February 4, testis 1 mm.; sex?, February 4, 12 gm.; sex?, February 4, 13 gm.

Centurus subelegans rubricapillus Cabanis.—Open timber mixed with organpipe cactus constituted the habitat of this woodpecker. The cactus may be essential, as the birds frequently are seen working on the upper arms of it, much as do Gila Woodpeckers. None was seen in the damper, heavier woods along the main river. Concerning the species name, *see* Gilliard (Amer. Mus. Nov., No. 1071: 7, 1940).

♂, January 15, 50 gm., testis 4 mm.; ♀, January 19, 44 gm.; ♂, January 19, 43 gm., testis 5 mm.; ♂, January 23, 46 gm., testis 3 mm.

Phloeoceastes melanoleucos malherbii (Gray).—Near the slough in a row of tall trees bordering a drainage channel a pair of these woodpeckers was taken. No others were seen in the region. The female was first heard pounding and was then sighted near a nest hole 25 feet up on the main trunk in live wood. The aperture appeared to be five inches in diameter and faced the watercourse. The female was not yet ready to lay but might have attained full breeding state in a few weeks. The disturbance made by the wounded female attracted the male. It came to the nest tree and pounded on a dead stub above the nest. Once it backed down the trunk a distance of about six feet. For nomenclature, *see* Wetmore (Proc. U. S. Nat. Mus., 87: 212, 1939).

♂, January 28, 242 gm., testis 8 mm.; ♀, January 28, 232 gm., ova 2 mm.

Ceophloeus lineatus nuperus Peters.—Twice encountered in woods bordering sloughs or rivers. The birds were silent except for tapping and were not breeding. The one skin preserved shows the coloration of *nuperus* but the wing is long for this form (*see* Peters, Occas. Papers Bost. Soc. Nat. Hist., 5: 320–321, 1930); wing chord, 192 mm.; bill, 38.5.

♀, February 1, 180 gm., ovary inactive; ♀, February 3.

Dendroplex picus dugandi Wetmore and Phelps.—This was the common woodhewer of the area, although it was not seen in large numbers. It ranged from low, open scrub cover to heavy streamside woodland. On January 20 one of these birds was noted flying from one thorn clump to another in open country; few of the low spreading trees here had trunks as much as eight inches in diameter. This bird proved to have a white-shelled egg in the oviduct. The birds from Villavieja are typical of this recently described form (Proc. Biol. Soc. Wash., 59: 64–65, 1946).

♂, January 19, 40 gm., testis 11 mm.; ♀, January 20, 45 gm., laying; ♀, January 21, 40 gm., old brood patch; ♀, January 27, 42 gm.; sex?, January 30, 41 gm.; ♂, January 31, 39 gm., testis 8 mm.

Lepidocolaptes souleyetii lineaticeps (Lafresnaye).—The series of piercing staccato notes that constitutes the call of this woodhewer is highly pitched and thinner than the corresponding notes of *Dendroplex picus*. Twice this species was encountered, each time in large streamside trees, where the birds worked up the trunks in typical woodhewer fashion.

♂, January 30, 25 gm., testis 3 mm.; ♂, January 31, 25 gm., testis 7 mm.

Synallaxis albescens insignis Zimmer.—These ovenbirds stayed in dense cover, usually in or near tall grass and annuals. When they were found in low trees, they apparently had moved there to take up calling posts. The "song" or call is a harsh, buzzing note with strong downward inflection, repeated at about one-second intervals over long periods of time. Females as well as males were taken while giving this note from fixed position. When in a tree, they sought not an exposed post but one in a dense clump of foliage or in mistletoe-like growths. None of the birds taken, even though in breeding condition and in seemingly adult plumage, had double-layered

skulls typical of most adult passerine birds; probably this condition is never attained in *Synallaxis*. Evidence concerning the breeding season of the ovenbirds is confusing, but probably indicates protracted, possibly year-round, breeding by the population as a whole. Singing birds with enlarged gonads were taken that were far advanced in molt, whereas others that were breeding were in full worn plumage; still others were in fresh plumage but were non-breeding or were in the strikingly rich brown juvenal dress.

♂, January 18, 16 gm., testis 6 mm., molting; ♀, juvenal plumage, January 24, 16 gm., iris dull brown; ♂, January 24, 16 gm., testis 6 mm., iris light rust; ♂, February 4, 16 gm.; ♀, February 5, 18 gm., ovary inactive; ♂, February 7, 16 gm., testis 4 mm.

Thamnophilus doliatus albicans Lafresnaye.—Abundant all through the thorn scrub and in lesser numbers in the lower tangles of streamside woodland. They seemed usually to be paired. The call note consists of loud, resonant notes somewhat owl-like in quality, although slightly guttural, given with increasing cadence but with little variation in pitch. Both members of a pair give it, the female less often and on slightly higher pitch. A male watched calling, on January 16, leaned forward with neck outstretched and crown raised. As the calling proceeded, the neck swung downward. Antshrikes were sluggish in their movements and stayed in the thick cover. Two of the females taken showed signs of breeding.

♂, January 13, 32 gm., testis 3 mm., iris ivory; ♂, January 16, 30 gm., testis 3 mm.; ♀, January 16, 29 gm., iris white; ♀, January 18, 33 gm., laying—1 empty follicle; ♀, 34 gm., oviduct enlarged, iris white; sex?, January 24, 30 gm.

Formicivora grisea hondae (Chapman).—These antbirds were conspicuous inhabitants of thorn scrub and of lower woodland trees. They flitted about in the cover somewhat in the jerky fashion of Redstarts. The long, white, silky flank feathers were fluffed out and displayed. One of their notes consists of a series of six or more elements, in quality remindful of the worry notes of Olive-sided Flycatchers.

♂, January 14, testis 4 mm.; ♂, January 16, 15 gm., testis 2 mm., molting; ♀, January 18, 13 gm., ovum 2 mm., molting; ♂, January 20, 12 gm., testis 1 mm., "female" plumage; ♀, 11 gm., January 20; ♂, January 20, testis 3 mm.; ♂, 12 gm., testis 6 mm.

Pachyramphus rufus (Boddaert).—Met only once, on February 6, when one was calling in the open crown of a streamside tree 25 feet above ground. The note was something like the trill of a small woodhewer.

♂, February 6, 17 gm., testis 5 mm.

Erator inquisitor albitorques (Dubus).—This cotinga, like the preceding one, seemed to be scarce in the region. On January 28, a female came into a dead tree top in the river-bottom forest and sat quietly. It had recently laid, having completed a clutch of three eggs, as shown by the empty follicles in the ovary. On February 6 a pair came silently into the tree where the *Pachyramphus* had been taken a few moments before. The pair was silent and was carrying food.

This genus is small in number of forms, but its structural differentiation from the related *Tityra* is of such magnitude in respect to tarsal scales, loral feathering and bill shape that I cannot see justification for merging the two as Hellmayr has done [Field Mus. Nat. Hist., Zool. Ser., 13 (6): 204, 1929]. The differences are much greater than between most passerine genera; *see* also Wetmore (Proc. U. S. Nat. Mus., 93: 284, 1943).

♀, January 28, 44 gm.; ♂, February 6, 42 gm., testis 5 mm.; ♀, February 6, 36 gm.

Fluvicola pica (Boddaert).—This strikingly white flycatcher was strictly limited to the vicinity of water, either the borders of the slough in the river bottom or the playa lakes on the plains south of Villavieja. The birds commonly flitted about over the water in the bushes or grass that grew at the margins or that stood in the water. They seldom took a fixed lookout post in search for insects but moved about more like gnatcatchers or fly-snapping warblers. I follow Wetmore (Proc. U. S. Nat. Mus., 87: 225, 1939) in considering this form specifically distinct from *F. albiventer* from south of the Amazon.

♀, January 31, 15 gm., laying; ♂, January 31, 14 gm., testis 5 mm.; ♀, January 31, 12 gm.; ♀, February 7, 13 gm., oviduct enlarged; ♀, February 8, 10 km. S., 12 gm.

Pyrocephalus rubinus piurae Zimmer.—In the plaza in the town of Neiva, on January 12, a pair of Vermilion Flycatchers frequented some open trees near the fountain. The male caught a large cicada and the female took it from him. She then pounded the insect while the male crowded close to her, somewhat disturbing her, but not trying vigorously to take the prey away. Several times the cicada was dropped and caught in the air near the ground. Finally the female broke off part of the abdomen and the male took away the remainder of the insect. The female swallowed her piece. The male, at some distance, broke up his part and may have swallowed some of it, but soon he brought a large piece over to the female, sat beside her, and let her take it when she reached out for it. She promptly swallowed the bite.

At Villavieja, Vermilion Flycatchers were common along the streets in town and along the railroad. They ranged out into adjacent open scrub and heavily grazed pasture. They avoided woodland and were not seen in the badlands nor in tall grass and denser scrub. Some were always seen about the sparse vegetation at the playa lakes south of town.

♀, January 17, 14 gm.; ♂, February 2, 10 km. S., 16 gm., testis 9 mm.; ♂, February 2, 15 gm., testis 8 mm.

Muscivora tyrannus monachus (Hartlaub).—Common in tracts of savanna where they perched on tops of trees and on fences. A sharp *tick* note, given singly or in rapid sequence, was the only sound uttered by them. This flycatcher was noted attacking one of the small caracaras (*Milvago*).

♂, January 13, 31 gm., testis 14 mm.; ♂, January 20, 32 gm., testis 10 mm.

Tyrannus melancholicus chloronotus Berlepsch.—Notes of this kingbird were the first sounds heard in the morning in town, when the chorus of weak sputtering notes sounded from all directions. Kingbirds were abundant in savanna and open scrub. Evidently many were breeding, although no nests were inspected.

♀, January 14, 44 gm., brood patch; ♂, January 21, 38 gm., testis 14 mm.

Tyrannus dominicensis dominicensis (Gmelin).—Apparently a winter visitant. One only was detected.

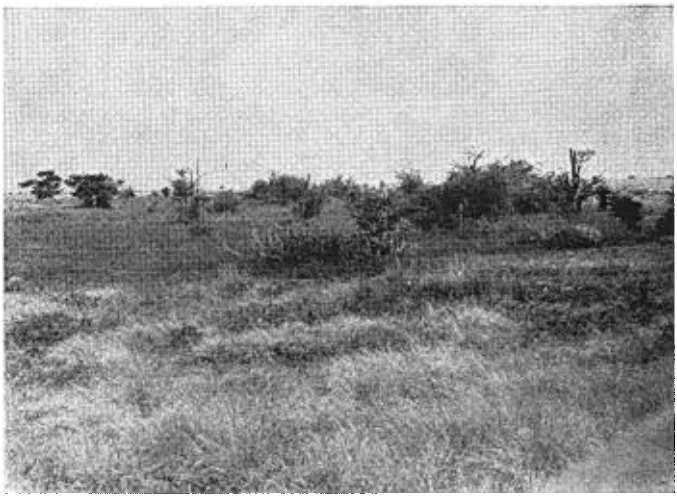
♀, February 4, 43 gm., ovary inactive.

Legatus leucophaius leucophaius (Vieillot).—This flycatcher was found well up in the large trees of the stream courses, although not along the main river. The actions of the bird, as also its notes, reminded me of a Wood Pewee.

♂, January 27, 21 gm., testis 5 mm.; ♂, January 30, 24 gm., testis 7 mm.

Myiodynastes maculatus difficilis Zimmer.—Found in the timber bordering the intermittent stream courses in the Laja Valley. The loud, harsh calls of this species were frequently heard in such situations. Breeding individuals were taken.

♂, January 25, 46 gm., testis 13 mm.; ♀, January 25, 43 gm., oviduct enlarged; ♂, January 30, 45 gm.; ♀, February 6, 45 gm., ovary inactive.



(*Upper*) TREES AND UNDERSTORY OF WOODLAND IN LAJA VALLEY, NEAR VILLAVIEJA, HUILA, COLOMBIA.

(*Lower*) SCATTERED THORN SCRUB AND CACTUS AT BORDER OF PLAYA LAKE ON PLAINS 10 KILOMETERS SOUTH OF VILLAVIEJA.

Megarynchus pitangua pitangua Linnaeus.—Common in the better-developed woodland where they foraged chiefly beneath the crowns of the trees among the larger branches and trunks. A bird taken on January 16 near a large nest high in the trees had greatly enlarged gonads, although it was molting. At other places family groups were seen and the yodeling squall of this species was then much in evidence. The specimens taken had been feeding on cicadas and others were seen pounding these large insects and mashing them in their capacious and well adapted bills. The feeding habits and the correlated bill structure are quite in contrast with those of the related Kiskadee or Derby Flycatcher which takes insects on the wing in the open, working from exposed lookouts.

♂, January 16, 64 gm., testis 13 mm.; ♂ jv., February 6, 55 gm.; ♀, February 6, 60 gm., old brood patch.

Myiozetetes cayanensis hellmayri Hartert and Goodson.—Found commonly in the open scrub and along the borders of woodland at low or middle heights. A fully grown juvenile was taken on January 18. An adult taken on January 29 was laying.

♀, January 27, 27 gm., ovary inactive; ♀, January 29, 29 gm., laying.

Pitangus sulphuratus rufipennis (Lafresnaye).—Not numerous, but occasionally seen on tree tops.

♂, January 30, 60 gm., testis 8 mm.

Myiarchus crinitus boreus Bangs.—This migrant from North America was twice taken in streamside woodland, in the same group of trees with the resident *Myiarchus apicalis*.

♀, January 23, 36 gm.; ♀, February 6, 30 gm.

Myiarchus ferox panamensis Lawrence.—A pair of this species was taken in the woods bordering the Laja River. They were moving about at a height of about 25 feet. They had a loud, clear burbling note. The cover in which they were found seemed no different from that where the other species of *Myiarchus* were taken in the same valley.

♂, February 4, 32 gm., testis 2 mm.; ♀, February 4, 33 gm., ovary inactive.

Myiarchus apicalis Sclater and Salvin.—On January 19 a sexually inactive female was watched investigating a hole in a fence post at the edge of streamside woods. A male in breeding condition was taken near here on January 23. The species seemed confined to woodland, either of the smaller tributary valleys or of the main river course.

♀, January 19, 28 gm.; ♂, January 22, 30 gm., testis 11 mm.; ♂, January 23, 30 gm., testis 8 mm.

Empidonax traillii traillii (Audubon).—Once detected, when a bird was found flitting about in streamside twigs.

♀, January 29, 13 gm.

Tolmomyias sulphurescens confusus Zimmer.—A female taken on January 27 was building an elaborate globular nest situated at the tip of a limb 20 feet above ground. This was in a tract of dense timber. The nest entrance was low on one side and was overhung. Other individuals also were taken in the dense, relatively humid type of woodland.

The three specimens from Villavieja are typical of *confusus* in their bright yellow under parts and dark upper parts (*see* Zimmer, Amer. Mus. Nov., No. 1045: 8–9, 1939) and do not show any certain intermediacy in this regard toward the paler *asemus*. However, they are of the large size of *asemus* (see measurements). *Asemus* has been reported from as near Villavieja as Chicoral, Tolima. The individual concerned is in poor plumage and the wing is unmeasurable, but its coloration does seem to be that of

asemus. It would appear that the influence of *confusus* extends across the eastern Andes from the type locality at Villavicencio into the upper Magdalena basin, but in this area there is a sign of intergradation in that the characters of the two races (color and size) are there mixed. De Schauensee (Proc. Acad. Nat. Sci. Phila., 97: 45, 1945) comments on the resemblance of two birds from El Tambo (presumably in Cauca Valley) to *confusus*, but I am unable to coördinate his observations with mine; he apparently made no direct comparison with *asemus*.

Measurements of wings of birds of known locality

T. s. asemus

♂	108996	A. M. N. H.	East of Palmira, Cauca	67.0 mm.
♂	112209	A. M. N. H.	Río Frío, Cauca	67.2
♂	108130	A. M. N. H.	Cali, Cauca	66.4
♂	133659	A. M. N. H.	Dabeida, Río Sucio	68.3
♀	498342	A. M. N. H.	Jiménez, W. Colombia	68.9

Villavieja birds

♂	93897	M. V. Z.		69.2
♂	93898	M. V. Z.		69.4
♀	93896	M. V. Z.		70.6

T. a. confusus

♂	133660	A. M. N. H.	Malena, Antioquia	65.9
♀	122173	A. M. N. H.	Buena Vista above Villavicencio	64.1
♀	122174	A. M. N. H.	Villavicencio	64.5
♀	122176	A. M. N. H.	Opon, Magdalena River	64.3
♀	181149	A. M. N. H.	Río Suno, Ecuador	63.0

♀, January 27, 17 gm., ovum 2 mm.; ♂ ad., January 28, 14 gm., testis 8 mm.; ♂, im. skull, January 31, 15 gm., testis 8 mm.

Todirostrum cinereum cinereum (Linnaeus).—Common throughout the woodlands of the valley. The blunt, finch-like notes are surprisingly loud for so small a bird. The birds seldom left the cover of the foliage, moving about therein like warblers.

♀, January 22, 7 gm., iris white; ♀, January 22, 7 gm., iris white; ♂, January 29, 7 gm.

Todirostrum sylvia superciliare Lawrence.—Only once was this species detected, when, on January 28, one was taken in the understory of the timber near the river.

♂, January 28, 7 gm., testis 5 mm., iris white.

Euscarthmornis margaritaceiventer septentrionalis (Chapman).—This small flycatcher was abundant in the scrub growth where it called loudly and frequently. The birds stayed within the cover but often were not much protected from the sun by the scant foliage.

The form *septentrionalis* has been poorly known and has been ascribed a peculiar distribution [Hellmayr, Field Mus. Nat. Hist., Zool. Ser., 13 (pt. 5): 322, 1927]. Chapman (Bull. Amer. Mus. Nat. Hist., 33: 176, 1914) named it as a species from two specimens taken at Honda, Tolima. He also reported a specimen from Anzoategui, 4750 feet, Lara, Venezuela. Hellmayr listed an additional example from Maraquita, near Honda. In the American Museum are three additional specimens (nos. 150450–2) from La Vela de Coro, Falcón, and El Cuji, Lara, Venezuela. These last and some Bogotá skins appear to me less gray dorsally than typical *sep-*

tentrionalis and than my specimens from Huila, although they are not as greenish as *impiger*. As regards distinguishing features of *septentrionalis* and *impiger* other than dorsal color, I find the bill color somewhat variable in both, although an average distinction is evident, *impiger* possessing a redder bill. I do not find constant differences in bill shape and size along the lines suggested by Chapman. Thus *septentrionalis* seems to show incomplete differentiation; it scarcely can be maintained as a full species. It is, I think, a geographic race of the upper Magdalena basin, possibly with a range extending even beyond this area. Partly in accord with Hellmayr (*loc. cit.*), I would view occasional dark-backed birds from the coastal section of Venezuela as individual variants of *impiger*.

The improved representation of *septentrionalis* now available, which includes birds in fresh plumage, throws light on the relation to *E. margaritaceiventer* and its races. Hellmayr (*loc. cit.*) has suggested that *impiger* and *margaritaceiventer* are conspecific and this now seems well indicated by the annectent character of *septentrionalis*. The form *E. m. wuchereri* of northern Brazil is so similar in coloration to unworn plumages of *septentrionalis* that on first examination I was in doubt concerning their racial distinctness. *Wuchereri* is, however, somewhat grayer on the pileum; the difference between the color of the pileum and that of the back is a little more definite. In bill color and shape I can see no dependable differences in the small samples at hand. Therefore, although geographic junction of *wuchereri* and *septentrionalis*, or of *rufipes* and *septentrionalis*, has not actually been shown, the imperfect differentiation of the southern and northern representatives hardly permits maintaining them as species. The very dark forms (*auyantepui* and *duidae*) of the mountains of southeastern Venezuela represent a separate line of modification which, if indeed within specific limits, is of greater magnitude than that of the northern lowland races.

♂, January 14, 9 gm., testis 5 mm., skull partly single layered, iris yellow; ♂, January 15, 10 gm., testis 7 mm., skull and iris as in preceding; ♂, January 20, 10 gm., testis 2 mm., skull "im."

Atalotriccus pilaris pilaris (Cabanis).—A loud, harsh call attracted my attention to this flycatcher in some open streamside trees where it was perched 20 feet above ground. I think this species was scarce, although it may have been overlooked through confusion with the common *Euscarthmornis*.

♂, January 27, 6 gm., testis 6 mm., skull partly single layered, iris white.

Euscarthmus meloryphus meloryphus Wied.—Twice taken in thick mimosa scrub, once on a mesa, and once beside the Laja River. The aspect of this bird in life and in the hand suggests an antbird as much as a flycatcher. It is not surprising to me therefore that its taxonomic position is in doubt [see Hellmayr, Field Mus. Nat. Hist., Zool. Ser., 13 (pt. 5): 357, 1927].

♂, January 13, 7 gm., testis 2 mm.; ♂, February 4, 7 gm., testis 3 mm.

Elaenia flavogaster flavogaster (Thunberg).—This elaenia reminded me of the Phainopepla in its actions. Its short, broad bill and elevated crest doubtless contributed to the illusion. The species was encountered in savanna and in woodland borders where the birds were seen flying erratically between trees or perched in the crowns of trees.

♂, January 16, 24 gm., testis 9 mm.; ♂, January 29, 25 gm., testis 8 mm.; ♀, January 29, 22 gm.

Myiopagis viridicata pallens Bangs.—Once taken in the forest understory near the main river. The bird was working about in a dark ravine near a large tree trunk. It proved to be in heavy molt, involving wings and tail; nevertheless the gonads were fairly large. For use of generic name, *see* Zimmer (Amer. Mus. Nov., No. 1108: 20, 1941).

♂, January 21, 15 gm., testis 4 mm.

Phaeomyias murina incomta (Cabanis and Heine).—This exceedingly plain flycatcher was once detected in a thicket of small trees along a ravine running through a grassy slope. It was calling loudly. As in the preceding species, a complete molt was in progress while the bird was sexually active.

♂, January 18, testis 6 mm.

Iridoprocne albiventer (Boddaert).—These Tree Swallows were seen perched on an old snag on a gravel bar in the middle of the Magdalena River and also at times along the wires paralleling the railroad. The birds were noted singly or in pairs and were less common than the Rough-winged Swallows. On February 4, Tree Swallows were noted entering nest crannies under the eaves of the railway station.

♂ ad., January 24, 15 gm., testis 11 mm.

Stelgidopteryx ruficollis aequalis Bangs.—Seen chiefly over the grassy fields and on the telephone wires, but also locally along small watercourses. On January 28, a pair was hovering in front of a small sand bank at the edge of a river terrace. The female, which was taken, showed no sign of sexual activity, however. Although frequently noted in pairs, none of the other birds preserved as specimens was sexually active.

This form of swallow differs appreciably from the races of Rough-winged Swallow of North America in quality of note, which is less guttural, and in shorter wing with consequent differences in flight. In the air the wing action is more like that of Tree Swallows without the effect of long, trailing primaries typical of *S. r. serripennis*. Were it not for the apparently complete transitional series of forms in Central America, the distinctly different coloration and the appreciable differences in behavior of the northern and southern representatives of *Stelgidopteryx* might argue for their specific distinctness.

♀ ad., January 24, 13 gm., ovary inactive; ♀ ad., 14 gm., ovary inactive; ♂ ad., January 30, 15 gm., testis 2 mm.; ♂ ad., February 7, 14 gm., testis 1 mm.

Cyanocorax affinis affinis (Pelzeln).—This jay inhabited the well-developed woodland of the stream and river courses. The birds usually were quiet and were not easily approached. On January 28, the calls of a wounded woodpecker attracted a pair of jays, which came in silently overhead. The female of this pair had recently laid an egg, as shown by the presence of an empty follicle in the ovary, and she evidently would have laid two more eggs to complete the set. Subsequently a third jay came into the disturbance but circled at some distance, giving a clear, loud whistle and also a loud, musical trill suggestive of song trills of shrikes. On January 30, a group of four young jays was found in tall timber near the Laja River. The adults were in attendance and came in close in response to squeaks. These young were fully grown, the rectrices being complete. On February 6 a family of short-tailed young was noted.

♀ ad., January 28, 232 gm., laying, iris silver; ♂ ad., 219 gm., testis 11 mm.; ♂ jv., January 30, 190 gm., iris dark; ♀ jv., January 30, 188 gm.; ♀ ad., 210 gm., iris silver; sex? jv., January 30, 192 gm., iris dark; ♂ ad., February 1, testis inactive, iris silver.

Campylorhynchus minor bicolor (Pelzeln).—Seen principally about the organpipe cactus and associated, scattered thorn trees. They also occurred in widely spaced trees adjacent to fence rows and pastures. The notes of this bird are very powerful, some of them clear, others harsh and guttural. The birds flew readily, often at heights of 25 feet above ground in moving between cactus plants. Fully grown juveniles were common, while some adults were engaged in nesting.

This form of cactus wren, which is extremely well differentiated from its conspecific relatives, has been known thus far only from Bogotá skins. Its true range, manifestly not the Bogotá area, had not been found. Chapman (1917, *op. cit.*) used the name *bicolor* for the race that is now called *albicilius* [*see* Hellmayr, Field Mus. Nat. Hist., Zool. Ser., 13 (pt. 8): 130–131, 1934], but he recorded a skin from Honda, northern Tolima, which Hellmayr thinks may have been true *bicolor*. Hellmayr did not examine this skin and I did not find it at the American Museum with other material from Honda; presumably Chapman's report of it was an error, as there is no record of such a cactus wren in the Museum's collection. In any event, Hellmayr's guess that true *bicolor* replaces *albicilius* in the upper Magdalena Valley is fully substantiated by its occurrence at Villavieja. My specimens from there agree well with Hellmayr's (*loc. cit.*) diagnosis and match skins in the Rothschild Collection, which presumably Hellmayr also had examined; he had studied the type in the Vienna Museum. Measurements, for comparison with Hellmayr's figures, follow.

♀ ad., January 13, wing 89 mm., tail 83, bill (culmen) 28, 60 gm., laying, 4 empty follicles; ♂ jv., January 13, wing 93 mm., tail 86, 49 gm.

Troglodytes musculus striatulus (Lafresnaye).—Present in town in small numbers and in the brushy margins of woodland or in the understory of open woodland. Singing was sporadic during January and February. An adult male was taken on January 26 in which one eye had not developed properly; there was the merest trace of the eye structure.

♂ jv., January 21, 16 gm.; ♂ ad., January 26, 16 gm., testis 4 mm., primaries molting.

Mimus gilvus tolimensis Ridgway.—This species of mockingbird appears much larger in the field than *polyglottos* of North America. Also the tail is carried less sharply uplifted. The song seems less sustained and vigorous. Mockers occurred in cactus and thorn scrub and in savanna—in general in the drier and more open areas. As with many other tropical species, individuals that were molting nonetheless showed a considerable development of the gonads. This was true of an immature which was just finishing the postjuvenal molt.

Three birds taken at Leiva, Boyacá, are much smaller (♂, wing, 122.6 mm.; ♀ ♀, 107.6, 116.8) than *tolimensis* and are best classed as *melanopterus* [*see* measurements given by Hellmayr, Field Mus. Nat. Hist., Zool. Ser., 13 (pt. 7): 318–319, 1934]. They serve to set the southern boundary of *melanopterus* in this sector, as they are somewhat intermediate. Weights of a male and a female are 62 and 53 grams, respectively, in sharp contrast with those of *tolimensis* listed below.

♂ ad., January 18, 88 gm., testis 6 mm., heavy molt, wing 135.2 mm.; ♂, im. (skull), January 19, 79 gm., testis 5 mm., wing 125.8 mm.

Turdus ignobilis ignobilis Sclater.—"Robins" were not common about Villavieja and this and the following very similarly colored species were not distinguished from each other while in the field. An example of *ignobilis* was taken at the border of the slough.

♀ ad., February 3, 79 gm., oviduct enlarged.

Turdus leucomelas albiventer Spix.—One was taken in broken woodland and pasture on January 15. There were empty follicles in the ovary. The bird was in badly worn plumage and was beginning to molt. I follow Todd (Proc. Biol. Soc. Wash., 44: 54, 1931) in using the name *albiventer* for this bird. The characters claimed for *ephippialis* [Hellmayr, Field Mus. Nat. Hist., 13 (pt. 7): 401, 1934] do not seem to me to be developed with sufficient constancy in material in the American Museum collection from Venezuela and Colombia to warrant recognition of that form.

♀, January 15, 72 gm.

Hylocichla ustulata swainsoni (Tschudi).—This North American species was noted occasionally in the woods. On January 15 during a heavy rain one gave call notes and broke into half-voiced song much as Hermit Thrushes do on their wintering grounds.

♂, January 15, 30 gm., testis 1 mm.

Polioptila plumbea anteocularis Hellmayr.—Gnatcatchers were seen chiefly in mimosa scrub and frequented these trees even where they were far spaced in savanna formation in pasture lots. The whining notes are very similar to those of *P. caerulea*. The bill is notably long. In combination with mockingbirds and cactus wrens these gnatcatchers gave a distinctly Sonoran aspect to the avifauna of the tracts of mimosa and cactus.

♀ jv., January 13, 6 gm.; ♀ ad., 6 gm., ovary inactive, molting; ♂ [adult plumage], January 26, 6 gm., testis 4 mm.

Hylophilus flavipes flavipes Lafresnaye.—These vireos move about deliberately in the foliage, like other members of their family, yet in other ways they did not remind me of vireonids. They were seen to hang under limbs, occasionally, like chickadees. One was observed as it gradually let itself down backward over the limb on which it had been perching until it was suspended beneath. This species gives a series of thin whistles, with upward inflection, rapidly repeated. They were found to come readily to imitation of this note which evidently is a song. *Hylophilus* was abundant in the woodland and there were many juveniles on the wing.

♂ ad., January 14, 14 gm., testis 5 mm., iris ivory; ♂ jv., January 14, 14 gm., iris dark; ♂ ad., January 18, testis 4 mm.; sex? jv., January 18; ♂ ad., January 22, 12 gm., testis 5 mm.

Cyclarhis guyanensis canticus Bangs.—Frequented tall streamside trees, working slowly about high above ground. The ringing, clear song of this species is suggestive of that of *Icterus crysater*, but is shorter and of fixed pattern. One bird had caught a large insect and was singing periodically between efforts to swallow it. Three singing males were heard in the vicinity of the slough, stationed about a quarter of a mile apart.

♂ ad., February 3, 27 gm., testis 9 mm., iris light brown; ♂, February 3, 30 gm.

Coereba flaveola columbiana (Cabanis).—This honey creeper was scarce in the vicinity of Villavieja. Males were occasionally detected singing in the crowns of fairly tall trees near the stream courses. The song is wiry and strongly accented, much as are some wood warbler songs; there are three well separated couplets to begin with, followed by a rapid trill.

♂ ad., January 31, 10 gm., testis 7 mm.

Conirostrum leucogenys leucogenys (Lafresnaye).—An adult female taken on January 22 was gathering nest material. Two days later a male was taken at the same place, a small tract of open woodland near the river. At times these birds hang upside down like chickadees. Nowhere were they common. For use of the generic name, see Zimmer (Amer. Mus., Nov., No. 1193: 11, 1942).

♀ ad., January 22, 7 gm., oviduct enlarged; ♂ ad., January 24, 7 gm., testis 5 mm.; ♀ jv., February 5, 7 gm.

Protonotaria citrea (Boddaert).—One was taken in open twigs at the edge of the slough on February 5. Few Prothonotary Warblers have been taken so far south in winter.

♀ ad., February 5, 15 gm., ovary inactive, little fat.

Dendroica petechia aestiva (Gmelin).[1]—Common throughout the woodlands. One taken on February 4 is typical of this race. A prenuptial body molt was taking place.

♂ ad., February 4, 12 gm., testis minute.

Seiurus noveboracensis noveboracensis (Gmelin).—This water-thrush was a common winter visitant, occurring along the banks of sloughs and small streams and in the woodland floor adjoining, where the ground was damp. Their sharp call notes were heard regularly in such places even when the birds, which were shy, could not be seen.

♀ ad., January 27, 16 gm., ovary inactive; ♀ ad., January 28, 16 gm., ovary inactive.

Oporornis philadelphia (Wilson).—Found frequently in the damp woodlands near the slough where they frequented low tangles and understory vegetation up to 20 feet. One of the males taken still showed evidence of immaturity in the skull.

♀ ad., January 28, 10 gm.; sex? [♂] ad., January 31, 12 gm.; ♂ im., February 7, 11 gm.; ♀ ad., February 7, 10 gm.

Geothlypis aequinoctialis aequinoctialis (Gmelin).—Seen only in a tract of waist-high bunch grass on dry ground in the vicinity of the river and slough. A badly worn breeding female was taken, and on February 10 a black-masked male, presumably of this species, was seen momentarily at close range in the bunch grass.

♀ ad., February 3, 15 gm., oviduct enlarged, old brood patch.

Setophaga ruticilla (Linnaeus).—This winter visitant from the north was occasionally seen in the woodlands. No black-plumaged males were noted.

♀ ad., January 23, 7 gm.; sex? ad., February 1, 7 gm.

Basileuterus delattrii mesochrysus Bonaparte.—Common in tangled woodland understory near the watercourses but not necessarily close to the ground. The song has the sharp accents of a yellow-throat song but the end trails off into something like the song of a Yellow Warbler or a Redstart.

♂ ad., January 21, 11 gm., testis 8 mm.; ♂ ad., January 22, 12 gm., testis 7 mm.; ♂ ad., January 25, 15 gm., testis 7 mm.; ♀ im., January 26, 12 gm.

Psarocolius decumanus melanterus (Todd).—These oropendolas were conspicuous but not very numerous in the woodlands. Groups of about six were sometimes seen, but often single birds or pairs only were noted. In a large open tree in the Laja Valley a group of nests was seen at a distance where they overhung an area of impenetrable brush. Oropendolas frequently were seen in and about the tree but were not noted entering the nests. There were three nests, at least, hanging from limb tips. The structures appeared to be about three feet long. The song performance of this species is a startling combination of staccato squeaks superposed on a continuous wheeze. It is difficult to believe, until a bird is closely watched, that one bird makes the simultaneous array of sound.

Wetmore (Proc. U. S. Nat. Mus., 87: 251, 1939) has pointed out that Hellmayr [Field Mus. Nat. Hist., Zool. Ser., 13 (pt. 7): 10–11, 1937] was mistaken about the significance of an action of the International Zoological Congress at Padua and that *Xanthornis* is not available as a generic name for this group of oropendolas. However, usage of *Ostinops*, to which Wetmore reverts, seems to be incorrect, for this name is antedated by *Psarocolius* Wagler (Syst. Av., 1, fol. 22, 1827). Wagler provides a detailed diagnosis, and "*Oriolus cristatus*" "Gmelin," (= *decumanus* Pallas), the form first listed and described by Wagler, was subsequently designated the type of *Psarocolius* by Gray (Cat. Gen. Subgen. Birds: 68, 1855).

[1] I use the specific name *petechia* in accordance with the standards adopted in The Auk for A.O.U. Check-List birds. I believe, however, that *petechia* and *aestiva* are not conspecific and that the correct name of the present form is *Dendroica aestiva aestiva* (Gmelin).

♀, January 14, 177 gm., iris blue; ♀, January 19; ♂ ad., January 21, testis 3 mm.; ♂, January 27.

Molothrus bonariensis cabanisii Cassin.—A solitary male was taken from the crown of a tall tree near the Laja River. It had flown in from the open country and its crop was filled with grain. A breeding female was taken from a dead tree top by the slough. It chattered in the same way as does the female of *M. ater*. No other cowbirds were detected in the course of my stay.

♂ ad., January 30, 69 gm., testis 9 mm.; ♀ ad., February 5, 57 gm., ovary with 2 empty follicles and 2 yellow ova.

Icterus auricapillus Cassin.—Only once seen, when a bird was taken from the crown of a tall tree near the Laja River. This species has not previously been reported so far south. Chapman did not record it south of Honda, in the Magdalena Valley. However, there is a specimen (no. 130995) in the American Museum from the region between Giradot and Ibagué, Tolima, taken in August, 1913, and another (no. 176555) from "Guevara," Tolima, taken in August, 1918.

♂ ad., February 6, 31 gm., testis 6 mm.

Icterus chrysater giraudii Cassin.—Seen principally in scattered small trees and patches of thorn scrub and cactus. The species was not numerous, but the loud, clear songs of the males, and their color, readily attracted attention.

The two adult males taken are typical of *I. c. giraudii*, showing the light yellow coloration and size of that form. The occurrence of *giraudii* in the Tropical Zone at Villavieja is of particular significance because of Chapman's contention (*op. cit.*: 634, 1917) that it is limited to the Subtropical Zone. De Schauensee (Notulae Naturae, No. 167: 12, 1946) has also reported *giraudii* from a tropical area in the Chocó region of northern Colombia. Chapman's description (Bull. Amer. Mus. Nat. Hist., 33: 191–192, 1914) of a distinct species, *Icterus hondae*, from the Tropical Zone was somewhat supported by the supposed complementary zonal distribution of it and *giraudii*. Since this supposition is proved to be at least partly erroneous and since Villavieja is but 230 kilometers south of Honda (600, not 3000 feet), type locality of *hondae*, and in the same valley, increased doubt arises concerning the validity of *hondae* [*see* Hellmayr, Field Mus. Nat. Hist., Zool. Ser., 13 (pt. 10): 131–132, 1937; deSchauensee, *loc. cit.*).

The type and only other specimen of *hondae* are young males. Orioles of this group often molt their juvenal rectrices and remiges at an early age, but some of them at least retain brown primary coverts as evidence of their immaturity. Immature, brightly colored birds with a full set of brownish primaries and rectrices, the feathers grown in the nest, are scarce. However, the two examples of *hondae* are of such plumage. Measurements of similarly plumaged *I. c. giraudii* reveal, as in many other passerine species, that these brown rectrices and remiges are shorter on the average than the black flight feathers which sooner or later replace them. Measurements of wing and tail of such brown-feathered *giraudii* range down to those of *hondae* (*see* table). It thus seems clear the small size claimed for *hondae* is not a dependable character but may be explained by immaturity.

The specimens of *hondae* are indeed richer orange than normal *giraudii*, but in a large series of the latter there is much variation in color. Immatures often are dark orange, especially adjacent to the black of the head and throat; occasionally presumed adults are similar. Selected examples of *giraudii* equal *hondae* in richness of orange, some with respect to throat and neck, others with respect to pileum. None is as deeply orange on the interscapular region, but the approach is very close, especially to the condition in the duller topotype, no. 123162. I am therefore forced

MEASUREMENTS IN MILLIMETERS OF SELECTED MALE SPECIMENS OF *Icterus chrysater* AND *Icterus hondae*

Specimen	*Locality*	*Wing*	*Tail*	*Bill length from nostril*
	I. hondae			
123163 A. M. N. H., im. (type)	Honda, Tolima	91.5	93.0	1.8
123162 A. M. N. H., im.	Honda, Tolima	90.0	91.0	1.7
	I. chrysater			
117519 A. M. N. H., im.	Andalucia, Huila	96.0		1.7
168879 A. M. N. H., im.	Mambita, ENE Bogotá	*90.0*	93.5	2.0
136754 A. M. N. H., im.	Darien, Panamá	94.0	*91.5*	*1.7*
93986 M. V. Z., ad.	Villavieja, Huila	100.5		1.9
93987 M. V. Z., ad.	Villavieja, Huila	105.0	104.0	1.9

to view *hondae* as an individual variant of *giraudii*, probably encompassed entirely within the full range of age and individual variation of that form. *Hondae* should be carried in the synonymy of *giraudii* until such time as new evidence comes to hand from the Honda area to indicate its validity. I do not anticipate that such evidence will appear.

♂, January 14, 59 gm., testis 9 mm.; ♂ ad., January 23, 61 gm., testis 8 mm.

Tanagra concinna (Sclater).—Seen infrequently in the more open, drier woodland. On February 4, one was singing a warbler-like song in a low canopy of streamside trees. Members of a mated pair taken on January 20 were in breeding condition. In view of uncertainty regarding the specific affinities of the forms *finschi, saturata* and *concinna* (*see* Zimmer, Amer. Mus. Nov., No. 1225: 12–13, 1943) the binomial is here employed.

♂ ad., January 20, testis 7 mm.; ♀ ad., January 20, 10 gm., oviduct enlarged; ♂ ad., January 21, 9 gm., testis 3 mm.; ♂ ad., February 4, 12 gm., testis 8 mm.

Tangara ruficapilla (Sclater).—Twice this tanager was encountered, both times in the crowns of thirty-foot trees in open woodland. On January 29, a pair was chasing two cactus wrens, apparently in defense of a nesting area. For the use of the generic name, *see* Zimmer (Amer. Mus. Nov., No. 1245: 2, 1943).

♂ ad., January 15, 23 gm., testis 10 mm.; ♀ ad., January 29, 24 gm., oviduct enlarged.

Thraupis episcopus cana (Swainson).—This common tanager was well established in the scattered trees in town, but it occurred also in open woodland. The birds moved about over large areas, even flying over open land to isolated tree clumps.

♂ ad., January 18, 37 gm., testis 13 mm.; ♂ jv., January 21, 35 gm.; ♂ ad., January 26, testis 10 mm.

Thraupis palmarum atripennis Todd.—Noted only in the woodland bordering the slough where one was taken from the crown of a tree on February 3. Numbers of this species must be small in the region.

♂ ad., February 3, 34 gm., testis 1 mm.

Ramphocelus dimidiatus dimidiatus Lafresnaye.—These tanagers were largely confined to the vicinity of watercourses where they were particularly associated with tall grass and brush tangles and the trees overhanging this cover. The only note heard from the species was a buzzing bleat, not unlike the buzz of a Lazuli Bunting. Immature and juvenal birds lacked an expanded basal horn sheath of the ramus, and the

color of this area was black instead of the pale blue of adult males. An adult female was in intermediate condition.

♂ ad., January 27, 28 gm., testis 8 mm.; ♀ ad., February 3, 29 gm., ova 2 mm.; ♂ ad., February 3, 31 gm., testis 8 mm.; ♂ im., February 3, 30 gm., testis 3 mm.; ♂, February 3, 27 gm.; ♀, February 3, 28 gm.; sex? jv., February 6, 30 gm.

Piranga rubra rubra (Linnaeus).—This winter visitant was encountered occasionally in the woodland, usually moving about rather silently, high up in the trees.

♀ ad., January 18, 32 gm.; ♀ ad., January 25, 32 gm.; ♂ ad., January 29, 30 gm., testis 1½ mm.

Saltator albicollis striatipectus Lafresnaye.—Moderately common in brush and vine tangles of open woodland, ranging into dense trees 25 feet in height and into tall continuous scrub. The cardinal-like whistles were heard occasionally, but song was not much in evidence. The birds adhered to cover and usually were difficult to see.

♂ ad., January 16, 37 gm., testis 8 mm.; ♂ ad., January 18, 38 gm., testis 8 mm.; ♂ ad., January 21, 42 gm., testis 9 mm.; ♂ jv., February 4, 41 gm.

Hedymeles ludovicianus (Linnaeus).—Only once noted, on February 1. The bird was undergoing a prenuptial molt of the head and part of the body.

♂ ad., 40 gm., testis 2 mm.

Tiaris bicolor omissa Jardine.—One was taken on January 16 on a grassy slope on which there were scattered clumps of three-foot bushes. Not otherwise detected.

♂ ad., January 16, 12 gm., testis 6 mm.

Spermophila minuta minuta (Linnaeus).—Seedeaters were common in grassland wherever there also were scattered trees or shrubs; these they normally used for song posts. Usually the grass was at least knee-high. The definitely patterned song is of sweet, clear notes, somewhat in quality like that of *Spinus psaltria*, but of fixed length.

♂ ad. (dull plumage), January 25, 9 gm., testis 2½ mm.; ♂ (red plumage), January 26, 7 gm., testis 5 mm.; ♂ (red plumage), January 29, 7 gm., testis 5 mm.; ♂ (dull plumage), 10 km. S. Villavieja, February 2, 9 gm., testis 6 mm.; ♂ ad. (red plumage), February 3, 7 gm., testis 8 mm.

Volatinia jacarina splendens (Vieillot).—These grassquits were abundant in the open tracts of tall grass, where the males were going through their song performance above the grass tops. In preparing specimens of this species I was impressed with the weakness of the connective tissues and consequent looseness of the skin.

♀ ad., January 20, 12 gm., 1 empty follicle, 1 ovum 4 mm.; ♂ ad., January 29, 9 gm., testis 4 mm.; ♀ ad., February 5, 10 gm., old brood patch; ♂ ad., February 7, 10 gm., testis 5 mm.; ♂, February 7; ♂, February 7.

Spinus psaltria colombianus (Lafresnaye).—Scarce in the vicinity of Villavieja. One was taken on January 18. The notes of this race are like those of the North American races except for the low-pitched flight call which is a nasal bleat instead of a clear, soft note. The bird from Villavieja has a distinct white area in the tail whereas two males from Leiva, Boyacá, lack this marking [for discussion of variability, *see* Hellmayr, Field Mus. Nat. Hist., Zool. Ser., 13 (pt. 11): 301, 1938].

♂ ad., January 18, 9 gm., testis 5 mm.

Sicalis luteola luteola (Sparrman).—On February 8, at one of the playas south of Villavieja, a scattered flock of these finches frequented the mimosa trees about the edge of the marsh. They gave a squeaky, two-parted note, suggestive of that of a Pine Siskin. At times they flew out over the grass, disappearing, only to reassemble about the pond. Occasionally they engaged in a prolonged twittering song. This sometimes was given while hovering above the bushes. Many of the birds were

juveniles or adults in poor plumage. Once a group of these finches was detected flying over the badlands.

♂ ad., 11 gm., testis 6 mm.; ♀ jv., 11 gm.; ♂ ad.; sex? im., 5304—all taken February 8, 10 km. S. Villavieja.

Coryphospingus pileatus rostratus, new subspecies

Type.—Adult male, no. 94041 Mus. Vert. Zool., taken at Villavieja, 435 meters, Huila, Colombia, January 15, 1945, by Alden H. Miller; orig. no. 4969.

Diagnosis.—Similar to *Coryphospingus pileatus brevicaudus* and *C. p. pileatus*, but bill much longer, the elongation resulting in relative attenuation and in accentuation of the curved and acute culmen. Tail apparently short on the average, as in *brevicaudus*. Coloration similar to that of *brevicaudus*, although development of white loral spot is evidently variable. A series of adult males might reveal consistently paler ventral coloration.

This form is known only from five specimens taken at Villavieja, but it may be presumed to be the race occupying the arid upper Magdalena Valley. Heretofore this species of Pileated Finch has not been detected west of the eastern Andes. This is surprising in view of its abundance at Villavieja. Chapman's parties failed to take it in Colombia and Hellmayr [Field Mus. Nat. Hist., Zool. Ser., 13 (pt. 8): 381, 1938] records it only east of the mountains, assuming, possibly correctly, that Bogotá skins came from the llanos.

The appearance of the bill of this form is so distinctly different from that of its relatives that even a small sample may suffice for characterization of a race. Even in the three young birds the elongation is evident, although in one of these that appears particularly young, it is less pronounced than in the others. Measurement of length of bill from nostril expresses this difference (*see* table). Among males of *brevicaudus* and *rostratus* there is no overlap in measurements, but one female of *brevicaudus* does equal the smallest young male *rostratus* in measurement; in general, females show bill dimensions which fully equal those of males, and measurements of the sexes can safely be combined as I have done with the sample of *rostratus*. Tests for reliability of differences of means show the figure for bill length of *rostratus* to be significantly greater than the figures for the other two forms. Similarly the difference in tail length of *brevicaudus* and *C. p. pileatus* has been shown to be reliable. Comparative material of *brevicaudus* was available chiefly from the vicinity of Cumaná, Venezuela, near the type locality, and from Ciudad Bolívar in the Orinoco Valley.

MEASUREMENTS IN MILLIMETERS

	Bill length from nostril			*Tail*		
	No.	*Mean*	σ	*No.*	*Mean*	σ
C. p. pileatus, ♂♂	9	8.44±.06	0.19	9	58.7±.70	2.11
C. p. brevicaudus, ♂♂	12	8.70±.06	0.20	9	52.2±.52	1.79
C. p. brevicaudus, ♀♀	—	—— ——	——	9	48.3±.42	1.25
C. p. rostratus, 4♂♂, 1♀	5	9.70±.07	0.17	[3 ♂♂: 47.4, 52.5, 57.3; 1 ♀: 50.2]		

At Villavieja, Pileated Finches were the most numerous birds in the open thorn scrub. Loose groups of three to six individuals were probably family aggregations. Fully grown, streaked juveniles and females were much in evidence and one had to

search the flocks for adult males. Feeding was carried on at the edges of the thorn clumps or sometimes beneath them. No singing was noted and there was no other sign of breeding in progress.

♂ ad., January 13, 19 gm., testis 2 mm., complete molt in progress; ♂ im., January 13, 17 gm.; ♂ im., January 15, 17 gm.; ♂ ad., January 15, 17 gm., testis 3 mm.; ♀ im., January 16, 17 gm.

Arremenops conirostris inexpectatus Chapman.—Taken only in heavy, shaded brush and vine tangles along the stream courses. The song is saltator-like but longer than that of *Saltator albicollis*.

The specimens taken are typical of *inexpectatus* in all details of color as specified by Chapman (*op. cit.*: 570, 1917). I can see no approach to *A. c. conirostris*, and the contrast is strong with Chapman's *A. c. conirostris* from Chicoral, Tolima; *chrysoma* is more brilliantly green. However, the birds from Villavieja are not short-winged as is typical of *inexpectatus*. The wing is 76.2 mm. in the adult male, and 73.4 and 74.1 in the adult females as compared with 70.4, 69.6, 68.0, 68.6 in males of *inexpectatus* and 69.9 in a female of that race. A male and a female of *A. c. conirostris* from Chicoral measure 77.5 and 71.5, respectively. The extension of range of *inexpectatus* to the floor of the Magdalena Valley and hence closer to the range of *A. c. conirostris* is significant in view of the supposed restriction of *inexpectatus* to the headwaters of the Magdalena River. This is true even though the Villavieja birds in view of their combination of color and size characters may be regarded as somewhat intergradient between the races. It seems likely that *inexpectatus* will prove to be a form of inconstant size which occupies the whole arid upper Magdalena basin.

♀ ad., January 25, 37 gm., ova 2 mm., brood patch; ♂ ad., 39 gm., testis 8 mm.; ♂ ad., January 26, 40 gm., testis 8 mm.; ♀ ad., 33 gm., brood patch; ♂ jv., February 7, 36 gm.

Myospiza humeralis humeralis (Bosc).—These birds are fundamentally Grasshopper Sparrows in behavior and habitat preference. Even though the song is less insect-like than that of *Ammodramus*, and in fact much like that of *Passerculus*, their horizontal posture while perched, their flight, and their general appearance suggest *Ammodramus* from which they may not be usefully set aside generically. The species was common in the grasslands of the plains where there was at least some grass or annuals of knee height. Scattered bushes were used for low song and lookout posts. The birds also occurred in smaller grass plots and in mixed scattered brush near Villavieja. One fully grown juvenile was taken and many adults were encountered that were scolding as though they had young.

Chapman (*op. cit.*: 567, 1917) pointed out that his birds from Chicoral in the Magdalena Valley, "are paler than *columbiana* and more nearly resemble" the birds from the middle Orinoco region (*M. h. humeralis*); nonetheless they were listed under *columbiana*. My specimens from Villavieja, many of them in better plumage than Chapman's specimens, even more clearly relate to *M. h. humeralis* as represented in collections from eastern Venezuela, the middle Orinoco, northeastern Brazil and Matto Grosso, Brazil. They lack the heavy dorsal black streaking of *columbiana*, and the fresh feathers of the back are broadly bordered with gray and the median parts are but moderately brown. They thus correspond with the paler, less brown variants of *M. h. humeralis*. I am by no means convinced that Hellmayr [Field Mus. Nat. Hist., Zool. Ser., 13 (pt. 8): 477, 1938] is correct in doubting the existence of the two northern races of the species, *columbiana* and *meridana*, although individual variation is great. Adequate local series might reveal a number of recognizable races. It does seem evident from material now available that *columbiana* extends up

the Magdalena Valley only part way, as to Honda, that farther south in Tolima there is intergradation or close approach to *humeralis*, and that in Huila, in the arid upper Magdalena basin, *humeralis* occurs in typical form or is possibly even paler than average. Some Bogotá specimens apparently pertain to *humeralis* and may have confused the concept of *columbiana* and *meridana* in the past.

♂ jv., January 13, 15 gm.; ♂ ad., January 17, 6 km. SE. Villavieja, 18 gm., testis 1 mm., complete molt in progress; ♀ ad., January 17, 6 km. SE., 17 gm., ovary inactive, body molt; ♀ ad., January 17, 6 km. SE., 15 gm., brood patch; ♂ ad., January 17, 6 km. SE., 18 gm., testis 7 mm.; ♂ ad., January 18, testis 4 mm.; ♀ ad., January 25, 19 gm., ovary small, brood patch.

DISCUSSION AND SUMMARY

The avifauna of the arid Tropical Zone of the upper Magdalena Valley was clearly shown by Chapman (*op. cit.*) to be related to the west-Andean and Caribbean tropical faunas and only indirectly to the tropical faunas of the eastern llanos and the Amazonian basin. This fundamental conclusion is unchanged by later work, but the improved knowledge of racial differentiation and distribution in the upper Magdalena Valley has materially elaborated this picture and has brought to attention the importance of this district as a differentiation center.

Among the forms recorded from Villavieja, Huila, the following appear to be endemic to this tropical district. Certain of them extend beyond it somewhat, particularly northward, but all seem to center in this arid basin and probably differentiated there. (The name in boldface indicates the endemic element.)

Ortalis columbiana **columbiana**
Colinus cristatus **leucotis**
Speotyto cunicularia **tolimae**
Lepidopyga goudoti **goudoti**
Thamnophilus doliatus **albicans**
Euscarthmornis margaritaceiventer **septentrionalis**
Campylorhynchus minor **bicolor**
Polioptila plumbea **anteocularis**
Tanagra **concinna**
Coryphospingus pileatus **rostratus**
Arremenops conirostris **inexpectatus**

Additional to these, *Myrmeciza longipes boucardi* seems to be endemic to the district, although I did not encounter it in the field, and there doubtless are others which at present are inadequately known. Some apparent endemics of the region may not be truly related to the arid habitats of the floor of the valley and hence did not appear at Villavieja.

Apart from this list of local differentiates, there is a large group of west-Andean forms that range far to the north or west, or both, even into Central America, and which here in the Magdalena Valley reach their eastern limits. In other words, they are not widespread South American forms that extend into Venezuela (except locally at the north) or into east-Andean Colombia or Brazil. Some indeed are

restricted to the Magdalena drainage, but not merely to the upper part of it.

Ortalis **columbiana** subsp.
Jacana jacana **hypomelaena***
Columbigallina passerina **parvula***
Brotogeris jugularis **jugularis**
Amazona ochrocephala **panamensis**
Chloroceryle americana **hellmayri**
Picumnus olivaceus **olivaceus**
Ceophloeus lineatus **nuperus**
Dendroplex picus **dugandi**
Formicivora grisea **hondae***
Pyrocephalus rubinus **piurae**
Myiozetetes cayanensis **hellmayri**
Myiarchus ferox **panamensis**
Myiarchus **apicalis**
Atalotriccus pilaris **pilaris***
Cyanocorax **affinis affinis**
Troglodytes musculus **striatulus**
Mimus gilvus **tolimensis**
Turdus ignobilis **ignobilis**
Cyclarhis guyanensis **canticus***
Basileuterus delattrii **mesochrysus***
Psarocolius decumanus **melanterus**
Molothrus bonariensis **cabanisii**
Tangara **ruficapilla**
Thraupis palmarum **atripennis***
Ramphocelus **dimidiatus dimidiatus**

Those marked with an asterisk in the foregoing list apparently are absent from the arid tropical district of the upper Cauca Valley. Chapman (pp. 126–127) presents another partial list of absentees, not confined to west-Andean forms, and he explains that this situation can be accounted for only by the high degree of isolation of the Cauca Valley.

One significant conclusion reached through better acquaintance with the avifauna of the upper Magdalena is that there is in it an element derived from the llanos across the Andes to the east. Chapman did not recognize this particular element. He did list (pp. 122–123) a group of species that crossed through the gap at Andalucia, but they are evidently forest-dwelling types in the main and not characteristically found in arid tropical habitats. The following forms detected at Villavieja are essentially eastern types, some of which extend to the middle as well as the upper Magdalena Valley:

Buteo magnirostris **magnirostris**
Geranospiza caerulescens **caerulescens**
Falco sparverius **intermedius**
Zenaidura auriculata **stenura**
Tolmomyias sulphurescens **confusus**
Geothlypis aequinoctialis **aequinoctialis**
Tiaris bicolor **omissa**
Coryphospingus **pileatus** subsp.
Myospiza humeralis **humeralis**

Certain of these species, as the Sparrow Hawk, are tolerant of unforested parts of higher zones and may cross the eastern Andes at the present time either in the form of continuous populations or through vagrant dispersal. Others may be effectively isolated now, but probably gained access in the not distant past by crossing the Andes. *Coryphospingus pileatus* would seem to have come in by this route, but in its racial differentiation it reflects a current isolation.

The study at Villavieja has resulted in extension of known range southward in the Magdalena Valley of many species. These did not appear in the course of collecting at San Agustín or below Andalucia, probably because these localities are not fully representative of the arid tropical environment. Why a number of them did not come to light at Chicoral is difficult to explain. The forms, with indications of previously known southernmost stations, are:

Jacana jacana hypomelaena, Puerto Berrio?
Columbigallina passerina parvula, Chicoral
Columbigallina talpacoti rufipennis, Chicoral
Aratinga wagleri wagleri, Chicoral
Brotogeris jugularis jugularis, Honda
Amazona ochrocephala panamensis, Honda
Speotyto cunicularia tolimae, "Tolima"
Chloroceryle amazona mexicana, "northern Colombia"
Galbula ruficauda ruficauda, Chicoral
Centurus subelegans rubricapillus, Chicoral
Ceophloeus lineatus nuperus, Honda
Dendroplex picus dugandi, Chicoral
Thamnophilus doliatus albicans, Chicoral
Myiarchus ferox panamensis, Chicoral
Myiarchus apicalis, Chicoral
Atalotriccus pilaris pilaris, Chicoral
Euscarthmornis margaritaceiventer septentrionalis, Honda
Cyanocorax affinis affinis, Chicoral
Polioptila plumbea anteocularis, Chicoral
Hylophilus flavipes flavipes, Chicoral
Conirostrum leucogenys leucogenys, Honda
Icterus auricapillus, Honda
Tanagra concinna, Honda
Tiaris bicolor omissa, Chicoral

By way of contrast, there are a few birds among the eastern element and the endemic element which on the basis of present information do not range north either to Chicoral or Honda. Some are replaced at these localities by more northern races. These species serve to emphasize that the greatest development of the distinctive arid tropical fauna of the upper Magdalena is not attained until one passes south of the Giradot (Chicoral) area. The races are:

Tolmomyias sulphurescens confusus (replaced by *asemus*)
Campylorhynchus minor bicolor (not of Chapman, *see* p. 371)
Coryphospingus pileatus rostratus
Arremenops conirostris inexpectatus (replaced by *A. c. conirostris*)
Myospiza humeralis humeralis (replaced by *columbiana*)

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