

ON A COLLECTION OF BIRDS FROM WESTERN
COSTA RICA.

BY OUTRAM BANGS.

IN 1891-1892 Mr. Geo. K. Cherrie made a famous collection of birds for the National Museum of Costa Rica, on the Rio Grande de Térraba in western Costa Rica, a region at that time practically unknown ornithologically. He subsequently published a long paper¹ on the results of his trip in which he described as new one species — *Henicorhina pittieri* — and recorded the occurrence for the first time in Costa Rica of ten more, — *Basileuterus veraquensis*, *Hylophilus viridiflavus*, *Saltator albicollis*, *Capsiempis flaveola*, *Synallaxis albescens*, *Automolus pallidigularis*, *Gymnocichla nudiceps*, *Dendrobates ceciliæ*, *Melanerpes chrysauchen* and *Centurus tricolor*.

Mr. C. F. Underwood, whose name is so familiar to naturalists the world over interested in the biota of Central America, had always felt that much yet remained to be done in Cherrie's Boruca region, and for a long time had urged me to let him make a trip there in the spring and summer — Cherrie's work having been done in the autumn and winter. Through the generous interest of John E. Thayer, Esq., this was finally arranged, and Underwood started from San José in March, 1906. He stopped for a short time, both going and coming, at Punta Arenas and Boca Barranca in the Golfo de Nicoya, where he collected a few birds, but the main part of his time was spent on Cherrie's old ground on the Rio Grande de Térraba, where he worked from April to August. The principal localities at which he collected here, are Pozo del Rio Grande, 500 feet altitude to sea level; Lagato, 800 feet altitude; Barranca, Paso Real and Terraba, all about 1,000 feet altitude; and Boruca, about 1545 feet altitude.

His collection, numbering nearly 6,000 skins, is a very fine one, and in the following pages I describe from it as new — *Micrastur*

¹ Exploraciones Zoológicas | efectuadas | en la parte meridional de Costa Rica | por los años de 1891-92 | I | Aves | par | Geo. K. Cherrie | Taxidermista del Museo nacional, | 1893, | San José de Costa Rica. | Tip. Nacional.

interstes, *Gymnocichla nudiceps erratilis*, *Synallaxis albescens latitabunda*, *Dendrocolaptes sancti-thomæ hesperius*, *Leptopogon pileatus faustus*, *Cyanerpes lucidus isthmicus*, and *Buarremon costaricensis*. One overlooked, but well marked subspecies, *Glaucis hirsuta æneus* (Lawrence) is reinstated, and twelve birds are recorded, for the first time, I believe, from Costa Rica — *Asturina nitida*, *Cataptrophorus semipalmata*, *Ereunetes occidentalis*, *Chæmepella minuta*, *Elainia chiriquensis*, *Myiarchus lawrencei bangsi*, *Catharus griseiceps*, *Troglodytes musculus inquietus*, *Eucometis spodocephala stictothorax*, *Emberizoides sphecnura hypochondriacus*, *Sporophila gutturalis*, and *Saltator magnoides intermedius*.

Original conditions still prevail in western Costa Rica, and there are enormous stretches of virgin forest and perfectly wild country, and the lowland forest birds are safe for a time at least. I have, however, grave fears that many of the very rare and still but little known species of the Atlantic lowland forest are doomed. The banana industry is sweeping away the forest at a terrible rate, and in the few years since the United Fruit Company established itself at Port Limon the forest has been entirely cleared away not only directly about that place, but way south into the famous Talamanca District. Very few of the forest birds take kindly to banana plantations, and as the forest goes they go with it.

The great difference between the lowland forest ornithology of the Atlantic and Pacific sides of the main cordillera in Costa Rica is too well known to need special comment here, but the sliding past each other of northern and southern forms is very remarkable — instance after instance could be given of a bird whose Central American form extends down the Atlantic lowlands, and whose Panamanian form pushes north up the Pacific slope, often passing each other, the mountains, however, between their respective ranges preventing them from intergrading or even meeting. It is largely to this cause that Costa Rica owes its very extensive bird fauna, numbering well over 700 species and subspecies, and that in a country scarcely bigger than the state of Florida.

In connection with the making and identifying of the present collection, I beg to express my sincerest thanks to many of my friends — in the first place to John E. Thayer, Esq., who generously furnished the necessary funds for Underwood's expedition, and

then to Dr. Robert Ridgway, Mr. E. W. Nelson and Mr. J. H. Riley, who made many comparisons for me with material in Washington.

A complete catalogue of Underwood's collection made in western Costa Rica in the spring and summer of 1906, in which colors, when definite names are given them, are according to Ridgway's 'Nomenclature,' and all measurements are in millimetres, is as follows:

ARDEID.E.

Butorides virescens maculata (Bodd.). Two males, one fully adult the other youngish, Pozo del Rio Grande, April.

These skins agree with others from Panama, etc., and in my opinion are identical with the bird of the West Indies.

ANATID.E.

Querquedula discors (Linn.). Four adults, one male, three females, Pozo del Rio Grande, April.

FALCONID.E.

Micrastur interstes sp. nov.

One young male Pozo del Rio Grande, Aug. 4.

Type, from La Estrella, Cartago, Costa Rica, adult ♂, No. 16414, coll. of E. A. & O. Bangs, collected Mar. 28, 1903 by C. F. Underwood.

Characters. Similar to *Micrastur guerilla* Cassin of Mexico, Guatemala, Honduras etc. but slightly larger, the adult male with the underparts darker — the dusky bars broader and the pale interspaces narrower and grayer, less purely white, in color; the whole belly, thighs and under tail coverts heavily barred with dusky, whereas in *M. guerilla* the middle of the belly is white (unbarred or nearly so) and the thighs and under tail coverts are narrowly barred, the dusky bars far apart; white bands on tail wider, more conspicuous and more complete. The adult female differs from that of *M. guerilla* as does the male, but the differences are not so marked as in the other sex. Young birds of the new form are much more heavily barred below than young of *M. guerilla*, and the barring includes the belly, which is plain in *M. guerilla*, and the ground color is darker and more ochraceous.

Measurements.

No.	Sex.	Wing.	Tall.	Tarsus.	Culmen.
16414 Type,	♂ ad.	170	157	56	18
16413 Topotype,	♀ ad.	179	161	58.5	21

Remarks. There is no doubt that the small species of *Micrastur* with barred underparts very much need careful reviewing; the reviews of Ridgway and of Gurney being based on much too scanty material. Still, after going over the whole matter very carefully, I cannot find that the bird of Costa Rica and Panama has ever been named, and as it certainly is different from *M. guerilla* of Mexico and northern Central America on the one hand and from *M. zonothorax* (Cab.) of Colombia and Venezuela on the other, I venture to give it a name. Formerly¹ I had referred a bird from Divala, Chiriqui to *M. zonothorax*, but this specimen belongs to the new form here described from Costa Rica.

***Geranospizias niger* (Du Bus).** One adult male, Pozo del Rio Grande, April 6.

***Accipiter bicolor schistochlamys* Hellmayr.** Two males, one adult, one young, Boruca and Pozo del Rio Grande, May and August.

***Asturina nitida* (Lath.).** One fine adult male, Pozo del Rio Grande, April 3.

This hawk has not previously been taken, I believe, so far north as Costa Rica.

***Rupornis ruficauda* (ScL. & Salv.).** Three adults, both sexes, Boruca and Pozo del Rio Grande, April and May.

***Elanoides furcatus* (Linn.).** Two adults, male and female, Boruca, April 25.

***Leptodon cayennensis* (Gmel.).** One adult male, Pozo del Rio Grande, Aug. 4.

***Cerchneis sparveria* (Linn.).** One female, Boruca, May 6.

I cannot attempt to say to what subspecies this specimen is referable, as it is in exceedingly abraded plumage.

***Pandion haliaëtus carolinensis* (Gmel.).** One male, Barranca Puntarenas, Aug. 12.

TINAMIDÆ.

***Tinamus castaneiceps* Salvadori.** Seven specimens, adults of both sexes and one youngish male, April and August. The young example, which is moulting, has the back and wings irregularly marked with small yellowish spots.

***Crypturus soui modestus* (Cab.).** Twelve specimens, adults of both sexes and two chicks, one taken April 19, the other May 24. The larger of these, though no bigger than a sparrow, has the wing feathers all well grown and undoubtedly flew well. Boruca and Pozo del Rio Grande, April, May and August.

CRACIDÆ.

***Craz panamensis* Ogilvie Grant.** Two adult males, Pozo del Rio Grande, April 8.

¹ Auk, Vol. XVIII, October, 1901, p. 358.

Penelope cristata (Linn.). Six adults, both sexes, Pozo del Rio Grande, April and August.

Ortalis cinereiceps Gray. One adult male, Boruca, April 25.

ODONTOPHORIDÆ.

Odontophorus castigatus Bangs. Seven specimens, adults of both sexes, and one nearly grown young, Boruca and Pozo del Rio Grande, April and May.

RALLIDÆ.

Aramides cajanea (Müll.). One adult female, Boruca, May 13.

CHARADRIIDÆ.

Ægialeus semipalmatus (Bonap.). One adult male, Puntarenas, Aug. 20.

Ægialitis collaris (Vieill.). Eight specimens, adults and youngish, both sexes, Pozo del Rio Grande and Barranca Puntarenas, April and August.

Catoptrophorus semipalmatus (Gmel.). One specimen, in partly barred plumage, Puntarenas, Aug. 13.

I believe this is the first actual record for the Willet in Costa Rica.

Tringoides macularius (Linn.). Seven specimens, both sexes, all in spotted plumage but one, Barranca Puntarenas and Pozo del Rio Grande, April and August.

Ereunetes occidentalis Lawr. Six specimens, both sexes, Barranca Puntarenas, August.

Rather to my astonishment the Western Sandpiper does not appear to have been taken in Costa Rica previously to Mr. Underwood's getting this series.

Limonites minutilla (Vieill.). Four specimens, both sexes, Barranca Puntarenas, and Pozo del Rio Grande, April and August.

PARRIDÆ.

Asarcia variabilis (Linn.). One adult male, Barranca Puntarenas, Aug. 14.

COLUMBIDÆ.

Columba speciosa Gmel. Eighteen specimens, adults and young of both sexes, Boruca and Paso Real, April-July.

Young birds, not full grown, lack the scaly markings of the adult plumage, being nearly uniform rusty brown above, with the underparts paler, grayer and whitish on middle of belly.

Columba rufina Temm. & Knip. Five adults, both sexes, Paso Real, Pozo del Rio Grande and Barranca Puntarenas, July and August.

Columba nigrirostris *Scl.* Four adults, both sexes, Boruca, Paso Real and Pozo del Rio Grande, May, July and August.

Chæmepella minuta (*Linn.*). Forty specimens, adults and young of both sexes, Paso Real, July.

Although recorded from southern Mexico and Guatemala, and again from Panama, this little dove has, so far as I know, not before been taken in Costa Rica.

Chæmepella rufipennis rufipennis (*Bonap.*). Twenty-three specimens, both sexes, young and adult, Boruca, Pozo del Rio Grande and Barranca, April-July.

Claravis pretiosa pretiosa *Ferrari-Perez.* Twenty-five specimens, both sexes, Boruca, Paso Real and Pozo del Rio Grande, April-August.

Leptotila verreauxi *Bonap.* Twenty-one specimens, adults and young, both sexes, Boruca, Paso Real, Pozo del Rio Grande and Barranca Puntarenas, April-August.

Leptotila rufinucha *Scl. & Salv.* Thirty-three specimens, adults and young of both sexes, Boruca and Pozo del Rio Grande, April, May and August.

Geotrygon montana (*Linn.*). Nineteen adults, both sexes, Boruca and Pozo del Rio Grande, April-June.

After very careful comparison of a large amount of material I can find no constant differences between birds of this species from the Greater Antilles and from the continent. Mainland specimens perhaps average a little darker in color, although many are indistinguishable from island skins in this respect; they also average just a trifle smaller, but not enough so to be appreciable in comparing single individuals.

PSITTACIDÆ.

Ara macao (*Linn.*). One adult female, Pozo del Rio Grande, April 20.

Brotogerys jugularis (*Müll.*). Thirteen specimens, both sexes, Paso Real, Pozo del Rio Grande and Barranca Puntarenas, July, April, and August.

Pionus senilis (*Spir.*). Three specimens, both sexes, Paso Real, July.

CUCULIDÆ.

Coccyzus minor minor (*Gmel.*). One adult female, Pozo del Rio Grande, April 14.

Piaya cayana thermophila (*Scl.*). One adult male, Boruca, May 7.

Dromococcyx phasianellus (*Spir.*). One female, Boruca, June 25.

PICIDÆ.

Melanerpes chrysauchen *Salv.* Twenty-two specimens, both sexes, Boruca, Paso Real and Pozo del Rio Grande, April-August.

Melanerpes wagleri *Salv. & Godm.* Twenty-two specimens, both sexes, Boruca, Paso Real and Pozo del Rio Grande, April-August.

Venilornis neglectus *Bangs*. Three adults, two males and a female, Pozo del Rio Grande, April.

Cherrie has already recorded one specimen of this species from Boruca under the name *Dendrobates ceciliae* (Malh.); the bird was rare in the region visited by Underwood who saw but the three examples he took.

Campophilus guatemalensis buxans *Bangs*. Four specimens, both sexes, Boruca, Pozo del Rio Grande and Barranca Puntarenas, April, June and August.

Ceophlœus lineatus (*Linn.*). Five specimens, both sexes, Boruca, Paso Real and Pozo del Rio Grande, April, May and July.

Hargitt in 'Catalogue of Birds in the British Museum,' mentions that Costa Rican examples of this species examined by him differed slightly from typical specimens in being less distinctly barred below. Four of the five skins in the present series are very rusty below, possibly stained, and the black bars are rather indistinct, but the fifth does not differ in this respect from South American examples. All are rather smaller than typical examples; in point of size corresponding more nearly with *C. scapularis*, and suggesting that possibly the two forms actually intergrade in western Costa Rica.

Ceophlœus scapularis (*Vig.*). One adult female, Barranca Puntarenas, August.

This brings the ranges of the two forms very near to one another, and the Barranca specimen may be an intergrade; its bill is white but otherwise it does not differ from the Rio Grande examples of *C. lineatus*, being of the same size and having an equally black back.

Picumnus olivaceus flavotinctus *Ridgw.* Sixteen specimens, both sexes, Boruca, Paso Real and Pozo del Rio Grande, April–August.

RHAMPHASTIDÆ.

Rhamphastos tocard *Vicill.* Seventeen specimens, adults of both sexes and one young female, Boruca, Paso Real and Pozo del Rio Grande, April–August.

Pteroglossus frantzii *Cab.* Three adults, both sexes, Boruca and Pozo del Rio Grande, April and May.

GALBULIDÆ.

Galbula melanogenia *Scl.* Thirty-six specimens, adults and young of both sexes, Boruca, Paso Real and Pozo del Rio Grande, April–August.

Young individuals, about two thirds grown, with very short bills, are like the adults in color, and show the same sexual difference in the color of the throat, except that their upper parts are more coppery, less green.

BUCCONIDÆ.

Bucco dysoni *Scl.* Two adults, male and female, Paso Real, July 8.

Maacoptila panamensis panamensis *Lajr.* Twenty-one specimens, young and adult of both sexes, Boruca, Paso Real, Pozo del Rio Grande and Lagato, April–August.

This species is dichromatic, there being a distinctly gray and a distinctly red-brown phase of plumage, having nothing to do with sex, age or season. In large series, as with most dichromatic birds, some skins intermediate between the two phases will always be found. I cannot see any differences between western Costa Rican skins and those from Panama, and if the subspecies *costaricensis* is a valid form these Rio Grande specimens do not represent it. One skin in my collection from Carrillo, the only one I have from eastern Costa Rica, appears to be quite typical *M. inornata* Du Bus, and I hardly think there is room for a subspecies *costaricensis*.

TROGONIDÆ.

Trogon atricollis tenellus (Cab.). Twenty-five specimens, adults and young of both sexes and one nestling male with wholly tawny back and breast and the belly slightly paler and somewhat mixed with whitish, Boruea and Pozo del Rio Grande, April-June.

Trogon bairdi Lawr. Nineteen specimens, both sexes, Boruea and Pozo del Rio Grande, April and May.

Trogon melanocephalus Gould. Six specimens, both sexes, Barranca Puntarenas, August.

Trogon caligatus caligatus Gould. Seventeen specimens, both sexes, Boruea, Barranca and Barranca Puntarenas, May, June and August.

Trogon massena Gould. Four adult males, Boruea and Pozo del Rio Grande, April, May and August.

MOMOTIDÆ.

Eumomota superciliaris australis Bangs. Four adults, both sexes, Barranca Puntarenas, August and January, 1905. Three of the four specimens were taken during a few days spent by Underwood at this place, in January, 1905, and are included here with the other collection. All are like the two original skins from Bebedero upon which I based the subspecies.

Momotus lessoni Less. Five specimens, adults of both sexes, and two young in nestling plumage, which is similar to the adult plumage except in lacking the bunch of black feathers on the chest, Boruea, Pozo del Rio Grande and Barranca Puntarenas, April, May and August.

ALCEDINIDÆ.

Ceryle torquata torquata (Linn.). Four adults, both sexes, Paso Real, Pozo del Rio Grande and Barranca Puntarenas, April, July and August.

Ceryle amazona (Lath.). One adult male, Pozo del Rio Grande, April.

Ceryle americana septentrionalis Sharpe. Nine specimens, both sexes, Boruea, Lagato and Pozo del Rio Grande, April-August.

ASTONIDÆ.

Pulsatrix perspicillata (Lath.). Two specimens, male and female, Pozo del Rio Grande, April.

CAPRIMULGIDÆ.

Nyctidromus albigollis (*Gmel.*). Three specimens, an adult male and two young in nestling plumage, Boruca, May and July.

MICROPODIDÆ.

Streptoprocne¹ **zonaris zonaris** (*Shaw*). Six adults, both sexes, Boruca, April and May.

TROCHILIDÆ.

Threnetes ruckeri (*Bourc.*). Fifteen specimens, adults of both sexes, and one not full grown young, Pozo del Río Grande, April and August.

Glaucis hirsuta æneus (*Lawr.*). Three adults, two males and a female, Pozo del Río Grande, August.

The form of *Glaucis hirsuta* that ranges from Costa Rica to Nicaragua, and that was named *Glaucis æneus* by Lawrence (*Proc. Ac. Phil.* 1867, p. 232), is a strongly marked subspecies, differing from true *G. hirsuta* of Panama and southward, in its smaller size, nearly wholly black bill, more bronzy back and much clearer and brighter cinnamonaceous color of the underparts — all southern specimens being conspicuously dull and grayish cinnamon beneath.

Phaethornis longirostris longirostris (*Less. & Delatt.*). Sixteen specimens, adults of both sexes, Pozo del Río Grande and Boruca, April, June and August.

Phaethornis guy coruscus *Bangs*. Two specimens, male and female, Pozo del Río Grande, August.

Phaethornis adolphi *Gould*. Fourteen adults, both sexes, Boruca, April-July.

Florisuga mellivora (*Linn.*). One adult male, Boruca, June 21.

Aphantochroa cuvieri (*Delal. & Bourc.*). Five adults, both sexes, Boruca, May and June.

Agyrtria decora (*Salv.*). Eighty-nine specimens, both sexes, Boruca, Paso Real, and Pozo del Río Grande, April-August.

Saucerottea sophiæ (*Bourc. & Muls.*). Four adults, both sexes, Barranca Puntarenas, August.

Saucerottea niveoventer (*Gould*). One hundred and three specimens, both sexes, Boruca, May-July.

Amizilis tzacatl dubusi (*Bourc. & Muls.*). Fifty-one specimens, both sexes, Boruca, Barranca, and Boca Barranca Puntarenas, April-August.

Amizilis cinnamomea cinnamomea (*Less.*). One adult female, Barranca Puntarenas, August.

Hylocharis elicix (*Bourc. & Muls.*). One hundred and forty-one specimens, both sexes, Boruca, and Pozo del Río Grande, May-August.

Chlorostilbon assimilis *Lawr.* Fourteen specimens, adults of both sexes, Boruca, May and June.

¹ See Oberholser, *Proc. Biol. Soc. of Washington*, Vol. XIX, pp. 67-70. May, 1906, for change of generic name of these swifts.

Thalurania columbica venusta (Gould). Forty-four adults, both sexes, Boruca, Barranca and Pozo del Rio Grande, May–August.

Elvira chionura (Gould). One adult female, Boruca, June 30.

This appears to be a rare bird in Costa Rica; though it has been before recorded from the Republic, I can find no exact localities; like other Panaman forms that extend into Costa Rica it probably reaches only to the Pacific slope.

Colibri delphinæ (Less.). One adult male, Boruca, May 21.

Heliotherix barroti (Bourc. & Muls.). One adult female, Paso Real, July 16.

Floricola superba (Shaw). Fifty specimens, both sexes, many young, Boruca, Paso Real, and Barranca, April–July.

On the whole Costa Rican skins of *Floricola superba* are nearer to true *superba* than to *pallidiceps*, though some are intermediate, between the two forms. The Costa Rican bird was named *sclateri* by Cab. & Heine, but nothing is gained by using this name for a purely intermediate race.

Clais guimeti (Bourc. & Muls.). Fourteen specimens, both sexes, Boruca, May and June.

Lophornis adorabilis Salv. Twelve specimens, both sexes, Boruca, May and June.

FORMICARIIDÆ.

Thamnophilus transandeanus Scl. Twenty-five specimens, adults of both sexes and two young males, Boruca, Pozo del Rio Grande, Lagato and Barranca Puntarenas, April–August.

Thamnophilus bridgesi Scl. One hundred and fifty-one specimens, adults and young of both sexes (the female being of course the so-called *Thamnophilus bridgesi* Scl. and the male the *T. punctatus* Cab.; as *bridgesi*, though based upon the female, is the older name it must stand for the species). Boruca, Paso Real, Pozo del Rio Grande and Lagato, April–August.

Thamnophilus doliatus (Linn.). Thirty specimens, both sexes, Boruca, Paso Real, Lagato and Barranca Puntarenas, April–August.

Myrmotherula ménétriesi (d'Orb.). Seventeen specimens, adults and young of both sexes, Boruca and Pozo del Rio Grande, April–July.

Formicivora boucardi Scl. Forty-four specimens, both sexes, Boruca, Paso Real, Pozo del Rio Grande, and Lagato, April–August.

Rhamphocænus rufiventris (Bonap.). Seventeen specimens, both sexes, Boruca, Paso Real and Pozo del Rio Grande, April–August.

Cercomacra tyrannina crepera (Bangs). One hundred and sixteen specimens, young and adult of both sexes, Boruca, Paso Real, Pozo del Rio Grande and Barranca, April–August.

Gymnopithys bicolor olivascens (Ridgw.). Nineteen specimens, both sexes, Boruca and Pozo del Rio Grande, April–June.

Myrmelastes exsul occidentalis (Cherrie). Seventy-four specimens, both sexes, young and adult, Boruca, Paso Real, Pozo del Rio Grande and Barranca, April–August.

***Gymnocichla nudiceps erratilis* subsp. nov.**

Ninety-two specimens, both sexes, young and adults, Boruca, Paso Real, Pozo del Rio Grande and Barranca, April-August.

Cotypes, from Boruca, Costa Rica, adult ♀, No. 18990, and adult ♂, No. 18991, coll. of E. A. and O. Bangs. Collected June 11, 1906, and May 22, 1906, respectively by C. F. Underwood.

Characters. Similar to true *G. nudiceps* of northern Colombia and Panama, but larger, wing and tail longer (in the adult ♂ of the new form averaging, wing, 78.5; tail, 62; in true *G. nudiceps* averaging wing, 76; tail, 58), bill and tarsus of about the same length in both forms. The adult male not different in color, from the adult ♂ of true *G. nudiceps*; the adult female, however, much more intensely ferruginous, the upper parts deeper and redder and without the olivaceous tinge seen in true *G. nudiceps*; the whole underparts deep, strong ferruginous, scarcely if any paler on belly, quite different in color from the orange-rufous underparts of true *G. nudiceps* which are also duller and paler in middle of belly; tail and wing, especially the edgings of lesser and middle coverts, much deeper ferruginous.

Measurements.

No.	Sex.	Locality.	Wing.	Tail.	Tarsus.	Culmen.
18991	♂ ad.	Boruca, C. R.	80	62	28	22
18992	♂ ad.	"	78	65	28.5	19
18993	♂ ad.	"	80	63	29	21.5
18994	♂ ad.	"	79	64	29	22
18995	♂ ad.	"	78	61	29	22
18996	♂ ad.	"	77.5	62	27.5	21.5
18997	♂ ad.	"	78.5	64	27	22
18998	♂ ad.	"	77	59	29	22
18999	♂ ad.	"	77	60	28.5	21
19000	♂ ad.	Pozo del Rio Grande, C. R.	79.5	61	28	22
18990	♀ ad.	Boruca, C. R.	75	58.5	28	21.5
19001	♀ ad.	"	74	57	26.5	20.5
19002	♀ ad.	"	75	58	27	19.5
19003	♀ ad.	"	75	58.5	28	21
19004	♀ ad.	"	76	58	28	21.5
19005	♀ ad.	"	74.5	59	27.5	21
19006	♀ ad.	"	73	56	26.5	22
19007	♀ ad.	"	76	56	28	21
19008	♀ ad.	"	75.5	55	27.5	21.5
19010	♀ ad.	Pozo del Rio Grande, C. R.	74.5	56.5	28	21

Remarks. Cherrie in the paper referred to in the introduction of this article recorded for the first time, I believe, the occurrence of *Gymnocichla nudiceps* in western Costa Rica. Underwood found the bird to be common

in the Rio Grande region and secured the large series listed above. I was much surprised, however, on comparing these skins with a series from Loma del Leon, Panama, taken some years ago by Brown, to find the Costa Rican form so different. The female of the Costa Rican bird can be told at a glance by its much deeper and more intensely ferruginous general coloration; the male, as might be expected in an almost wholly black bird, is not different in color, but can be distinguished by having a longer wing than true *G. nudiceps*, this difference being probably greater than the measurements indicate, because the Boruca series is in rather worn *summer* plumage, whereas the Panaman specimens, with which I compare them, are in fresh, unworn spring plumage.

Formicarius hoffmanni hoffmanni (Cab.). Eighty specimens, adults of both sexes, and one young female, Boruca, Paso Real, Pozo del Rio Grande, Lagato and Barranca, April–August.

A young female, in nestling plumage and not full grown, is similar to the adults in color, except in being duller with all the colors more blended, the chestnut patches on sides of neck and crissum less strongly marked, and the tail blackish only at tip.

One specimen has the whole throat white, marked with small black dots. I had already another skin just like it from Chiriqui, and Ridgway described a specimen, supposed to be a young male, of *F. nigriifrons* (Proc. U. S. Nat. Mus., Vol. XVI, p. 672, 1893) in similar plumage.

That these black spotted, white-throated birds do not represent the normal young plumage is proved by the presence in this series of the young female described above which has the throat just as in the adults. Moreover, my two specimens do not appear to be young — that is not nestlings — being so far as one can judge by the prepared skin, full grown and mature, and it remains to be found out just what stage of plumage these white-throated individuals, recorded now in two species of *Formicarius*, represent.

Grallaria lizanoi Cherrie. Twenty-four specimens, both sexes, Boruca, Paso Real, and Pozo del Rio Grande, April–August.

DENDROCOLAPTIDÆ.

Synallaxis albescens latitabunda subsp. nov.

Five specimens, both sexes, three adults and two young, Boruca, Paso Real and Barranca, May–July.

Type, from Boruca, Costa Rica, No. 19064, ♂ adult, coll. of E. A. and O. Bangs. Collected May 31, 1906, by C. F. Underwood.

Characters. Similar to *Synallaxis albescens albigularis* Sel. of north-eastern South America, but differing in having red of crown much more extended, reaching backward over entire occiput; the white throat more sharply defined, and gray band across chest more pronounced; the red-brown of wings and crown rather less ochraceous, more brickly.

Measurements.

No.	Sex.	Locality.	Wing.	Tail.	Culmen.
19064	♂ ad.	Boruca, Costa Rica	51	69.5	11.5
19062	♂ ad.	Paso Real, Costa Rica	53.5	69.5	11.5
19061	♀ ad.	Paso Real, Costa Rica	48	62.5	11

Remarks. Hellmayr has lately (Nov. Zool., XIII, p. 28, 1906) pointed out the differences between true *S. albescens* of southern South America and *S. albescens albigularis* and assigns to the latter form all specimens from eastern Ecuador, Colombia, Venezuela and the Orinoco region. Specimens from western Costa Rica, the extreme northern limit of the species, differ quite a little from those in my collection from Colombia, and must be considered, I think, to represent still another subspecies.

***Synallaxis pudica* Scf.** Twenty specimens, adults of both sexes and one young female, Boruca and Pozo del Rio Grande, April–August.

The young differs from the adults in lacking the rufous crown, the whole upper parts being brownish olive, and the underparts dull olive instead of gray.

***Automolus virgatus* (Lawr.).** Four adults, both sexes, Pozo del Rio Grande, April and August. This is of course the bird recorded by Cherrie as *A. pallidigularis*.

***Automolus exsertus* Bangs.** Fifty-three specimens, both sexes, Boruca Lagato and Pozo del Rio Grande, April–August.

***Xenops genibarbis mexicanus* Scf.** Forty-nine specimens, both sexes, Boruca, Paso Real, Pozo del Rio Grande and Lagato, April–August.

***Sclerurus guatemalensis* (Hartl.).** Four adults, both sexes, Boruca, Paso Real and Pozo del Rio Grande, April, May and July.

***Glyphorhynchus cuneatus* (Licht.).** One adult female, Pozo del Rio Grande, April 11.

***Dendrocichla anabatina anabatina* Scf.** Fourteen specimens, both sexes, Boruca, Paso Real and Pozo del Rio Grande, April–August.

***Dendroornis nana costaricensis* Ridgw.** Fifty-three specimens, both sexes, young and adult, Boruca, Paso Real, Pozo del Rio Grande, Barranca, Lagato, and Barranca Puntarenas, April–August.

***Dendroornis lachrymosa eximia* Hellmayr.** One adult male, Pozo del Rio Grande, April 12.

***Picolaptes compressus compressus* (Cab.).** Fourteen specimens, both sexes, Boruca, Paso Real, Pozo del Rio Grande, Barranca and Barranca Puntarenas, April–July.

***Dendrocolaptes sancti-thomæ hesperius* subsp. nov.**

Fourteen specimens, both sexes, Boruca, Paso Real, Pozo del Rio Grande and Lagato, April–August.

Type, from Lagato, Costa Rica, adult ♂, No. 19119, coll. of E. A. and O. Bangs. Collected May 27, 1906, by C. F. Underwood.

Characters. Similar to true *D. sancti-thomæ* (Lafr.), and of about the same size, but differing in color and markings as follows: head duller, more rusty, less yellowish or ochraceous; back less heavily marked with blackish cross bars; ground color of under parts slightly darker, more tawny, less ochraceous; the black bars on the feathers of under parts much narrower and more blended with the general color of the feathers, producing the effect of a fine and rather indistinct dusky cross-barring below. In true *D. sancti-thomæ*, the bars on the under surface are wide, black, and stand out in bold relief against the paler, yellower, ground color.

Measurements, adult ♂, *type*: Wing, 124; tail, 116; tarsus, 26.5; culmen, 40.5. Adult ♀, No. 19142, Boruca, Costa Rica, wing, 118; tail, 106; tarsus, 26.5; culmen, 39.

Remarks. This form — a fairly well marked subspecies of *D. sancti-thomæ* — appears to be confined to western Costa Rica. Specimens from eastern Costa Rica, — Juan Vinas and Cariblanco de Sarapiquí — being extreme examples of true *D. sancti-thomæ*, to which I also refer skins from Divala, Chiriquí, though these are not so extreme.

In all probability Lafresnaye's type of *Dendrocops sancti-thomæ* came from the town of Santo Tomás, near Orma, Honduras. It had been supposed by some ornithologists that Lafresnaye bestowed this name on his bird thinking it came from the island of St. Thomas in the West Indies (see Salvin and Godman, *Biol. Cent.-Am.*, Vol. II, p. 192). Skins from Honduras are similar in all respects to those from eastern Costa Rica.

TYRANNIDÆ.

Placostomus superciliaris (Lawr.). Nineteen specimens, both sexes, Boruca, Pozo del Rio Grande and Paso Real, April–August.

Rhynchocyclus brevirostris (Cab.). Six adults, both sexes, Boruca and Pozo del Rio Grande, April–June.

Rhynchocyclus cinereiceps (Scl.). Eighteen specimens, adults of both sexes and one young male, Boruca, Paso Real and Pozo del Rio Grande, April–July.

Todirostrum cinereum finitimum Bangs. Two specimens, male and female, Pozo del Rio Grande, August.

Todirostrum schistaceiceps Scl. Thirty-two specimens, adults and young of both sexes, Boruca, Paso Real and Pozo del Rio Grande, April–August.

Oncostoma cinereigulare (Scl.). Thirteen specimens, both sexes, Boruca and Pozo del Rio Grande, April–August.

Pipromorpha assimilis dyskola (Bangs). Seventy-one specimens, adults and young of both sexes, Boruca, Paso Real, Pozo del Rio Grande, and Barranca, April–August.

Leptopogon pileatus faustus subsp. nov.

Five adults, both sexes, Boruca and Paso Real, May and July.

Type, from Boruca, Costa Rica, adult ♂, No. 17828, coll. of E. A. & O. Bangs. Collected May 5, 1906, by C. F. Underwood.

Characters. Similar to true *Leptopogon pileatus* Cabanis of Guatemala and southern Mexico, and of about the same size, but back paler green; under parts much paler, especially the belly which is primrose yellow; lining of wing and wing bands paler and much yellower, less fulvous; margins of rectrices and upper tail-coverts much greener, less reddish olive.

The new form is much nearer to *C. supercilialis* than true *C. pileatus* in general coloration, except for the brown instead of gray cap.

Measurements.

No.	Sex.	Locality.	Wing.	Tail.	Tarsus.	Culmen.
17828	♂ ad.	Boruca, C. R.	67	56.5	15	12.5
17830	♂ ad.	Paso Real, C. R.	64	51	14.5	12.5
17832	♂ ad.	"	65	56	14	13
17831	♀ ad.	"	59	45	14	13
17829	♀ ad.	Boruca, C. R.	59	48	13.5	13

Remarks. *C. pileatus faustus* is a well marked southern form of which the five skins before me vary but little in color among themselves, all differing from northern specimens in their paler colors and light yellow bellies.

The type locality of the species is Guatemala; one skin in my collection from that country (Gualan, Guatemala) agrees much better with examples from Vera Cruz, Mexico, than with the Costa Rican series. It, however, approaches slightly the southern form in some respects, and I judge the extreme characters of the northern form are only attained in the very northern part of its range — southern Mexico.

Myiopagis placens accola Bangs. Three adults, one male, two females, Boruca, April, May and June.

Camptostoma pusilla flaviventre (Scl. & Salv.). Two adults, male and female, Paso Real and Pozo del Rio Grande, July and August.

Tyranniscus parvus Laur. Forty-three specimens, young and adults of both sexes, Boruca, Paso Real and Pozo del Rio Grande, April–August.

Elainea flavogastra subpagana (Scl. & Salv.). Twenty-six specimens, adults and young of both sexes, Boruca, Paso Real and Lagato, April–July.

Elainea chiriquensis Laur. Twelve specimens, adults and young of both sexes, Boruca, Paso Real and Lagato, April–July.

This appears to be the first time this species has been recorded from Costa Rica, though the type came from near by in Chiriqui.

Mr. Ridgway has kindly informed me that the species must be known by Lawrence's name though both Sclater and Allen synonymize *E. chiriquensis* with *E. flavogastra subpagana*; they however, were clearly wrong.

Lawrence's type, in the U. S. National Museum, agrees entirely with the present Costa Rican series and also with Panama birds, upon which I based my *Elainea sordidata* (the type of the latter was from the Pearl

Islands, but specimens from Panama, Chiriqui and Costa Rica prove to be the same).

Elainca chiriquensis Lawrence is an earlier name for the species than *Elainca albigvertex* Pelz.; whether or not the latter can be maintained as a southern subspecies I am not now prepared to say.

Legatus albicollis (Vicill.). Four specimens, three males and a female, Boruca, April–June.

Myiozetetes similis superciliosus (Bonap.). Two specimens, male and female, Boruca, June and July.

Pitangus derbianus derbianus (Kaup). One adult female, Puntarenas, Aug. 25.

Myiodynastes luteiventer Bonap. One adult female, Puntarenas, August.

Myiodynastes audax nobilis (Scl.). One adult male, Boruca, May 15.

Onychorhynchus mexicanus fraterculus Bangs. Eleven specimens, adults of both sexes and one young female, Boruca, Paso Real and Pozo del Rio Grande, April, May and July.

The young female, about half grown, taken April 29, is similar in color to the adults except that the throat and breast are thickly marked with small black spots and the back mottled with dusky and yellowish.

Myiobius barbatus atricauda Lawr. Seventeen adults, both sexes, Boruca and Pozo del Rio Grande, April–August.

Myiobius xanthopygus sulphureipygius (Scl.). Thirty-two specimens, adults of both sexes and young, Boruca, Paso Real and Pozo del Rio Grande, April–August.

Terenotriccus fulvicularis (Salv. & Godm.). Thirteen specimens, both sexes, Boruca, Paso Real and Pozo del Rio Grande, April–August.

Empidonax traillii traillii (Aud.). Two males, Boruca, April 28, and Pozo del Rio Grande, Aug. 15.

Empidonax traillii alnorum Brewster. Three females, Boruca, April 27, May 8 and May 15.

Empidonax flaviventris (Baird). Seven specimens, both sexes, Boruca and Pozo del Rio Grande, April 9–May 9.

Horizopus richardsonii sordidulus (Scl.). Five adults, both sexes, Boruca, May.

Myiarchus nuttingi nuttingi Ridgw. One adult male, Barranca Puntarenas, Aug. 15.

Myiarchus lawrencei bangsi Nelson. Nine adults, both sexes, Boruca, Pozo del Rio Grande and Lagato, April, May, June and August.

Although these skins vary somewhat among themselves in the amount of rufous edging to the tail and wing feathers, all are distinctly referable to *M. lawrencei bangsi* differing from *M. lawrencei nigricapillus* in their intensely black heads, greener backs and smaller bills.

Tyrannus tyrannus tyrannus (Linn.). One adult male, Pozo del Rio Grande, April 11.

Tyrannus melancholicus satrapa (Licht.). Two adult males, Boruca, April 30, and July 9.

Muscivora tyrannus (Linn.). One male, Paso Real, July 22.

PIPRIDÆ.

Pipra mentalis ignifera *Bangs*. Fifty-four specimens, adults of both sexes and young, Boruca, Paso Real and Pozo del Rio Grande, April–August.

Pipra vetulina *Berlepsch*. Forty-five specimens, both sexes, Boruca, Paso Real and Pozo del Rio Grande, April–August.

Coropipo leucorrohoa altera *Hellmayr*. Eleven specimens, both sexes, Boruca and Paso Real, April–July.

Chiroxiphia linearis (*Bonap.*). Two specimens, male and female, Paso Real and Barranca Puntarenas, July and August.

Manacus aurantiacus *Salvin*. One hundred and seven specimens, adults of both sexes and young, Boruca, Pozo del Rio Grande, Paso Real and Lagato, April–August.

Scotothorus veræpaciis dumicola *Bangs*. Three specimens, both sexes, Pozo del Rio Grande, April.

COTINGIDÆ.

Tityra semifasciata costaricensis *Ridgway*. Nine adults, both sexes, Boruca, and Barranca Puntarenas, April, May, June and August.

Tityra albitorques fraserii (*Kaup*). Five specimens, adult male and female and three young, Paso Real, July 20–22. The young are in nestling plumage and have the back and wings much suffused with yellowish brown, the whole side and top of the head reddish brown, spotted with blackish on the occiput.

Pachyrhamphus cinereiventris *Scl.* Six adults, both sexes, Boruca, Barranca Puntarenas, Paso Real and Pozo del Rio Grande, May, July and August.

Lathria unirufa clara *Ridgw.* Two adults, male and female, Pozo del Rio Grande, April 5 and 17.

Attila citreopygia citreopygia (*Bonap.*). Four adults, both sexes, Boruca and Pozo del Rio Grande, April and May.

Attila citreopygia luteola *Ridgw.* One adult male, Pozo del Rio Grande, April 15.

Mr. Ridgway kindly identified these five skins of *Attila* and decided that four of them were referable to true *citreopygia* and one to *luteola*, from which it seems reasonable to infer that the Rio Grande region of Costa Rica is the meeting ground of these two races.

Microtriccus semiflavus semiflavus (*Scl. & Salv.*).¹ One adult male, Boruca, May 4, 1906.

Chasmorhynchus tricarunculatus *J. & E. Verr.* One female, Pozo del Rio Grande, April.

¹ See Ridgway, Proc. Biol. Soc. of Washington, Vol. XVIII, p. 210, Sept. 2, 1905.

TURDIDÆ.

Planesticus grayi casius (*Bonap.*). Six specimens, one adult male and five young, Boruca, April and May.

Planesticus tristis cnephosa (*Bangs*). Forty-four specimens, adults and young of both sexes, Boruca, April–July.

Hylocichla ustulata swainsonii (*Cab.*). Three specimens, Boruca, and Pozo del Rio Grande, April 21 and 30, and May 3.

Catharus griseiceps *Salvin.* Twenty-two specimens, adults and young of both sexes, Boruca, Paso Real, and Barranca, April–July.

These skins average slightly different from specimens from Chiriqui, being a little paler — whiter — on throat, with the tail and upper tail coverts slightly redder, and the under tail coverts more fulvous. The differences, however, are slight and not altogether constant, and as the Costa Rica specimens were taken in spring and summer and the Chiriqui birds, with which I have compared them, in winter, the slight color differences noted may be seasonal.

The species is new to the ornithology of Costa Rica.

Catharus melpomene costaricensis *Hellmayr.* Two young, male and female in nestling plumage, Boruca, July 8 and Barranca, June 28. No adults of this species were taken, but the young are easily recognized, and quite different from the corresponding plumage of *Catharus griseiceps*. These two specimens were identified by Mr. Ridgway.

SYLVIIDÆ.

Poliotilta superciliaris superciliaris *Lawr.* Thirty-one specimens, adults and young of both sexes, Boruca, Paso Real, Pozo del Rio Grande and Barranca, April–August.

TROGLODYTIDÆ.

Heleodytes capistratus capistratus (*Lesson*). One adult male, Barranca, August 13.

Pheugopedius fasciato-ventris melanogaster (*Sharpe*). Sixty-eight specimens, adults and young of both sexes, Boruca, Pozo del Rio Grande and Barranca, April–August.

Pheugopedius hyperythrus (*Salv. & Godm.*). Fifty-six specimens, adults and young of both sexes, Boruca and Paso Real, April–July.

These are slightly darker and richer tawny below than Panaman examples.

Troglodytes musculus inquietus (*Baird*). Two males, one adult May 17, the other young June 19, Boruca.

The taking of these two specimens positively extends the range of this form to western Costa Rica. I wholly agree with Mr. Ridgway's opinion expressed on page 571, footnote, of 'Birds of North and Middle America,' Part III, that *T. intermedius* is specifically distinct from *T. inquietus*. I have never seen any indication of intergradation among the many specimens I have examined.

Henicorhina prosthaleuca pittieri (Cherrie). Seventeen specimens, adults and young of both sexes, Boruca, May–July.

Thryophilus semibadius (Salv.). Nineteen specimens, adults and young of both sexes, Boruca, Paso Real, Pozo del Rio Grande and Lagato, April–July.

Thryophilus pleurostictus ravus Ridgw. Four specimens, two adult males and a young male and young female, Barranca Puntarenas, August.

Thryophilus rufalbus castanonotus Ridgw. Fifteen specimens, adults and young of both sexes, Boruca, Paso Real and Lagato, May and July.

Thryophilus modestus modestus (Cabanis). Twenty-two specimens, adults and young of both sexes, Boruca, Paso Real, and Pozo del Rio Grande, April–August.

Skins from the Rio Grande region of Costa Rica are not extreme *T. modestus*, but are intergrades between that form and *T. modestus elutus*; on the whole, however, I think them rather nearer to *modestus* than to *elutus*.

VIREONIDÆ.

Vireosylva flavoviridis flavoviridis Cassin. Nineteen specimens, adults of both sexes and two young, Boruca, Paso Real, and Barranca, April–July.

Vireosylva philadelphica Cassin. One female, Boruca, May.

Pachysylva decurtata (Bonap.). Twenty-four specimens, adult and young of both sexes, Boruca and Pozo del Rio Grande, May–August.

This series does not average any smaller than specimens in my collection from Vera Cruz, Mexico, neither can I detect any constant differences in coloration, and I am inclined to believe the southern subspecies *pusillus* of Lawrence cannot be maintained, although Ridgway, 'Birds of North and Middle America,' Part III, page 217, footnote, seemed rather to think it might.

Pachysylva ochraceiceps pallidipectus Ridgw. Thirty specimens, adults and young of both sexes, Boruca, Paso Real, Lagato, Barranca and Pozo del Rio Grande, April–August.

Young in nestling plumage are very different in color from adults, having the entire upper parts dark cinnamon, and the under parts, except under tail coverts which are greenish yellow, pale cinnamon mixed with whitish — the throat mostly whitish. From this plumage they moult into the livery of the adult; three skins in the above series being in process of such a change.

Pachysylva viridiflava (Lawr.). One adult male, Boruca, June 16.

HIRUNDINIDÆ.

Progne chalybea chalybea (Gmel.). Seven specimens, adults and young of both sexes, Boruca and Paso Real, May and July.

Stelgidopteryx ruficollis uropygialis (Lawr.). One adult female, Pozo del Rio Grande, April 4, 1906.

Iridoprocne albilineata (Lawr.). Eight specimens, adults and young of both sexes, Barranca Puntarenas, August.

Pygochelidon cyanoleuca (Vieill.). Sixteen specimens, adults and young of both sexes, Boruca, Paso Real and Barranca, May-July.

MNIOTILTIDÆ.

Chrysocantor æstiva æstiva (Gmel.). Four specimens, two males, two females, Boruca and Pozo del Rio Grande, April 10 to April 27.

Dendroica pensylvanica (Linn.). Two males, Pozo del Rio Grande, April 6 and April 9.

Oporornis formosa (Wilson). Two males, Pozo del Rio Grande, April 4 and April 17.

Oporornis philadelphia (Wilson). Three specimens, two males and a female, Boruca and Pozo del Rio Grande, April 11 to April 27.

Seiurus aurocapillus (Linn.). Four specimens, both sexes, Boruca and Pozo del Rio Grande, April 12 to May 6.

Seiurus noveboracensis noveboracensis (Gmel.). One male, Pozo del Rio Grande, April 8.

Chamæthlypis caninucha Ridgway. Eighteen specimens, adults and young of both sexes, Boruca, Paso Real and Barranca, May-July.

Young in nestling plumage, besides lacking all gray and black markings on the head, differ from the adults in the color of the under parts which are dull olive-yellow.

Icteria virens virens (Linn.). One female, Pozo del Rio Grande, April 9.

Basileuterus rufifrons delatarii (Bonap.). Seven adults, both sexes, Boruca and Paso Real, April, May and July.

Basileuterus semicervinus veraguensis (Sharpe). Eleven specimens, adults of both sexes and one nestling female, Boruca and Paso Real, April, May and July.

This series presents much variation, and some skins are very close to *B. semicervinus leucopygius* (Scl. & Salv.) if not really referable to that form, while others are typical *B. s. veraguensis*.

Rhodinocichla rosea eximia Ridgw. Thirty-three specimens, adults of both sexes, immature of both sexes and two nestlings, both male. Boruca, April-July.

CEREBIDÆ.

Chlorophanes spiza exsul Berlepsch. Ninety-one specimens, adults and young of both sexes, Boruca and Paso Real, April-July.

This series is, like Chiriqui specimens, wholly referable to *C. spiza exsul*, which in my opinion is an excellent form. The very short bill of *exsul*, which in the adult male averages about 15 mm., at once distinguishes it from the northern *guatemalensis* with a bill of 17.5 mm.

Cyanerpes cyaneus (Linn.). Sixty-nine specimens, adults and young of both sexes, Boruca, Paso Real and Lagato, April-July.

Cyanerpes lucidus isthmicus subsp. nov.

Five specimens, four adult males, one adult ♀ (?), Boruca and Paso Real, July.

Type, from Paso Real, Costa Rica, adult ♂, No. 18325, coll. of E. A. and O. Bangs. Collected July 22, 1906, by C. F. Underwood.

Characters. Similar to true *C. lucidus* of Guatemala, but smaller with shorter and much more slender bill; the adult male with the blue color of the body darker (in true *C. lucida* body and head are of about the same shade, in the new form the body is darker than the head, the latter being of the same light blue color as in true *C. lucida*); adult female rather duller green on the back, and with the head less washed with bluish.

Measurements.

No.	Sex.	Locality.	Wing.	Tail.	Culmen.
18324 ¹	♂ ad.	Paso Real, C. R.	54	25	19
18325	♂ ad.	"	54	25.5	18.5
18326	♂ ad.	"	56.5	27	17.5
18327	♂ ad.	"	55	27	18
17292	♂ ad.	Pozo Azul, C. R.	55	26	17.5
17293	♂ ad.	"	55.5	27	16.5
17294	♂ ad.	"	55	25	17
18317	♂ ad.	"	57	28	16.5
18320	♂ ad.	"	56	25	16
40319 ²	♂ ad.	Panama, Pan.	56	28	17
32010	♂ ad.	Panama, line of R. R.	52	24.5	16.5
128418	♂ ad.	Escondido R., Nic.	56	26	17
17290 ¹	♀ ad.	Pozo Azul, C. R.	54	26	17
18315	♀ ad.	"	53	26.5	16

For comparison with these a series of true *Cyanerpes lucidus* affords the following:

Measurements.

No.	Sex.	Locality.	Wing.	Tail.	Culmen.
20407 ²	♂ ad.	Choctum, Guat.	60	31	19.5
60037	♂ ad.	Guatemala	60.5	30	19.5
147809	♂ ad.	"	61	32	18.5
147810	♂ ad.	"	59	32	19
10149 ¹	♂ ad.	Ceiba, Hond.	60	29.5	20.5
10150	♂ ad.	"	59.5	30	20
10151	♂ ad.	"	61.5	32.5	20
10153	♂ ad.	"	62	32	19.5
10155	♂ ad.	"	59	31.5	19
10156	♂ ad.	"	59.5	29.5	20
10157	♂ ad.	"	61	30	20
10158	♂ ad.	"	57.5	28	19
10159	♂ ad.	"	60	31	19
10160	♂ ad.	"	60	32.5	19

¹ Coll. of E. A. and O. Bangs.

² Coll. of U. S. National Museum.

Remarks. The two geographical races into which *Cyanerpes lucidus* divides are easily separated by the measurements, as given above; the color differences are not altogether constant, though they show very well in series.

True *Cyanerpes lucidus*, originally described from Guatemala by Sclater and Salvin, I should restrict to Guatemala, Honduras and Salvador and call all specimens from Nicaragua, Costa Rica and Panama *Cyanerpes lucidus isthmicus*. Specimens from eastern Costa Rica and from Nicaragua show some signs of being intermediate, but still, on the whole, go better with the more southern race than with true *C. lucidus*.

The distribution of these two races of *C. lucidus* conforms to that of many species of birds that occupy the same area in Central America and points to a general faunal division, the exact lines of which vary a little, separating the biota of northern and southern Central America.

Dacnis cayana callaina *Bangs*. Nine specimens, adults of both sexes and young males, Boruca and Paso Real, May and July.

Dacnis venusta *Laur.* Five males, four adult, one young, Boruca, May and June.

Cœreba mexicana (*Sclater*). Thirty-six adults, both sexes, Boruca, Barranca, and Pozo del Rio Grande, April–August.

ICTERIDÆ.

Cacicus microrhynchus (*Scl. & Salvr.*). Four adults, both sexes, Pozo del Rio Grande and Lagato, April and May.

Amblycercus holosericeus (*Licht.*). Thirty-seven specimens, both sexes, Boruca and Pozo del Rio Grande, April–August.

Icterus spurius (*Linn.*). One adult male, Pozo del Rio Grande, August 10.

TANAGRIDÆ.

Euphonia gracilis (*Cabanis*). Nine specimens, adults of both sexes and young, Boruca, Paso Real, Barranca and Pozo del Rio Grande, June–August.

Euphonia luteicapilla (*Cabanis*). Twenty-eight specimens, adults of both sexes and young, Boruca, and Paso Real, April–July.

Euphonia minuta humilis (*Cabanis*). Two males, neither quite adult, Boruca, May.

Euphonia crassirostris *Sclater*. Three males, none of them fully adult, May and July.

Calospiza guttata chrysophrys (*Scl.*). Four specimens, adults of both sexes and one young male, Boruca and Barranca, June.

Calospiza gyroloides (*Lafr.*). Thirty-eight specimens, adults and young of both sexes, Boruca and Barranca, April–June.

Calospiza larvata fanny (*Lafr.*). Forty specimens, adults and young of both sexes, Boruca and Paso Real, April–July.

Tanagra cana Swains. Three specimens, an adult male and two young females, Boruca, May.

Piranga testacea testacea Scl. & Salv. Two adult males, Boruca and Paso Real, June and July.

Ramphocelus costaricensis Cherrie. Two hundred and nine specimens, adults and young of both sexes, Boruca, Paso Real and Pozo del Río Grande, April–August.

Lanio melanopygius Salv. & Godm. Eight adults, both sexes, Boruca and Pozo del Río Grande, April and May.

Tachyphonus nitidissimus Salv. Twenty-seven specimens, adults of both sexes and young males, two in nestling plumage, Boruca, Paso Real, Barranca and Pozo del Río Grande, April–July. The color of the crown-patch in the adult males varies much — from gamboge yellow to almost ochraceous-rufus, sometimes being yellow in middle and ochraceous at the end or sides.

Eucometis spodocephala stictothorax (Berlepsch). Thirty-seven specimens, adults and young, Boruca, Paso Real, Pozo del Río Grande and Lagato, April–August.

This series clearly is referable to *E. spodocephala stictothorax* and not to true *E. spodocephala* although some individuals approach the latter form and perhaps indicate intergradation somewhere in this vicinity; others — in fact most of the series — are extreme instances of the more southern subspecies. Specimens from Pozo Azul, Costa Rica, I should also refer to *stictothorax*, while examples from Volcan Miravalles are extreme *spodocephala*.

Young specimens in nestling plumage have the whole head and throat olive-green like the back, and the chest streaked with this color, otherwise they are similar to the adults.

Phœnicothraupis rubica vinacea (Lawr.). Sixty-two specimens, adults and young, Boruca and Lagato, April–June.

Nestlings are much browner, less greenish than the adult female and lack the yellow crown patch.

FRINGILLIDÆ.

Spiza americana (Gmel.). Five adults, both sexes, Pozo del Río Grande, April 3 to April 12.

Emberizoides sphenura hypochondriacus (Hellmayr).¹ Seven adults, both sexes, Boruca and Barranca, May and June.

This strongly characterized subspecies, lately described by Hellmayr, is of course a new bird to Costa Rica. It was very surprising after all the

¹ *Emberizoides macrourus hypochondriacus* Hellmayr, Bull. Br. Orn. Club, Vol. XIX, Dec. 31, 1906, p. 28. Type locality, Frances, Volcan de Chiriqui, 2000 ft. alt.

Dr. Chas. W. Richmond has called my attention to the fact that *Fringilla macroura* Gmel. 1788, is preoccupied by Pallas in Vroeg's Catalogue 1764, and that therefore the wide ranging South American species must be known by Vieillot's name *Passerina sphenura*, N. Dict. d'Hist. Nat., XXV, p. 25, 1817, Type locality, Cayenne.

bird collecting that has been done in Panama, Chiriquí and Costa Rica to find a bird of this genus inhabiting Central America, and still more so that it should have been taken by two collectors in two different regions so nearly at the same time.

At Boruca and Barranca Mr. Underwood did not find the bird living in marshes as *Emberizoides sphenura* is said to do in South America, but inhabiting small patches of a low green shrub in open places in and near the forest. It kept concealed in these low bushes, was very hard to flush, and had to be shot upon the wing as it darted from one clump to another, and I fancy it is a bird that might easily be overlooked by collectors.

Arremonops superciliosus superciliosus (*Salvin*). One adult female, Boca Barranca Puntarenas, Aug. 14.

Arremonops conirostris richmondi *Ridgw.* Thirty specimens, adults and young, Boruca, Barranca, Lagato and Pozo del Rio Grande, April–August.

Arremon aurantirostris *Lafr.* Eighty-eight specimens, adults and young, Boruca, Paso Real, Barranca, Lagato and Pozo del Rio Grande, April–August.

Buarremon costaricensis sp. nov.

Fifty-two specimens, adults of both sexes and one young female in nestling plumage, Boruca, Barranca and Lagato, April–July.

Type, from Boruca, Costa Rica, adult ♂, No. 18606, coll. of E. A. and O. Bangs. Collected July 1, 1906, by C. F. Underwood.

Characters. Somewhat similar to *B. assimilis* (Boissoneau), to which species it has usually been referred, of South America — Colombia and Venezuela to Peru — but larger; with larger, both longer and stouter, bill; and shorter and apparently (judged from dried specimens) heavier tarsus; color of back, etc., much clearer olive-green, less reddish olive; flanks and under tail coverts greener, less brownish; gray parts of head and sides of neck paler, clearer gray; bend of wing brighter, clearer yellow; nearly, usually entirely, lacking the whitish spot on forehead above middle of base of culmen so conspicuous in *B. assimilis*.

Measurements.

No.	Sex.	Locality.	Wing.	Tail.	Tarsus.	Culmen.
18606	♂ ad.	Boruca, C. R.	84	76	28	18
18596	♂ ad.	"	85	78	27.5	18.5
18597	♂ ad.	"	85.5	79	27	18
18609	♂ ad.	"	82	72	26.5	17
18607	♂ ad.	"	85	77	27.5	19
18601	♂ ad.	Lagato, C. R.	80	78	28	17.5
18592	♀ ad.	Boruca, C. R.	78	76	28	17
18599	♀ ad.	"	80	74	27	17.5
18600	♀ ad.	"	79	74	26	17
18605	♀ ad.	"	81	75	26.5	17.5
18608	♀ ad.	"	78	75	26	17
18611	♀ ad.	"	80	72	26.5	17

Three "Bogota" skins of *Buarremon assimilis* measure respectively as follows: wing, 79, 78, and 79.5; tail, 78, 75 and 78; tarsus, 30, 30 and 30; culmen, 16, 16 and 15.5.

Remarks. Lawrence, in 1868, very doubtfully referred to *Buarremon assimilis* a specimen from Guatila, Costa Rica, he then had in hand, pointing out differences between it and South American examples; Salvin, however, afterward examining the same skin, came to the conclusion it did not differ at all from South American examples.

The large series taken by Underwood shows very pronounced and constant differences from *B. assimilis* of Colombia and southward, and as no bird of this sort has ever been taken in Chiriqui or Panama, I am inclined to accord the Costa Rican *Buarremon* full specific rank.

Though wholly wanting or exceedingly rare in other parts of Costa Rica, Underwood found *Buarremon costaricensis* an abundant bird in the Rio Grande region.

***Volatinia jacarini splendens* (Vieill.).** Thirteen specimens, both sexes, Boruca and Paso Real, May–July.

***Sporophila gutturalis* (Licht.).** One adult male, Pozo del Rio Grande, April 18.

This is a new bird to Costa Rica, and I believe has before been taken on the continent no farther north than on the line of the Panama Railroad.

***Sporophila aurita* (Bonap.).** Thirty-eight specimens, adults of both sexes and young males, Boruca, Paso Real, Barranca and Pozo del Rio Grande, April–August.

The adult males from this series — twenty-one in number — show, for this species, remarkably little individual variation, there being no very black ones and none with white throats. All have black throats and breasts, white rumps and bellies and a semicircle of white on each side of the neck, are practically all alike, and represent the phase of plumage named by Lawrence *S. semicollaris*, except that the rump is slightly more extensively white.

***Sporophila morelleti morelleti* (Bonap.).** Four specimens, two adult males, one young male and one young female, Pozo del Rio Grande, April and August.

***Amaurospiza concolor* Cabanis.** One adult male of this rare species, Boruca, June 16, 1906.

***Cyanocompsa concreta cyanescens* Ridgw.** Forty-nine specimens, both sexes, Boruca, Paso Real and Pozo del Rio Grande, April–August.

***Oryzoborus funereus* Sclater.** Four adults, both sexes, Boruca and Barranca, June.

***Saltator magnoides intermedius* (Lawr.).** Eighteen specimens, adults of both sexes and one young in nestling plumage, Boruca, Barranca, Pozo del Rio Grande and Barranca Puntarenas, April–August.

These skins represent *S. magnoides intermedius*, differing in no way from specimens from Panama, except that in the series there is not an example with the black band across the chest broken or wanting; the

band, however, is very narrow, and many Panaman examples are precisely like these Rio Grande specimens.

The bird of eastern Costa Rica is *S. magnoides medianus* Ridgw.; not usually so extreme as more northern specimens, but clearly to be referred to that form.

***Saltator striatipectus isthmicus* (Sclater).** Forty-six specimens, both sexes, Boruca and Lagato, April-July.

ANOTHER HYBRID HUMMINGBIRD — *SELASPHORUS* *RUFUS* + *ATTHIS CALLIOPE* — FROM CALIFORNIA.

BY JOHN E. THAYER AND OUTRAM BANGS.

SHORTLY after the death of Walter E. Bryant his collection of beautifully mounted Californian Hummingbirds came into the possession of Thayer and is now in the Thayer Museum at Lancaster, Mass. In this collection we found, while identifying the species, a remarkable hybrid apparently of *Selasphorus rufus* and *Atthis calliope*. It was shot at Oakland, California, May 8, 1896, while feeding on locust blossoms.

In color this example, which is a fully adult male, is somewhat intermediate between adult males of the two species of which it is probably a hybrid.

The back is green, duller and more coppery than in *Atthis calliope*, the upper tail coverts and rectrices are edged with rufous, the rufous edging reaching nearly to the tips of the feathers on the inner webs of the rectrices and about to the middle on the outer webs; the cheeks, sides of body and under tail coverts are all clouded with rufous; the gorget, composed of feathers more pointed and narrower than in *Selasphorus rufus*, with the white bases showing slightly through, is of the most gorgeous ruby red, different from that of either *Selasphorus rufus* or *Atthis calliope*; the shape of the rectrices corresponds rather better with male examples of *Selasphorus rufus*, the outer rectrices being narrower and pointed, but the tail is short and more nearly square as in *Atthis calliope*.