

NOTES ON A COLLECTION OF BIRDS FROM EASTERN NICARAGUA
AND THE RIO FRIO, COSTA RICA, WITH A DESCRIPTION OF A
SUPPOSED NEW TROGON.

BY
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The accompanying list, in which are embodied the notes made during a year's residence in eastern Nicaragua, is based on collections and observations extending from February 1, 1892, to January 19, 1893. Specimens of most of the species were obtained, and of others, nearly all North American, only those well known to me have been admitted unless otherwise stated.

Greytown, or San Juan del Norte, is situated on a small lagoon at the mouth of the San Juan River, on the Caribbean coast of Nicaragua. It is almost surrounded by marshes and silico* swamps, yet the climate is as healthful as at any other point on the coast. This is due, probably, to the sandy nature of the soil on which the town is built, and to the influence of the sea air. The climate of the region is apparently not as deadly as many suppose. Many foreigners live in the country for years, retain their health, and are seldom or never troubled with "the fever." Unless one is peculiarly susceptible to malarial influences no bad effects are liable to attend a sojourn in the country if proper care is taken to preserve the health, but one is very liable to be led into various exposures on first reaching the country, especially if one has left a severe winter behind in the north. The country a few miles inland is not as salubrious as directly on the coast, and those who contract the fever there frequently recover entirely after a trip to the seashore.

The coast country has a protracted rainy season of eight or nine months, from May to January, with occasional spells of fair weather during the other three or four months. Some years the "dry" season is said to fail altogether. The rainfall is enormous, and from a report of observations by officers of the Nicaragua Canal Company it appears that over 296 inches fell at Greytown during the year 1890. The precipitation during July of that year was nearly 2 inches per day. The

*The local name of a species of palm which constitutes the prevalent growth in most swamps of the coast district.

temperature is even and seldom reaches the nineties or goes below 70° F.; the average is about 85° at noon and 72° at night.

Two weeks were spent at Greytown, where collecting was confined to the bushy thickets and clumps of bushes on the outskirts of the town, and to fruit trees in the gardens. The species collected were mostly those found in all clearings and open places along the coast. My brother, W. L. Richmond, and Mr. G. E. Mitchell, collected for a few days at a cacao plantation on the San Juan near Greytown, and secured several species not noticed elsewhere. Four days, February 23-26, inclusive, were spent at San Carlos, at the southeast end of Lake Nicaragua. The collecting ground there was much the same as that at Greytown, clumps of bushes, thickets of small extent, and a sprinkling of large trees on the lowland along the lake shore. The dry season at San Carlos had an actual existence, and the climate was delightful. The next fourteen days, February 27 to March 11, were occupied on the Rio Frio, which flows into the San Juan opposite San Carlos. The river was ascended to the Guatusa Indian settlements, at the head of canoe navigation in the dry season, and a few days spent in their neighborhood. With the exception of two clearings the river banks were uninhabited. Owing to this solitude animal life was abundant. Water birds were extremely numerous. Monkeys of three species were seen day after day in large troops. Alligators, turtles, and lizards actually swarmed, and sharks, probably the same as found in the lake, were found as far as the Indian habitations. Dense forests extend along the Frio for miles, with occasional stretches of savannah land. Narrow patches of tall grass line the banks in low places, where the heavy timber is replaced by jungles of smaller trees. The altitude of the river, as far as covered by me, is less than 150 feet, and the vegetation therefore strictly tropical.

The time from March 12 to April 17 was passed on the San Juan and at Greytown, but no collecting was done, and much of the spring migration of North American birds was missed. I have endeavored to give dates in connection with the North American species, which may be of some value in the study of the migration of those birds, but it will be remembered that the notes cover parts of two migrations, and that a species noted from October to February was seen first in February and again on its return from the north in October; also that species common at Greytown and noted as last seen in February (when my observations ended there) may really have remained a month or more later. The terms winter, summer, etc., have been used to designate the same seasons as in the north.

The time from May 1, 1892, to January 19, 1893, was passed on the Escondido River, principally at the "I. P." plantation. As by far the most of my time was spent on that river, and most of the species observed elsewhere were also collected there, I have included in the list

two or three species not met with by me, but collected by Mr. Henry Wickham* a number of years ago.

The Escondido, formerly known as Blewfields or Bluefields River, is probably the most important one on the coast of Central America, with the exception of the San Juan. There is no troublesome bar at the mouth, as is usually the case, and large ocean steamers ascend the river to Rama, 65 miles from the mouth. Two rivers, the Rama and Sequia, join at the town of Rama and form the Escondido. The banks for many miles, including both branches above Rama, are lined with banana plantations, the monotony of which is broken by the numerous picturesque ceiba and cbo trees which have been left standing in the clearings, and the dense tropical forest in the background. In the last 15 or 20 miles of its course the river winds through dreary silico swamps and empties into Bluefields Lagoon, a sheet of water 15 miles long and 7 miles broad. These swamps are of little interest; they are covered with a dense growth of silico palms and trumpet trees, and bird life is scarce.

The International Planting Company's plantation, or "I. P.," as it is familiarly called, is 50 miles from Bluefields. A creek joins the river at this plantation, and affords an excellent means of reaching the heavy forest in the rear. Many of the forest birds delight to frequent the open space where the creek runs through the woods, and a canoe trip in the early morning under these circumstances usually enables one to get a fair lot of birds. Shortly after reaching the "I. P." plantation work was much interfered with by an attack of the fever, due entirely to carelessness, which eventually led to my return to the United States.

Special attention was given to the colors of soft and fading parts of specimens collected, and in all cases where a definite color of such parts is given the part was compared with Ridgway's Nomenclature of Colors.

My thanks are due Mr. Ridgway, curator of the department of birds, U. S. National Museum, who has allowed me the use of various specimens in the Museum series for comparison with my own, and has aided me in other ways; and to Messrs. G. E. Mitchell and W. L. Richmond for records from Greytown and on the Escondido. I can never sufficiently thank Mr. Sam. A. Risley, of the International Planting Company, who rendered me so many favors during my stay there that it would be useless to try to enumerate them. He contributed in many ways to the success of my work. I met with so many offers of assistance and expressions of good will from Americans and others with whom I came in contact in Nicaragua that with one exception my thanks are due them all.

*List of birds collected on the Bluefields River, Mosquito coast, by Mr. Henry Wickham, by P. L. Selater, F. R. S., and Osbert Salvin, M. A., F. Z. S. Proc. Zool. Soc. Lond., 1867, 278-280.

Family TURDIDÆ.

1. *Turdus mustelinus* Gmel.

Heard several times on the Escondido; first noted November 7.

2. *Turdus ustulatus swainsonii* (Cab.).

One shot October 3. A large flight occurred on the 14th.

3. *Merula grayi* (Bonap.).

Common on the Escondido and also observed at Greytown. Its song is not unlike that of the American Robin (*Merula migratoria*), although somewhat inferior. On the Escondido the banana plantations are its favorite haunts, and it frequently places its nest in the bunches of fruit, occasionally building in the space at the junction of a leaf with the stem of the plant. A nest secured July 1 resembled that of *M. migratoria* in having the walls well plastered with mud. It contained two fresh eggs, measuring 1.09 by 0.78, and 1.14 by 0.79; pale bluish-gray, spotted and blotched with reddish-brown.

Two young birds just able to fly were found June 18.

It is interesting to note that in the tropics many species lay but two eggs. The domestic fowls are not as prolific as in the north apparently, and their eggs are small-sized.

Family SYLVIIDÆ.

4. *Polioptila bilineata* (Bonap.).

Not very common on the Escondido and at Greytown.

Family MIMIDÆ.

5. *Galeoscoptes carolinensis* (Linn.).

Rather common; observed from October 28 to April 17.

Family TROGLODYTIDÆ.

6. *Henicorhina prosthaleuca* (Sch.).

Apparently not common. The bird skulks close to the ground in the thick underbrush of the forest and is quite shy.

7. *Thryophilus costaricensis* Sharpe.

Common at Greytown and on the Escondido, also observed on the Rio Frio. It is most abundant during the winter months and possibly may not occur during the breeding season; at any rate, it escaped my notice during the early summer, and it was not until July that the birds became conspicuous through their loud but rather monotonous song. They are mostly confined to thickets bordering streams, and

keep so well concealed that it is difficult to secure specimens. At times they appear in plain sight and do not manifest any unusual shyness.

8. *Thryophilus thoracicus* (Salv.).

Rather common. This species is found in the forest, in trees, usually at a distance of 10 or 20 feet from the ground. It spends its time much as does *Thryothorus atrogularis*, searching among the bunches of dead leaves and masses of dead material lodged in vines. It occasionally scolds in a somewhat harsh voice, but on the whole is rather a silent bird.

9. *Thryophilus zeledoni* Lawr.

One specimen secured February 13 in a thicket at Greytown. In its actions it resembled the following:

10. *Thryothorus atrogularis* Salv.

Common; appears to be absent part of the year. First seen September 7, and afterwards common until the end of February. Found in the forest, 10 or 20 feet up in the trees, searching for food in the thick tangled masses of vines, or scratching in the accumulations of vegetable matter lodged in palms. It is not very noisy, seldom uttering its rather harsh note.

11. *Troglodytes intermedius* Cab.

Common on the Escondido. A pair or more are found on every plantation. The birds are very familiar, hopping around through the houses and outbuildings like the House Wren (*T. aëdon*), and the song is almost exactly the same, but rather less musical. Nesting apparently occupies a considerable portion of the year. I found young in July and August, and nest building was observed in November and January. The nests were constructed of fresh grass, with a small entrance in the side. One was located in a fork in the top of a small guava tree, and another was built in a bunch of grass which had grown through an opening in an outbuilding.

Family MNIOTILTIDÆ.

12. *Protonotaria citrea* (Bodd.).

Quite common through the winter months; first seen September 2.

13. *Helminthophila pinus* (Linn.).

Apparently rare; shot one at Greytown February 8 and saw another on the Escondido January 17.

14. *Helminthophila chrysoptera* (Linn.).

Uncommon during the winter; specimens obtained November 5.

15. *Helminthophila peregrina* (Wils.).

Shot a specimen on the Escondido October 24; two days later the species had become abundant, hundreds passing by in an almost continuous stream, pausing an instant in the trees in front of the house, then off again, following the course of the river westward. This migration continued until the 29th, after which date no more were observed.

16. *Compsothlypis americana* (Linn.).

One specimen, in company with some Tennessee Warblers, shot October 26 on the Escondido.

17. *Dendroica æstiva* (Gmel.).

Abundant winter resident. First seen August 9, and afterwards abundant, swarming in the tall grass bordering the Escondido River. Remains until late in February at least.

I never heard this or any of the other North American birds sing here.

18. *Dendroica coronata* (Linn.).

Not very common. Observed at Greytown and on the Escondido. Several noticed November 28, and one on February 16.

19. *Dendroica maculosa* (Gmel.).

Quite common in winter. First seen October 27, and last on February 5.

20. *Dendroica pensylvanica* (Linn.).

Abundant during the winter months, noticed from September 29 to February 16.

21. *Dendroica dominica albiflora* Baird.

One specimen collected at Greytown, February 12.

22. *Seiurus aurocapillus* (Linn.).

Rather rare, first seen November 7, and occasionally noted until May 6.

23. *Seiurus noveboracensis notabilis* (Grimm.).

Abundant in winter, from September 20 until May 5.

24. *Seiurus motacilla* (Vieill.).

Rather rare, first seen October 23.

25. *Geothlypis formosa* (Wils.).

Very common, first seen September 22.

26. *Geothlypis philadelphia* (Wils.).

Shot an immature male on February 4, at Greytown; the only one seen.

27. *Geothlypis trichas* (Linn.).

Common, first observed October 28.

28. *Geothlypis bairdi* Nutting.

Common on the Rio Frio in Costa Rica. One specimen taken at Greytown and one at Colorado Junction, on the San Juan. Rare on the Escondido, where I got an adult male May 29, and a young bird in first plumage June 5.

29. *Geothlypis caninucha icterotis* Ridgw.

Rather common on the Escondido. First specimen shot May 17. Next seen August 17, when an immature male was shot. Later it became quite common, and individuals were frequently heard. The note is loud and clear. The birds are found in the tall grass along the river banks. They may breed here, but if so are very retiring, as I saw none during the summer.

30. *Icteria virens* (Linn.).

Uncommon, apparently. First seen October 14, and specimen obtained at Greytown February 14.

31. *Sylvania mitrata* (Gmel.).

Very common. First seen September 24; taken at Greytown February 5.

32. *Setophaga ruticilla* (Linn.).

Very common; first seen September 20.

33. *Basileuterus leucopygius* Sel. and Salv.

Common on the Rio Frio in March. The bird has habits very similar to *Sciurus motacilla*, and its note is very much the same. Instead of jerking the tail up and down it flirts it continually after the manner of a Redstart (*Setophaga ruticilla*), and at times resembles this bird in habits more than the *Sciurus*. The song is loud and clear, and very melodious, resembling somewhat that of a Field Sparrow (*Spizella pusilla*), with several variations.

Found usually along streams, but often wanders into clearings, where it hops along fallen trees and on bare patches of ground. The birds were found almost invariably in pairs.

Family HIRUNDINIDÆ.**34. *Progne subis hesperia* Brewst.**

A pair shot September 13 on the Escondido out of a flock of six or eight, which had settled in the top of a dead tree during a shower. This appears to be considerably south of the other records for this species.

35. *Progne chalybea* (Gmel.).

Abundant. Nests in holes in trees standing in the plantations, and also common in the town of Bluefields, where the birds use natural cavities in the breadfruit trees for nesting purposes. Young birds found from April to July. Later, the birds congregate in small flocks and fly about over the plantations and houses, occasionally circling about high in the air during sunny days. At times large flocks, mixed with *Tachycineta albilinea*, *Chelidon erythrogaster*, and others may be seen flying about, especially in the evening before sunset or on cloudy afternoons. The ordinary note resembles that of *P. subis*.

36. *Chelidon erythrogaster* (Bodd.).

Abundant in winter and during migrations. Arrive late in August, when they occur in large flocks, usually mixed with other species. In March large numbers were seen, probably migrating, and small numbers were seen as late as May 3.

37. *Tachycineta albilinea* (Lawr.).

Abundant, particularly on the Rio Frio, where there were many snags and stumps sticking out of the water, in the cavities of which the birds bred. Saw young birds early in May.

This species seldom or never occurs away from the rivers, where it flits back and forth, frequently perching on snags or dead limbs hanging out over the water.

38. *Stelgidopteryx uropygialis* (Lawr.).

Common on the Rio Frio in company with the preceding. Collected by Wickham on his trip up the Esccondido.

Family VIREONIDÆ.

39. *Vireo olivaceus* (Linn.).

One of a pair secured September 16.

40. *Vireo philadelphicus* (Cass.).

One shot October 21 was the only one observed.

41. *Vireo flavifrons* Vieill.

Rather common; first seen October 22 and last on February 8.

42. *Vireo ochraceus* Salv.

A pair secured in some bushes at Greytown, February 1, and one seen April 10, in the same vicinity.

My birds are in fresh unworn plumage, and almost as bright as *V. carmioli*. They agree very well with the description of the bird called

Vireo semiflavus by Salvin, which was probably a bird of this species in unusually bright plumage.

Measurements are as follows:

Number.	Locality.	Sex.	Wing.	Tail.*	Tarsus.	Culmen
126153	Greytown, Nicaragua.....	♂	2.00	1.62	0.75	0.45
126154	.....do.....	♀	2.10	1.62	0.80	0.43

* All measurements are in inches and hundredths; the tail measurement is that of the longest tail feather from tip to point of insertion.

43. *Hylophilus decurtatus* (Bonap.).

Common at Greytown and on the Escondido River during the winter. Apparently not present during the summer, but was observed from August 28 and thereafter throughout the winter. It has a pleasing song; is usually found some distance up in the trees, although at Greytown it was found in low bushy thickets.

44. *Vireolanius pulchellus verticalis* Ridgw.

Not common. First observed September 28, and several times thereafter. It appears to be absent during the summer. In one of my specimens, a female, there is a well-defined and really conspicuous yellow rictal streak, the green over the eye is paler than usual, and faintly yellowish, forming a decided superciliary stripe. There are several yellow feathers posterior to the lores, and the abdomen is of a brighter yellow than in other specimens examined. In two other National Museum specimens from Guatemala there is a tendency to a light rictal streak and faint superciliary stripe.

Family CEREBIDÆ.

45. *Dacnis ultramarina* Lawr.

One female, shot November 27 on the Escondido, was the only one seen.

46. *Chlorophanes spiza* (Linn.).

Very common on the Escondido. First seen September 26, and afterwards common. Feeds largely on ripe bananas. Has a loud, clear, shrill call of two syllables, like "twee-twee," which can be heard a long distance. Mixes with the other Honey Creepers quite freely.

Iris, burnt sienna; lower mandible, naples yellow.

47. *Arbelorhina cyanea* (Linn.).

Very common in flocks at San Carlos in February, feeding on trees having large crimson flowers. One shot on the Escondido May 17, and others found associating with *A. lucida* in November.

Feet and legs of adult male, vermilion; of female and immature birds, brownish vermilion.

48. *Arbelorhina lucida* (Sel. and Salv.).

Very abundant on the Escondido. First seen November 21, when several came into the house. Afterwards abundant, mixed with a few *Chlorophanes* and *A. cyanea*. The note is a weak chirp. These birds appeared to be attracted by the cocoanut and bread fruit trees. In almost every specimen shot the bill was covered with a waxy substance.

In the adult male the feet and legs are canary yellow; claws black; the females and young males have these parts sage green, but in the latter the colors begin to change with the plumage.

49. *Cœreba mexicana* (Sel.).

Common at Greytown and at the Guatusa Indian clearings on the Rio Frio. A pair started a nest at Greytown in a bread-fruit tree, but deserted it before finishing. The note is a rather weak, rapidly uttered chirp. Not seen on the Escondido.

Family TANAGRIDÆ.

50. *Euphonia luteicapilla* (Cab.).

One specimen secured September 28 on the Escondido.

51. *Euphonia hirundinacea* Bonap.

Not rare on the Escondido, where it haunts the banana plantations and feeds largely on the ripe fruit. Has a pleasing and somewhat varied song.

52. *Euphonia gouldi* Sel.

Occasionally seen in small companies on the Escondido and at Greytown. Does not appear to spend its time among the bananas like the preceding.

53. *Calliste larvata* DuBus.

Very common in small flocks. Immature birds obtained early in May. Feeds largely on ripe bananas, although at times it appears to search for insects in the Trumpet and other trees.

54. *Tanagra cana* Sw.

Abundant at Greytown and on the Escondido in pairs and small flocks. Feeds largely on ripe bananas and the berries of some trees. Has a prolonged squeaky note.

Ripe bananas prove a great attraction for many species. Bunches of the fruit are often cut down and allowed to rot in the plantations, and when "dead" ripe they draw most of the plantation birds, even species that are almost exclusively insect feeding, such as *Pitangus*.

55. *Tanagra palmarum* Weid.

One specimen shot at Greytown, February 6.

56. *Ramphocelus passerinii* Bonap.

With the single exception of *Sporophila corvina* this species is the most abundant in localities visited by me. It fairly swarms in all favorable situations, and is one of the first birds to impress the eye of a foreigner. The birds spend the day romping about in the bushes or in the banana plantations, chasing one another here and there, with no apparent reason other than to pass away the time. They keep up an almost continual squeaky chatter, which is the only note heard on ordinary occasions, but at times I have heard solitary males sing, if the performance may be called a song. It is a very inferior chant, much like the ordinary chatter, but uttered in a slow and measured way. Females appear to be much more numerous than males. The birds are perhaps not truly gregarious, although very social the year round, and may possibly be polygamous. In many ways these birds remind one of the House Sparrow (*Passer domesticus*). The birds show little feeling when robbed of nests and eggs. One partial albino was observed.

Nesting begins early, as young were found in the nest during the first week in March, and eggs were obtained as late as July 4. As in many other species in this region, the number of eggs and young found in a nest is two. The nests are placed in bushes or vines, from 1 to 5 feet from the ground, constructed of small stems of plants and dead leaves, and lined with fine grass stems. Eggs ovate, pale blue, marked chiefly on the large end with dark brown, almost black, spots, mottlings, or occasional pen lines, with a few indistinct pale lavender spots. Measurements of four clutches are as follows: 0.96 by 0.64, 0.94 by 0.64; 0.87 by 0.66, 0.88 by 0.67; 0.98 by 0.63, 0.98 by 0.64; 0.88 by 0.68, 0.90 by 0.68.

57. *Phlogothraupis sanguineolenta* (Less.).

Not rare on the Escondido and at Indian plantations on the Rio Frio. In habits it differs much from the preceding, being ordinarily rather shy and quiet. Rarely more than two are seen together, except in the fall, when there is a tendency to gather in small flocks. At this period there appears to be something of a migration of the species, or an influx of individuals from other localities, and the bird might then be said to be common. An increase in numbers was noticed late in August. The note is a rather shrill whistle; I did not hear the song. It occurs in banana plantations, in bamboos along streams, and in open places on the edge of the forest, but does not appear to frequent low bushes, as the above species is wont to do.

A nest found May 30 was in a cluster of vines on a banana plant, at a height of 8 feet. It was similar to that of *Ramphocelus*, but slightly larger, covered with living green moss, and lined with hair-like black stems. The eggs are pale blue, short ovate, sparsely spotted at the large end with brownish black spots, with occasional faint marks of lavender. They measure 0.91 by 0.71, 0.90 by 0.70. Iris reddish brown.

58. *Piranga erythromelas* Vieill.

Early in March I observed two adult males on the Rio Frio, and another on the Escondido September 27. These were in the scarlet and black plumage, and the only individuals of the species identified.

59. *Piranga rubra* (Linn.).

Very abundant during the winter. Males are found in various stages of plumage between that of the female and adult male. First seen late in October, when they shortly became common, and continued so until spring. Last seen April 13.

60. *Phænicothraupis salvini* Berl.

My specimens of this genus collected on the Escondido are referable to this form, although not typical, while a pair from Greytown, collected by Holland, are true *P. fuscicauda*. These localities are separated by a distance of only 60 or 70 miles.

These birds are gregarious and inhabit the forest; individuals are often found in company with Ant Thrushes and other birds, preying on the traveling ants. They are rather shy and the first to notice the approach of an intruder, when they move off to a position of safety, scolding in a harsh voice. Iris brown.

61. *Phænicothraupis fuscicauda* Cab.

Common on the Rio Frio. Habits similar to those of the above.

62. *Tachyphonus luctuosus* Lafr. & D'Orb.

Uncommon, occasionally met with in the forest on the Escondido, where they are found in the trees, above the undergrowth. Feet and legs light heliotrope purple.

63. *Arremon aurantiirostris* Lafr.

Very common on the Rio Frio, less so on the Escondido. While journeying up the former river I camped at night in the woods, where, at daybreak, the first signs of bird life were sure to be individuals of this species hopping about on the ground in open places, uttering an occasional sharp "chip," and at the least suspicious movement darting back into the dark recesses, from whence they would again appear after becoming reassured. I have never seen them above the bushes, while ordinarily they seem to prefer brush heaps and bare spots on the ground.

Bill orange-vermilion.

The nest is slightly raised from the ground, and is very bulky. It is constructed on a base of dead leaves, plant stems and other dry material being largely used; the lining is of fine light-colored stems and roots. The affair is roofed over like that of the Ovenbird (*Seiurus aurocapillus*) and covered with living ferns and mosses, which most effectually conceal it. Several visits were made to a nest before the

bird could be identified, owing to its extreme shyness and habit of stealing away on my approach. The eggs are two, elliptical ovate, with straggling spots of dark brown at the large end. Two eggs, taken from different nests, measure 0.95 by 0.65, 0.93 by 0.67.

64. *Saltator atriceps* Less.

One shot at Greytown February 3. This was the only individual positively identified, although the species may have been common.

65. *Saltator magnoides* Lafr.

Common in plantations and thickets along the streams.

66. *Saltator grandis* (Licht.).

Not identified at Greytown, but specimens were obtained near Bluefields, at San Carlos, and commonly on the Escondido. These birds feed on berries, ripe bananas, and other fruits. They are very restless.

67. *Pitylus poliogaster scapularis* Ridgw.

Common on the Rio Frio and on the Escondido. This *Pitylus* is gregarious; it inhabits the rather open parts and edges of the forests, and occasionally wanders into the banana plantations. The birds sing almost incessantly as they travel about in search of food. The song is short and jerky, and its resemblance to that of the Dickcissel (*Spiza americana*) very close. I saw birds with nesting material about the middle of May.

68. *Pitylus grossus* (Linn.).

Not common on the Escondido, where individuals were at times seen in the forest. It is rather shy, and does not appear to go in flocks like the preceding. The call note is similar to that of the Cardinal (*Cardinalis cardinalis*). The skin is very tender. Bill vermilion.

Family FRINGILLIDÆ.

69. *Oryzoborus nuttingi* Ridgw.

Not common; observed at Greytown and on the Escondido. It frequents the clearings and thickets around plantations and bordering the forest. The bill is usually flesh-color, occasionally black. I did not note anything further on its habits.

70. *Oryzoborus funereus* Sel.

Abundant at the International Planting Company's plantation on the Escondido, and probably at other places on that river; one specimen was taken at Greytown. It lives in precisely the same situations and resembles *Sporophila corvina* so closely that the two birds are difficult to distinguish at any distance, except by song, which, in this species is very like that of the Indigo Bunting (*Passerina cyanea*), but is not

nearly so loud and clear. At times, like *Sporophila corvina*, it seeks a perch in the top of a tree from which to deliver its song. Usually, however, it is content with the tall grass growing in the plantations and on the edge of the water, where it leads a careless life and finds an abundance of food.

A nest found June 14 was in a bush, 3 feet from the ground. It was made of fine weed stems, the inner part entirely of fine hair-like stems, lined with the same. Eggs, two, ovate, grayish white, finely spotted all over, particularly on the large end, with lavender, and over these small, irregular dark-brown markings. They measure 0.83 by 0.59, 0.78 by 0.58.

71. *Guiraca concreta* (Du Bus).

Rather common, especially in clearings, and thickets bordering the woods. The song is not very remarkable. On one occasion I found several of these birds a short distance in the woods behaving very suspiciously near a colony of army ants, but am unable to say whether they were preying on the ants or not.

72. *Sporophila corvina* (Sel.).

Extremely abundant, particularly on the Escondido, where it fairly swarms in all suitable situations, in the long grass and around clumps of bushes. It is very social and much like *Ramphocelus* in its habits.

In the *Centrali-Americana, Biologia Aves*, I, 356, referring to this species, the statement is made that "in Nicaragua alone it approaches the Pacific, having been found at Los Sábalos on the western shore of the Lake of Nicaragua." This is a mistake, as Los Sábalos is located on the San Juan, some miles east of the lake (Nutting gives it as about 35 miles). This hacienda is not shown on any map, but the Sábalos River, which gives the location exactly, empties into the San Juan from the north, and is named on most maps, I believe. The birds are abundant here, and also on the Rio Frio in favorable places.

The song of this species is a rapid chant, giving one the impression that the singer is in a hurry to finish and be off with the rest of its kind. The bird is quite a mimic, frequently bringing the notes of other species into various parts of its little performance. I have detected the notes of *Myiozetetes texensis*, *Crotophaga*, *Ramphocelus*, and others during one execution. At times the song appears to be composed almost entirely of the notes of other species. The common call is a "deé-ah," and reminds one of a note of *Spinus tristis*.

Breeding begins in May, as fresh eggs were found about the middle of the month. The nest is usually placed in a bush, though often in the grass, at heights varying from 2 to 8 feet. It is composed of fine stalks and grasses, lined with finer ones. Sometimes the nest is made of one material, without extra lining. The eggs are two; yellowish white, blotched with pale lavender, over which are heavy, though

sparse, markings of dark brown, chiefly at the larger end, sometimes forming a wreath, and mixed with occasional fine black spots. Two eggs measure 0.77 by 0.53, 0.74 by 0.53; another, 0.73 by 0.50.

73. *Volatinia splendens* (Vieill.).

One specimen, taken July 14, found in the tall grass on the river bank.

74. *Passerina cyanea* (Linn.).

Occasionally observed during the fall on the Escondido. First collected September 30, and a flock noticed October 23. All were in the plumage of the female.

75. *Embernagra striaticeps* Lafr.

Very common. Found in clearings, banana plantations, and similar places, where it prefers the vicinity of bushes, vine-covered banana plants, and other hiding places, to which it can retire if disturbed. The bird spends much of its time upon the ground, searching for food; and individuals were sometimes caught in traps set for small mammals. I have not heard this bird sing, but it has a low and rather plaintive chirp. A nest found May 6 was in a fan palm leaf, about 3 feet from the ground. It was quite a bulky affair, roofed over and composed of strips of dead leaves and weed stalks, lined with fine stems and grasses. The base of the nest was tenanted by a colony of black ants. Several visits were made to the nest before the bird could be identified, owing to its retiring way. The eggs were two, ovate, pure white, measuring 0.93 by 0.69, 0.96 by 0.69. Another nest, found the same day, contained small young, and was in a citrus tree, about 5 feet from the ground. It was not so bulky as the first.

Family ICTERIDÆ.

76. *Eucorystes wagleri* (Gray).

Noted at various places on the San Juan and Rio Frio; one specimen shot on the Escondido.

A colony observed nest-building on the Rio Frio early in March. The actual work of securing material and constructing the nests seemed to fall upon the females, the males merely accompanying them back and forth on these occasions. A dead tree standing in the open, containing a hornet's nest, had been selected by the birds, and about fifty nests were suspended from the extremities of the branches. These were nearly finished, and various nests on the ground testified to the overburdening of some of the smaller branches. I did not hear any song, but the birds kept up a low chuckling note as they flew to and from the tree. The amount of energy and diligence displayed by the birds in building these nests is truly remarkable, when one considers the time wasted by many birds in nest-building.

77. *Gymnostinops montezumæ* (Less.).

Very common. Gregarious at all times and breeds in communities, the birds selecting a solitary dead tree, as in the case of *Eucorystes*, generally with a hornet's nest in it, where the peculiar pendulous nests, over 3 feet in length, are suspended from the branches, presenting a very conspicuous appearance.

At these colonies many apparently old nests are found on the ground, having been attached to branches unable to bear the strain, or possibly blown down by the wind. Nests occupied at the time were found late in April, and nest-building was noticed early in January. During the summer the birds are rather retiring, and only occasionally met with in the woods, but late in the fall and throughout the winter they are very conspicuous, visiting the large ebo and other trees in the plantations, or passing overhead from one feeding place to another. The flight is slow and labored, and recalls that of a crow; the birds also have a habit of flying in an unsteady stream when moving from one place to another in numbers, instead of going in a flock. The ordinary note is frequently uttered, but, like the song of this species, is most difficult to describe. The song is a gurgling sound, rapidly ascending the scale, and simultaneously with it another note is uttered resembling the shrill squeaking of a hinge or wagon wheel in need of attention. The attitude of the bird in the act of singing is also remarkable. When about to deliver its notes it makes a profound bow, bringing the head below the level of its perch, at the same time raising the tail to a vertical position. While singing the bird gradually resumes its normal position. It sings at frequent intervals for a half hour or more, and when not thus engaged sits dressing its feathers or hops leisurely about. It is worth mentioning that in every case that came under my notice the bird, during its singing spell, was alone.

Iris dark brown; terminal half of bill chrome-orange, remainder black; naked skin on side of head flesh color, with faint bluish tinge.

78. *Amblycercus holosericeus* (Licht.).

Common; occurs mostly in clearings and banana plantations, but is met with occasionally in more open places in the woods. It is gregarious to some extent, as small flocks of six or eight are commonly observed traveling about in search of food. Clumps of bamboo and thickets of "wild plantain" (*Heliconia*) are favorite resorts of this species. It spends much time investigating the dead leaves hanging from banana plants, shaking and rattling them as if to frighten insects from their hiding places. Ordinarily quiet and rather retiring, it is possessed of considerable curiosity, and can be called up without any difficulty by imitating its note or the cry of a bird in distress, when it scolds one in a harsh voice, the note much resembling that of a Magpie. Several times while trying to entice more desirable birds from the thick underbrush have I been surrounded by individuals of this spe-

cies, who immediately began to scold loudly, with the result of frightening other birds away. This species is the author of various whistling notes, that are difficult to identify before one has become well acquainted with the bird, owing to its retiring disposition. On one occasion, having wounded one of these birds, it escaped into the thick brush, where I was unable to reach it. Another individual flew into a bush close by and began to whistle, when the injured one hopped out from its place of concealment and answered the calls of the newcomer with an entirely different whistle.

Iris varies from Naples yellow to almost white; feet plumbeous.

79. *Cassicus microrhynchus* (Sci. and Salv.).

Common. These birds are gregarious part of the year, but go in pairs during the breeding season. The nest is somewhat over a foot in length, constructed of the same materials and resembling in shape the nest of *Gymnostinops*. The birds do not appear to select isolated trees, as in the case of the Yellow-tails, nor do they nest in communities. A pair was noticed building late in February in the top of a large forest tree. One of the birds, probably the female, attended to the nest-building, while the other escorted it to and from the nest, singing a few lines while material was being arranged in the nest. The song resembles notes occasionally uttered by the American Robin (*Merula migratoria*). These birds appear to have some particular roosting place, to which they resort each night, when not occupied with nesting cares. A small flock of seven or eight used to pass over the plantation each evening, drop into a tree for a moment or so, then off toward the woods, where they spent the night. When flying they make a whirring noise with the wings.

This is a forest species, keeping usually to the high trees, but often found among the lower branches searching for food in company with *Phenicothraupis* and other birds.

Iris pale blue; feet black.

80. *Icterus prothemelas* (Strickl.).

Common in banana plantations on the Escondido. Although this bird was observed almost daily for over eight months, I failed to hear its song; the only note detected was a chirp similar to that of the House Sparrow (*Passer domesticus*).

81. *Icterus mesomelas* (Wagl.).

The common Oriole of the country. Confined to clearings, especially banana plantations, where it is known as "Banana Bird" to all the English-speaking people. It has a loud, clear song, with several variations. The bird is something of a ventriloquist at times, beginning its song in a low tone, as if far away, and gradually leading up to its

full volume, when one discovers the bird close at hand, instead of far away in the plantation, as at first supposed.

The nest did not come under my observation, but young birds were frequently met with; two young, hardly able to fly, were found June 22.

82. *Icterus spurius* (Linn.).

Common in winter. First seen August 20, and last observed on February 23. This and the following species occur here mostly in small flocks of from five to eight, sometimes both species in the same company. They do not seek their food among the banana plants after the manner of the native species, but prefer open, spreading trees in the plantations, bamboos, and fruit trees.

83. *Icterus galbula* (Linn.).

Common in winter. Noted from September 20 to February 16.

84. *Callothrus robustus* (Cab.).

One specimen taken at San Carlos, from a flock of the following species.

85. *Agelaius phœniceus* (Linn.).

Common at San Carlos and in marshy places on the Rio Frio. Not enough specimens were preserved to decide whether this or *sonoriensis* was the form occurring there.

86. *Dolichonyx oryzivorus* (Linn.).

Observed flying over, October 10, on the Escondido. Heard several times late in August and September.

87. *Quiscalus macrourus* Swains.

Common at San Carlos and Bluefields; not observed at Greytown. Several times during my stay at San Carlos I saw what appeared to be individuals of the recently described *Quiscalus nicaraguensis* Saly. and Godm. mingling with the above species at the wharf and along the lake shore, but shooting was prohibited within the town and no specimens were secured.

88. *Cassidix oryzivora* (Gmel.).

Not common. Observed a few times on the Escondido.

Family FURNARIIDÆ.

89. *Synallaxis pudica* Sel.

Very common at Greytown and quite so on the Escondido. Almost always in pairs. At Greytown the birds were most commonly found in brush piles, prospecting for food, and on being approached would seek the recesses of the pile rather than escape by flying to some other

place of safety, chattering rather harshly at being interfered with. They also have notes of one or two syllables, but although I observed them on many occasions and noted their habits minutely I never heard the song which Mr. Nutting speaks of (Proc. U. S. National Museum, VI, 1883, p. 404), and am inclined to think some mistake was made when he gave this bird credit for a song. On the Escondido the birds are often found in the dense masses of vines and parasitic plants attached to the trunks of trees standing in the plantations, in which they find favorable places for concealment. It is an easy matter to bring one of these birds out into plain sight by squeaking, as they show much curiosity. In their habits they resemble the Wrens, but exhibit less nervousness than those birds.

The nest is built in a bush, from 3 to 5 feet from the ground. It resembles a retort to some extent, in having a bowl with a neck at the top slanting downward. The nest is made of small thorny sticks closely laced together; the neck or entrance is built out and downward until it is below the level of the body of the nest. Sometimes this covered way is not very well defined, being lost in the mass of sticks. The nest is so compactly put together that it is not an easy matter to open it bare-handed. The species appears to go much better with this family than with the *Dendrocolaptidae*, where it has long been placed.

Iris reddish brown.

Family DENDROCOLAPTIDÆ.

90. *Automolus pallidigularis* Lawr.

Common in the woods on the Escondido. Does not cling to the trunk of a tree, but hops about and perches somewhat like a Robin. Its note very much resembles that of the Red-breasted Nuthatch (*Sitta canadensis*). It passes much of its time searching in the rubbish that gathers on the broad palm leaves.

My specimens appear to be *pallidigularis*, although probably not typical. In two examples the under parts agree exactly in color with *cerrinigularis* from Guatemala, marked "Compared with type."

91. *Xenops genibarbis* Ill.

One individual shot in the forest near Castillo. It was hopping about in a tree, some distance from the ground.

92. *Glyphorhynchus cuneatus* (Licht.).

This was the most abundant species of the family in the forest region embraced in this paper. Usually found in pairs. It climbs like a Woodpecker, frequently uttering its sharp "chip," sometimes a rapid succession of "chips." The bird is very tame and unsuspecting.

A nest found May 26 was in a small, natural cavity at the foot of a tree, not more than 10 inches from the ground, and the nest itself was level with, if not below, the ground. The eggs, two in number, were

pure white, short ovate, and blunt at both ends. They measure 0.75 by 0.61, 0.73 by 0.60.

Notwithstanding the fact that the eggs were somewhat incubated, the bird was engaged in carrying tufts of fine roots to the nest at the time of its discovery. When surprised on the nest it would fly to the nearest tree and cling to the trunk, where it remained perfectly motionless, and allowed me to pass within a short distance of it. This performance was repeated several times, always with the same result, the bird evidently relying on its dull color and silence for protection.

93. *Dendrocolaptes sancti-thomæ* (Laf.).

Occasionally seen on the Escondido. It is sometimes attracted by the armies of ants, where it mixes with the other species of Creepers and Ant Thrushes.

94. *Dendroornis nana* Lawr.

Quite common in the woods on the Escondido. This bird is usually found in the forest, but one pair was observed at Greytown on the trunk of a cocanut tree, some distance from heavy timber. I fail to recognize the form *costaricensis* Ridgw. My specimens present considerable variation in size and color.

95. *Dendroornis lacrymosa* Lawr.

I did not meet with this species, but Wickham collected it on the Escondido.

96. *Picolaptes compressus* (Cab.).

Two specimens taken at San Carlos. They were climbing a solitary tree, located in a marshy spot, some distance from the woods.

97. *Dendrocincla anabatina* Sel.

Observed several times on the Escondido, with armies of foraging ants. This and the following species were shot from the same tree, in one instance. Note, a querulous chirp, frequently uttered. Iris dark brown.

98. *Dendrocincla olivacea* Lawr.

One specimen shot from a company of ant-eating birds on the Escondido. Iris dark brown.

99. *Sclerurus guatemalensis* (Hartl.).

One shot on the Escondido. A pair of the birds was found on the ground in the deep woods.

Family FORMICARIIDÆ.

100. *Cymbilanius lineatus fasciatus* Ridgw.

Common; found in the forest, in trees, usually from 10 to 20 feet from the ground. Has a chattering note of several syllables, rapidly uttered. Females appear to be rather retiring, and fall under observation much less frequently than males.

When Mr. Ridgway described this subspecies* he had only one bird

*Proceedings U. S. National Museum, VI, 1883, 404, April 11, 1884.

from South America, a Cayenne female. His description has reference only to the female, and when applied to the male the differences pointed out by him are somewhat misleading, as in the latter the chief dissimilarity is observed on the under parts. Since that time the National Museum has acquired four males from Diamantina, Brazil, and others of both sexes, from Nicaragua and Costa Rica. A careful examination of this series leads me to believe that the northern birds are easily separable from the South American ones.

Granting that the Cayenne female is a typical one of the South American form, and I have reason to think it is, the difference between it and the Central American birds is at once apparent. The bars on the upper parts are much narrower and paler than in the latter, and, while the under parts are nearly the same as regards width of bars, there is a very strong suffusion of buff in the Central American examples. In males the difference between the bars on the upper parts is hardly distinguishable, but there is a decided difference below, the black and white spaces being considerably wider in *fasciatus*. The statement made in *Biologia Centrali-Americana, Aves*, II, 195, that the variation in the width of the white bands is probably due to age, the birds with narrower bands being the older, is disproved by two males from Diamantina, in which the wings are similar in color to those of the female, a mark of immaturity. These birds differ in no way from the other Diamantina males as regards barring of the under parts. There is a difference in size alone sufficient to warrant the separation of the two forms, as an examination of the following table will show:

CYMBILANIUS LINEATUS.

Number.	Collection.	Locality.	Sex.	Bill from nostril.	Wing.	Longest tail feather.
112275	U. S. N. M.	Diamantina, Brazil.	♂	0.52	2.82	2.67
120940	do	do	♂	.54	2.82	2.77
120941	do	do	♂	.52	2.84	3.01
120942	do	do	♂	.52	2.80	2.95
32823	do	Cayenne	♀	.52	2.80	2.70

CYMBILANIUS LINEATUS FASCIATUS.

91251	U. S. N. M.	Type. Los Sábalo, Nicaragua	♂	0.60	3.00	2.72
128338	do	Escondido River, Nicaragua	♂	.61	2.90	2.77
128339	do	do	♂	.58	2.90	2.78
4103	C. W. R.	do	♂	.60	2.98	2.80
4295	do	do	♂	.62	2.85	2.65
4408	do	do	♂	.61	2.98	2.77
126320	U. S. N. M.	Río Frio, Costa Rica	♂	.62	2.89	2.67
91840	do	Río Suelo, Costa Rica	♂	.59	2.90	2.71
64769	do	Sipurio, Costa Rica	♂	.61	2.93	2.70
34775	do	Angostura, Costa Rica	♂	.....	2.90	2.66
45615	do	Sta. Fé, Veragua	♂	.59	2.90	2.75
53801	do	Panama	♂	.60	2.90	2.82
91252	do	Type. Los Sábalo, Nicaragua	♂	.67	2.90	2.72
128340	do	Escondido River, Nicaragua	♂	.58	2.93	2.82
128341	do	do	♂	.60	2.93	2.77
4467	C. W. R.	do	♂	.60	2.85	2.75
4538	do	do	♂	.60	2.93	2.93
116345	U. S. N. M.	..... Nicaragua	♂	.60	2.90	2.76
64770	do	Sipurio, Costa Rica	♂	.57	2.88	2.81
34774	do	Angostura, Costa Rica	♂	.58	3.00	2.87
53807	do	Panama	♂	.58	2.80	2.75

Iris carmine.

101. *Thamnophilus melanocephalus* Sel.

Very common. This species is found in thickets bordering the forest, in patches of bushes in clearings, in clumps of bamboo along the banks of streams, and in similar places. It is often seen on the ground in these situations, searching for insect food. The song of this bird is heard at frequent intervals during the greater part of the day. The performance is a repetition of notes, rapidly uttered, in one key, with a slight pause after the first and second syllables. "Took, took, tu-tu-tu-tu-tu-took, wah," resembles it about as closely as it is possible to give it in print. The last syllable, "wah" is very harsh and guttural, and is heard only when one is very close to the bird. When singing, the bird usually seeks a perch above its surroundings, a bamboo, or the top of a bush, where it often remains for a considerable length of time, uttering its monotonous notes in answer to those of other individuals of the same species within hearing. It is rather shy under these circumstances, and on being approached drops into the bushes, where it remains perfectly quiet until all danger is over. On other occasions, when in the bushes, although in plain sight, the bird may be approached very closely without its showing any uneasiness.

The majority of males collected by me on the Escondido have white edgings to the feathers of the under tail coverts, some of them fully as much so as in *T. transandeanus*. Specimens in the National Museum from the north coast of Honduras have these feathers plainly edged with white, in one specimen to such an extent as to give it the appearance of *T. melanurus*. The wing coverts in all of these specimens are conspicuously tipped with white.

Iris granium red; bill black; feet and tarsi light plumbeous.

102. *Thamnophilus atrinucha* Salv. and Godm.

Three specimens secured on the Escondido. They were all found in the forest some distance up in the trees; one of them was at least 80 feet from the ground when shot. Sometimes seen with *Formicivora boucardi* inspecting the palm leaves, and searching in the masses of rubbish which accumulate in such places.

Iris brown.

103. *Thamnophilus doliatus* (Linn.).

Common. This species inhabits the same situations, and its song and habits are very similar to *T. melanocephalus*. When anything happens to arouse its curiosity or startle it the crest is raised.

Mr. Cherrie states (Auk, IX, 1892, 250) that this species occurs only on the Pacific side of Costa Rica. It is quite probable, however, that the species will be found on the Atlantic coast also, as the bird is common at Greytown.

Iris noted in different specimens as yellowish white and greyish white; feet bluish plumbeous.

104. Myrmotherula fulviventris Lawr.

One specimen shot in the forest on the Escondido, July 2. This was the only one observed. It was hopping about in a tree after the manner of a *Formicivora*.

105. Myrmotherula melæna (Sel.).

One shot in the woods on the Rio Frio. It resembled *Formicivora* in its actions.

Feet and claws pale bluish plumbeous.

106. Cercomacra tyrannina Sel.

Very common on the Escondido. One of the Ant Thrushes most frequently seen. Found in bushy places or in low trees in the forest, where it keeps concealed and often utters its chattering note. Almost always found in pairs, but occasionally noticed roving about with *Formicivora* and other species.

107. Formicivora boucardi Sel.

Common on the Escondido. It keeps in the trees some distance from the ground. Sometimes seen in flocks of fifteen or so in company with other species, searching the palm leaves for food, reminding one of a troop of Kinglets or Titmice to some extent.

108. Ramphocænus rufiventris (Bonap.).

This curious little bird is rather common at Greytown, where it passes its time in the bushy thickets. On the Escondido it is often met with in the forest, hopping about in the thick undergrowth, seldom getting more than a few feet above the ground. It is usually quick and Wren-like in its movements, but at times acts very leisurely, scrutinizing its surroundings in search of insect food, very much after the fashion of a Vireo. It is a quiet, unsuspecting bird, rarely uttering a note of any kind, or manifesting uneasiness at the proximity of an unusual object.

109. Gymnopathys olivascens (Ridgw.).

Uncommon on the Escondido. Apparently confined to the thick undergrowth of the forest, usually found associating with other species of the family, attending the hordes of army ants. Shy and retiring.

Naked skin around eyes pale blue; iris dark crimson; tarsi, feet, and claws dark plumbeous; upper mandible black.

110. Gymnocichla chiroleuca Sel. and Salv.

Quite a common species on the Escondido, where it frequents the undergrowth in the deep woods. Being a shy bird, it is more often heard than seen, keeping well concealed, and flying hurriedly from one clump of bushes to another during its travels in search of food. It is doubtless gregarious to some extent, as the birds are generally found

in small companies of five or six. The note is a loud, ringing whistle, like "cheé-oo, cheé-oo, cheé-oo," resembling that of the Cardinal (*Cardinalis*) not a little. The birds call every few moments in reply to their companions, while wandering about. This note is also used during excitement or when scolding. It is one of the species most frequently found in the vicinity of traveling ants.

Bill, tarsi, feet, and claws plumbeous; naked skin of head azure blue, campanula-blue posterior to the eyes; iris dark crimson.

111. Myrmelastes lawrencei (Salv. and Godm.).

An adult male of this rare species was shot in the forest of the Escondido, September 7. It was found in a locality where *Gymnocichla chiroleuca* was common, and it probably has similar habits. This is, I believe, the first record for the species north of Panama.

The skin on the head is colored as in *Gymnocichla*, but is only noticeable on raising the feathers.

112. Myrmelastes intermedius (Cherrie).

Met with on two occasions on the Escondido. Found in bushes in the forest. Rather shy, and difficult to secure. This bird has a rather pleasing call of several syllables. Skin on head colored as in the above species.

113. Hypocnemis naevioides (Lafr.).

Uncommon. Habits similar to those of *Gymnopithys*.

114. Formicarius hoffmanni (Cab.).

Common on the Escondido, where its lonely call may be heard in the woods at any time. This species passes its entire time upon the ground in the more retired parts of the forest, using its wings only when suddenly surprised. It is an easy matter to call the bird up by imitating its whistle, and under these circumstances, if alarmed, will take wing and fly far enough to enable it to escape. If one falls in with a bird while traveling through the woods, it sneaks quietly away without resorting to flight, unless a suspicious movement is made. On one occasion I watched an individual for several moments while it was perched on a large vine a few inches above-ground, calling at regular intervals. It soon discovered me, when it jumped to the ground and walked rapidly away.

115. Phlogopsis macleannani (Lawr.).

Common in the woods on the Escondido. I saw them almost invariably with the armies of foraging ants, and, when disturbed, they quickly made off through the underbrush, uttering their curious, low, rambling notes.

Naked skin on head azure blue, campanula-blue back of eyes; iris reddish brown; bill black; tarsi, feet, and claws pinkish vinaceous.

Those familiar with Mr. Thomas Belt's "Naturalist in Nicaragua," have no doubt been impressed with his accounts of the habits of the various species of ants, and his observations on the Ant Thrushes and other birds usually found with the Escitons, or army ants. My experience with the Ant Thrushes habitually attending armies of ants leads me to disagree with the following statement in this book (p. 20) inasmuch as it bears on the food of these birds: "Several species of ant-thrushes always accompany the army ants in the forest. They do not, however, feed on the ants, but on the insects they disturb. Besides the ant-thrushes, trogons, creepers, and a variety of other birds are often seen on the branches of trees above where an ant army is foraging below, pursuing and catching the insects that fly up."

I did not examine the stomachs of any of these birds, a circumstance I now regret very much, but ants were found in the mouths of some birds shot, which, while not proving positively that they were intended as food, strengthens a belief in that direction, especially when backed by other observations to the same effect.

In traveling through the woods one becomes aware of the proximity of hordes of ants, either by walking into their midst and receiving the information direct from the ants themselves, or by the medley of bird notes proceeding from the scene of activity. If the birds are approached quietly they will be found mostly close to the ground, and, as far as the Ant Thrushes are concerned, hidden in the thick bushes, on which and the ground the ants are swarming. On being discovered the various species make off through the underbrush in a guilty way, the Creepers begin an industrious search for insects on the trunks of neighboring trees, and each bird calls in its own peculiar manner, as if to disclaim any responsibility in the affair. The Creepers, or Ruby-crowned Tanagers (*Phanicothraupis*), if present, are usually the first to notice an intruder and give the alarm. Various species of forest birds, hardly to be expected in these assemblages, are often found, joining in the scolding, and giving one the impression that they have been drawn into a discussion without knowing why. These latter birds do not appear, in most cases, to feed on the ants, but on the insects in the bushes and trees overhead. Four species of Ant Thrushes I invariably found with these columns of ants, *Gymnocichla chiroleuca*, *Phlogopsis macleaniani*, *Hypocnemis nerioides*, and *Gymnopathys olivascens*, named in the order of their abundance. Señor Alfaro, director of the Museo Nacional, San José, Costa Rica, tells me that he has examined the stomachs of these birds and found them to contain ants.

Occasionally another species of ant is met with in the forest; this one travels in a narrow trail from 4 to 6 inches wide, instead of 20 or more feet, as in the case of the other, and, moreover, the trail is bare of everything, all obstructions having been removed. Birds accompanying these ants can not be feeding on insects disturbed by the latter, for none are started from the path; yet I have found the four spe-

cies of birds just mentioned in attendance upon these ants at various times, evidently for the purpose of feeding on the ants themselves.

I do not think any of the other Ant Thrushes met with by me feed on ants, except possibly *Myrmelastes*, *Formicarius*, and *Grallaria*. The first of these probably is an ant-eater, but I saw it only on three occasions and am not able to say positively.

116. *Grallaria dives* Salv.

One specimen shot in September, on the Escondido. It was walking about on the ground, and on my approach flew into a low bush. I did not hear its note.

Family TYRANNIDÆ.

117. *Copurus leuconotus* Lafr.

Common. Has a marked preference for dead trees in plantations and clearings, or dead limbs of living trees, in which the nest is usually located. The birds are almost invariably found close to the cavity in which their nest is placed, during the breeding season at any rate, frequently leaving their perches to fly out after a passing insect, after which returning to the same spot. The note is characteristic, shrill and prolonged, but rather weak.

118. *Todirostrum cinereum* (Linn.).

Abundant. Has a sharp, explosive note of three or four syllables, giving one the impression that it is a much larger bird than is really the case. My experience with the bird and its nest agrees very well with that of Mr. Cherrie, who has given a description of the nest and eggs in the Auk, VII, 1890, 233. According to my observations, however, the bird is not restricted to the banks of streams, although it shows a decided preference for such places. All of the nests found by me were in perfectly exposed situations and resembled bunches of drift grass. My first nest of this Flycatcher was found purely by accident. While exploring a busy tract, much frequented by this species, my attention was drawn to a small bird with disheveled plumage, which was darting at a *Synallaxis pudica*, accompanying its attacks by a hissing note. The attitude of the pugnacious little bird was striking, its tail was elevated and fully spread, and at every movement of the bird was switched from side to side in an angry way. With such a formidable appearance and spirited attack the intruder was soon driven off. The victor, which proved to be a *Todirostrum cinereum*, then hopped out toward the end of a branch and disappeared into what I had supposed to be an accidental tuft of dead grass and leaves. This I found to be its nest, a very compact structure, though ragged in appearance, with a hidden entrance in the side just large enough to admit the bird.

Eggs two or three, pure white. Three eggs, found March 31, measure 0.65 by 0.45, 0.65 by 0.46, 0.65 by 0.46. Two other eggs are 0.63 by 0.43, 0.71 by 0.41.

Iris pale yellow, almost white; feet bluish plumbeous.

119. *Todirostrum schistaceiceps* Sel.

Rather common. Not seen during summer, but specimens obtained August 30, after which date it was common. At Greytown this species and *T. cinereum* are found in much the same places, but, while the latter is bold and defiant in its actions and notes, this bird is quiet and retiring; I did not hear it utter a note at any time. On the Escondido it was observed in open places in the forest, where it kept in the undergrowth.

120. *Oncostoma cinereigulare* Sel.

As in the case of the above species, it was only observed during fall and winter. In its actions and choice of feeding places it also resembles that bird. First taken September 4.

121. *Mionectes oleagineus assimilis* (Sel.).

Not common. A specimen taken at Greytown and two others on the Escondido, one of which flew into the house. These were noted during fall and winter.

122. *Capsiempis flaveola* (Licht.).

Common in bamboos on the Escondido, and in bushy thickets in the vicinity of San Carlos. Taken also at Greytown. Has a weak note which it frequently utters while searching for food. It is very industrious, almost constantly on the move, though acting in a leisurely manner. Numerous deserted nests found in the bamboos probably belonged to this species. They were shallow structures, attached to forks at the extremities of the bamboos, covered outwardly with green moss, and usually suspended over water. An immature bird differs from the adult in being lemon yellow below, instead of canary yellow; wing bars yellowish buff; tail tipped with yellowish buff; feathers of back, upper tail coverts, crown, and hind neck also edged with the same color.

123. *Tyrannulus semiflavus* Sel. and Salv.

One specimen collected in some low bushes in open woods on the Escondido, September 7.

124. *Tyranniscus parvus* Lawr.

Common at Greytown in bushy thickets, and on the Escondido, where it was found high up in the forest trees in open places. The stomach of one individual examined was filled with small green seeds.

125. *Elainea pagana subpagana* (Sel. and Salv.).

Common at Greytown and on the Escondido. Resembles *Myiarchus* in habits, but prefers clearings, in the vicinity of thickets. I did not notice it in the woods at any time.

126. *Myiopagis placens* (Sel.).

Common in bushes and thickets in the neighborhood of San Carlos.

127. *Myiozetetes texensis* (Giraud).

Very common everywhere in the vicinity of streams. Saw fully fledged young on May 14, and found fresh eggs the same day.

128. *Myiozetetes granadensis* Lawr.

Common on the Escondido. One bird shot from a bamboo fell into the water, and before I could paddle to it a lizard ran out and dragged it to the bank, whereupon he dropped it and disappeared in some brush.

129. *Rhynchocyclus cinereiceps* (Sel.).

One specimen secured near Greytown.

130. *Pitangus derbianus* (Kaup).

Common. Called "Kiskadee" by the natives. Confined to the banks of water courses.

131. *Myiodynastes luteiventris* Bonap.

One of a pair shot on the Escondido.

132. *Megarhynchus pitangua* (Linn.).

Common, usually in pairs. Note is a harsh chatter. Not so partial to river banks as *Pitangus*.

133. *Muscivora mexicana* Sel.

Two specimens taken on the Escondido in September and October. The crest was not noticed in either case until the bird was shot.

134. *Myiobius fulvicularis* Saly. and Godm.

Shot a specimen on the San Juan, near Castillo, and took another far up the Rio Frio, where others were observed. It is found in the forest trees some distance from the ground, and makes a whirring noise with its wings while flying.

135. *Empidonax pusillus traillii* (Aud.).

Common on the Escondido and at San Carlos during the winter. Taken in fall as early as September 4, and in the spring until May 6.

136. *Empidonax flaviventris* Baird.

Several taken on the Escondido; first noticed October 22.

137. *Empidonax acadicus* (Gmel.).

A specimen was taken on the Escondido October 22. *Empidonaces* were common during the fall, and I probably missed noting some of the species, as attention was directed more to other birds.

138. *Contopus virens* (Linn.).

A common migrant; but few seen during the winter months. First heard August 21, and a few days later its familiar whistle was frequently heard. It was very abundant September 27.

139. *Contopus brachytarsus* Sel.

Common at San Carlos, but rather less so on the Escondido. An immature specimen taken in July has a very dark, almost pure black pileum. This specimen and others collected in February and March, in fresh, unworn plumage, have a very decided wash of straw-yellow on the under parts. This species prefers clearings and thickets. I did not at any time observe it in the forest country. Its note is weak.

140. *Myiarchus crinitus* (Linn.).

One specimen secured October 14 on the Escondido.

141. *Myiarchus lawrencei nigricapillus* (Cab.).

Very common; found mostly in clearings and bushy thickets; occasionally in open places in the forest. Note very weak.

142. *Tyrannus melancholicus satrapa* (Licht.).

Abundant at all times. Young birds fully fledged were found May 14. In a marshy spot on the Escondido, where dead trees and isolated bushes abounded, this species was exceedingly abundant. It is rather difficult to get good specimens, most of those shot being either in very worn plumage or molting.

143. *Tyrannus tyrannus* (Linn.).

A migrant. First seen September 8, when a small company of six or so was seen. A flock of over a hundred was observed on the morning of September 15. The birds dropped into a large tree on the plantation, and, judging from their movements, started in at once to satisfy their hunger.

144. *Tyrannus dominicensis* (Gmel.).

Rather common at Greytown for a short time late in March.

Family COTINGIDÆ.

145. *Tityra personata* Jard. and Selby.

Common. Usually found in small flocks in clearings, where dead trees abound. This bird has a very curious note—a low, gurgling sound, as if it were trying to clear its throat, sometimes hardly audible when the bird is in a high tree. The birds are occasionally given to playfulness, and chase one another lazily around the top of a tree, apparently with no desire on the part of the pursuer to overtake the object of its chase, but merely to keep it on the move. Breeds in holes in

trees. Feeds on fruits and berries, and possibly also on insects. Iris light brown; terminal third of bill black; remainder dull rose-purple; naked space around eyes purplish carmine.

146. *Tityra albitorques frazeri* Kaup.

Three individuals were shot out of a dead tree on the "L. P." plantation May 18. Two of these birds were females, one of which would shortly have deposited an egg. The species was not observed elsewhere.

147. *Pachyramphus cinereiventris* Sel.

Species taken at Greytown and on the Escondido. A nest found at Greytown April 14 was in an orange tree about 12 feet from the ground. It was rather bulky, composed of grasses and stems of various plants, with an entrance near the top. It contained three eggs, of a grayish color, obscurely mottled or blotched. The eggs were lost, and this description is entirely from memory.

148. *Pachyramphus cinnamomens* Lawr.

Rather common.

149. *Lathria unirufa* (Sel.).

Uncommon; noted in the forests on the Escondido.

150. *Laniocera rufescens* (Sel.).

One wandered into the house, on the Escondido, early in January, and was the only one noted.

This specimen, and one from Honduras (Segovia River), both males, are appreciably darker than an individual from Panama, and another from Costa Rica (Barranca). In the two former the indistinct dark edging of the feathers of the under parts extends throughout, including the under tail coverts in the Nicaraguan specimen, while in the Panama and Costa Rican examples this edging is obsolete on the abdomen. The Honduras bird is recently adult, with signs of immaturity still apparent. The tertials and rectrices are tipped with tawny-ochraceous. The feathers of the greater and of some of the middle wing coverts are conspicuously edged with black. There are also two or three blackish feathers on the belly. The northern birds are somewhat larger, as the following table will show:

Number.	Collection.	Locality.	Sex.	Exposed culmen.	Wing.	Tail.	Tarsus.
11276	U. S. N. M.	Segovia River, Honduras	♂	0.69	4.40	3.55	0.85
4748	C. W. R.	Escondido River, Nicaragua	♂	.70	4.30	3.35	.85
41430	U. S. N. M.	Barranca, Costa Rica	♂	.60	4.45	3.25	.81
53762	.....do.....	Panama	♂	.61	4.45	3.25	.80

151. *Lipaugus holerythrus* Sel. and Salv.

Several taken on the Rio Frio, but not noticed elsewhere. Wickham found this species on the Escondido. Raises its crest when disturbed.

152. *Attila citreopygius* (Bonap.).

Two specimens secured on the Escondido agree in a general way with others of this variable species. These were taken in rather open woods, and resembled Flycatchers in their actions. Iris brownish carmine.

153. *Pipra mentalis* Sel.

Rather common in the forest on the Escondido. Usually found traveling about in small numbers. I once saw a male in a lemon bush, half a mile from any timber. Two came into the house. Iris of adult male, white; feet and legs Isabella color.

154. *Manacus candæi* (Parzud.).

Very common in the forest. Sometimes a flock of twenty or more males are found assembled in the low bushes, apparently after food. When flying the birds make a buzzing with the wings, and on alighting often make a noise similar to the cracking of a small twig, or of a Peccary gnashing its teeth. Feet orange.

155. *Carpodectes nitidus* Salv.

This species is common on the Rio Frio in Costa Rica. During a trip up that river, from February 26 to March 10, I found the birds numerous, from a few miles from the mouth to a point about 3 miles below the Guatusa Indian villages, far up the river. The birds were observed daily, passing over the river high above the trees, with steady flight and regular wing-beats. Most of the birds seen on these occasions were males. My first specimen was a female, found near the edge of the forest in a small berry-laden tree. The berries of this tree proved a great attraction to various species. During two or three visits to the tree I noticed the following, not all of them were feeding on the berries, however: *Piranga rubra*, *Myiobius fulrigularis*, *Tityra personata*, *Pachyramphus cinnamomeus*, *Manacus candæi*, *Lipaugus holerythrus*, *Carpodectes nitidus*, *Trogon masseua*, *T. melanocephalus*, *T. atricollis tenellus?*, *Caica hamatotis*, *Ramphastos tocard*, and *Pteroglossus torquatus*. Several days later I was fortunate enough to find a tree in which the birds were feeding, some miles farther up the river. They were attracted by the berries, with which the tree was laden. There were fifteen or more of the *Carpodectes* in the tree, besides two or three *Tityra personata*, and other species, all feeding on the berries. At each discharge of the gun the birds flew out and disappeared in the surrounding trees, from whence, in the course of fifteen minutes or so, a bird would take the initiative and return to feed, to be followed shortly by the others, who straggled in by twos and threes.

After a long wait I secured seven of the birds, also a *Tityra*, shot by mistake, and wounded two or three more *Carpodectes*, which were lost in the woods. Most of those shot were gorged with the berries. About 2 miles above the tree just mentioned I found Mr. Frederick Hansen,

who was living on a small plantation bordering the river. He was well acquainted with the birds of the region, but had never seen this species near his clearing, nor did I, during several days stay there; yet 2 miles down the river it was common. Mr. Hansen told me that he had seen this species on some of the small rivers emptying into Lake Nicaragua from the east. It was known, he said, as "Espíritu Santo," or Holy Ghost bird. September 28 I shot a female from a tall trumpet tree on the Escondido, and at the same locality on January 5, 1893, Mr. G. E. Mitchell shot ten, mostly males, which were feeding in a berry-laden tree in the plantation. Mr. Mitchell did not hear the birds utter a note, nor did any of the individuals observed by me make a noise of any description. January 19, while on board a steamer going down the river, we observed three more of the birds in a trumpet tree on the river's edge.

Length of an adult male in the flesh, 10 inches. Iris very dark brown; bill, plumbeous, with black line along the culmen; feet and legs plumbeous.

Family MOMOTIDÆ.

156. *Urospatha martii* (Spix).

Apparently rare. Noted on the Escondido.

157. *Momotus lessoni* Less.

Occasionally met with in the forest. The note is not very penetrating; it resembles "hoo-hoo," given in a rather jerky manner, and sounds far away, even when the bird is close at hand.

158. *Prionirhynchus platyrhynchus* (Leadb.).

Collected on the Escondido by Wickham; I did not see it.

Family ALCEDINIDÆ.

159. *Ceryle torquata* (Linn.).

Very common. This species has a note similar to that of *C. alcyon*, but somewhat stronger.

One morning a pair of these birds went through a very curious performance. Attention was first called to them by their loud rattling cry, which was kept up almost constantly as they circled and gyrated about over the water, occasionally dropping—not diving—into the water, and sinking below the surface for a moment. This maneuvering lasted some minutes, after which both birds flew up stream uttering their ordinary note.

Two or three individuals were in the habit of passing the night at some point on the creek back of the "I. P." plantation, and came over just about dusk every evening. I noticed them for several months, and was struck with the regularity of their coming, and the course taken by each on its way to the roost. The birds could be heard a

considerable distance away, just before dusk, uttering their loud single "chuck" at every few beats of the wings. They appeared to come from their feeding grounds, often passing over the plantation opposite, probably to cut off a bend in the river. One of the birds invariably passed close to the corner of the laborers' quarters, though at a considerable height, and the other near a trumpet tree some distance away. The third bird was only a casual visitor. At times the birds came together, but usually there was an interval of several minutes. Their routes met at a turn of the creek a few rods back of the house, where they usually sounded their rattling notes and dropped down close to the water, which they followed to the roost. This was in a huge spreading tree, covered with parasitic plants and numerous vines, which hung in loops and festoons from the limbs. On one occasion I shot at one of the birds as it came chucking overhead, and caused it to drop several small fish. A female nearly ready to deposit eggs was shot October 9.

The birds made their appearance rather late in the morning, usually after 8 o'clock, and at times spent several hours of the day up there. Although the birds appeared to have their home at this place, I did not, on any of my numerous trips up the creek, discover the site.

According to my observations the Kingfishers on the Escondido rank about as follows in regard to abundance: *Ceryle amazona*, *C. torquata*, *C. americana septentrionalis*, *C. inda*, *C. alcyon*, and *C. superciliosa stictoptera*. The first two may be found at all times, the third is rather less common, while the last three are quite uncommon, the smallest particularly so. *C. torquata*, *C. amazona*, and *C. alcyon* have notes very much alike; the notes of the others are weak, varying in volume according to the size of the species, and are quite different from those of the large species.

On the Rio Frio, where the solitude is unbroken by river steamers, and rarely by the native dories, birds inhabiting the water's edge are abundant, and among the smaller species *Ceryle torquata* and *C. amazona* are conspicuous.

160. *Ceryle amazona* (Lath.).

Abundant. The note is almost the same as that of *C. alcyon*, but this bird has in addition a curious laughing note, which I have not heard from any of the other species.

161. *Ceryle alcyon* (Linn.).

Uncommon; observed on both rivers.

162. *Ceryle americana septentrionalis* Sharpe.

Rather common. Feeds largely on small crustaceans. The note is a weak "tuck."

163. *Ceryle superciliosa stictoptera* Ridgw.

Rarest of the Kingfishers in this region. Noted on both the Rio Frio and the Escondido.

164. *Ceryle inda* (Linn.).

Uncommon. The first specimen I saw was in a patch of woods, in a damp place near Greytown, some distance from any body of water, and rather an unusual place for a Kingfisher.

Family GALBULIDÆ.

165. *Galbula melanogenia* Sel.

Rather rare. Noted on the Escondido. Observed only on three or four occasions. It has a piercing cry, resembling "kee'-n," with the first syllable very shrill and strongly accented. The stomach of one specimen shot, contained insects. The bird jerks its tail after the fashion of a Kingfisher.

Family BUCCONIDÆ.

166. *Malacoptila panamensis* Lafr.

Rather rare in the forests on the Escondido. A female shot May 23, was about ready to deposit eggs. It was shot from a twig directly in front of a hole in a bamboo, in which its nest was probably located. The stomach was distended with insects, principally locusts. On July 2, another female was found, accompanied by one young bird, and both were secured.

The species seems to be confined to the thick forest, where it keeps among the lower branches, at times even descending to the bushes. Iris carmine.

September 23, I shot two birds which I supposed at the time to be mates, as they were found within 40 yards of one another, and subsequent dissection proved them to be male and female. The latter differs so much from ordinary *panamensis*, in being dark clove-brown or brownish slate above, with brownish black stripes on lateral underparts, that Mr. Ridgway applied the name *Malacoptila fuliginosa* to it in a MS. description, and in case the bird should prove to be really distinct from *panamensis*, this name may be used to designate it. For the present I prefer to include it with *M. panamensis*.

This bird, No. 127339, U. S. National Museum, Escondido River, September 23, 1892, may be described as follows:

Above deep clove-brown, rather clearer or more inclining to brownish slate on head and neck; back and tips of wing-coverts sparsely marked with minute dots of dull buffy; sides of head, beneath and behind eyes, narrowly streaked with buff; median portion of forehead, lores (except near eyes), and malar plumes white; chin and upper throat mixed white and dusky brown, the latter nearly uniform on upper throat; center of throat white, becoming light dull buff on lower throat and chest; rest of lower parts buffy white, the breast and sides conspicuously striped with dusky brown, these stripes broadest and most sharply

defined on sides of breast; under wing-coverts and broad edges to inner webs of remiges buff. Upper mandible black; lower, pale yellowish brown, tipped with black; feet horn color; iris carmine. This color from life, the others from dried skin. Wing, 3.30; tail, 2.95 lateral feather 0.80 shorter; exposed culmen, 0.95; tarsus, 0.65.

Mr. Ridgway's notes on the bird, made before knowing the circumstances under which it was shot, however, are as follows:

It is conspicuously unlike any of the twenty-three specimens of *M. panamensis* with which it has been carefully and simultaneously compared, notwithstanding the range of individual variation is so great. If *M. inornata*, as defined by Selater and others, is separable from *M. panamensis*, then *M. fuliginosa* is certainly very distinct from both. The only other view which can possibly be justified by the series before me is that there is only one species in Central America, from Panama to Guatemala, varying individually in plumage to a remarkable degree. Should this view prove correct, then *M. fuliginosa* must be admitted to represent an extreme of coloration quite as marked as the rufescent birds which occur both at the northern and southern limits of this range.

167. *Bucco dysoni* Sel.

One specimen obtained in the forest on the Escondido. This individual was catching insects, and acted very much like a *Tyrannus*. On making a capture it would seek a new perch, flying in a leisurely way, and showing considerable hesitancy about selecting a place to settle upon.

Iris, wine-purple; bill, black; feet, blackish.

Family TROGONIDÆ.

168. *Trogon caligatus* Gould.

Apparently uncommon, on the Escondido, where all Trogons are called "Mountain Parrots" by the English-speaking people. Orbital ring yellow.

169. *Trogon atricollis tenellus* (Cab.).

Common. One flew into the house. Trogons are almost invariably found in pairs, rarely in small flocks. Iris very dark brown; feet plumbeous; orbital ring blue; bill chromium-green.

170. *Trogon chrysomelas* sp. nov.

SP. CHAR.—Exactly like *T. atricollis tenellus*, except that the metallic green of the male is wholly replaced by opaque black, without the slightest trace of metallic gloss.

Adult male (Type, No. 127338, Escondido River, Nicaragua, September 23, 1892; Chas. W. Richmond): Entire head, neck, and chest uniform "dead" black; back, scapulars, and rump dull, dusky grayish brown, tinged or mixed with blackish; upper tail-coverts and middle tail-feathers brownish black, the latter abruptly tipped with deep black (about 0.40 of an inch wide). Wing-coverts and outer surface of closed

secondaries very finely vermiculated with black and white; rest of wing black, the primaries edged with white, this occupying whole outer web at the base. Three outer tail-feathers mostly white (the outermost wholly white for the exposed portion), broadly tipped (for about 0.45 of an inch on first to 0.70 of an inch on the third feather) with white, the remaining portion sharply and regularly barred on both webs with black, the black bars averaging very nearly as wide as the white interspaces. Under parts, posterior to the chest, wholly rich cadmium yellow, becoming a little paler next the black of the chest. Bill greenish horn color, with tomlia and culmen yellowish; feet horn color. Length (skin), 9.25; wing, 4.30; tail, 5.40, the outermost feather 2.35 shorter; culmen, 0.75.

Following is a description of the supposed female of this species:

Adult female (Type, No. 128377, Esccondido River, Nicaragua, January 17, 1893, Chas. W. Richmond): Upper parts, including upper tail coverts, sides of neck, malar region and auriculars, slate-black, almost pure black on pileum; middle pair of tail feathers slate-black, with a terminal black bar of 0.20 inch. Wings black, primaries, second to sixth, with outer webs edged with white; secondaries and wing-coverts narrowly barred with white, bars 0.10 inch apart. A white spot before and one behind the eye; throat and breast between mouse- and smoke-gray, a narrow band of white posteriorly and bordering the yellow of the lower breast. Lower breast, abdomen, and under tail-coverts deep cadmium-yellow; sides olive-gray; feathers of tarsus black, whitish at the base. Second pair of rectrices black, somewhat lighter on the outer web; third pair black; three outer pairs tipped with white, broad on the outer web, but narrowing down to a mere edging on the inner web at the tips of the feathers; the outer feather barred for its exposed length, but basal half of this barring more in the nature of spots, which do not touch the shaft, and become smaller toward the base; the second feather is similar but has less barring; the third still less. Exposed culmen, 0.66; width of bill at base, 0.69; wing, 4.70; longest tail feather, 5.10; shortest, 3.28; tarsus, 0.58. Orbital ring clove-brown; iris dark brown.

The female just described resembles that of *T. caligatus* almost exactly, but the barring on the wing coverts and secondaries is very different, and there is a slight difference on the upper parts, a perceptible gloss being present on these parts in the bird just described.

. 171. *Trogon massena* Gould.

Common. These birds feed largely on berries and fruit. The birds while picking at the fruit sometimes hang from the end of a branch, back downward, with wings fluttering, at such times presenting a very striking appearance.

Iris dark yellow; mandible orange.

172. *Trogon melanocephalus* Gould.

Common. The most abundant of the Trogons in the localities visited by me. It often wanders into the plantations. Sometimes found in companies of six or eight. The note is of one syllable, often repeated.

The flight of this and other species of Trogons is very irregular, something like that of a Goldfinch (*Spinus tristis*).

Orbital ring pale blue; iris dark brown.

Family CAPRIMULGIDÆ.

173. *Chordeiles virginianus henryi* (Cass.).

Exceedingly abundant during fall and winter on the Escondido. First seen August 17. Specimens from Arizona, Mexico, and Nicaragua as a general thing have shorter wings than birds from the north, the difference being about a half inch, but in one Nicaraguan specimen the wing is fully as long as in northern examples, while three specimens from the Dakotas and Minnesota are as small as any of the southern ones.

174. *Nyctidromus albicollis* (Gmel.).

Abundant, particularly at Greytown. These birds are very partial to open places and clearings, but are also found, though less commonly, in the dense woods. Specimens shot at Greytown early in February were breeding, and eggs about to hatch were obtained May 18. During the mating season two or three of these birds get together and utter very remarkable, low, guttural noises impossible to describe. The ordinary note may be represented by "kwe-ah-réo," uttered in a clear, ringing, and rather tremulous voice, and can be heard a long distance; the call from a distant bird sounds like "ah-réo." The birds are so abundant that at night the air seems to be filled with their notes, coming from all directions.

Stenopsis albicauda Lawr? While paddling up the Rio Frio, birds were several times observed that I now feel quite sure were of this or another species of *Stenopsis*. They made their appearance just before nightfall, while still enough daylight remained to allow a fair sight of them. They flew close to the edge of the forest, at a height of 30 or more feet above the water. Their flight was steady and rather slow. The birds appeared to be grayish and had square tails. I did not hear any note. In April, about 10 miles from Greytown, I saw one as it flew across an opening in the forest and disappeared in the dark trees beyond. If not *Stenopsis* these birds were of a species as yet not recorded from Nicaragua or Costa Rica.

Family MICROPODIDÆ.

175. *Panyptila cayanensis* (Gmel.).

Common at the "I. P." plantation on the Escondido, but not observed elsewhere. Specimens are very difficult to obtain on account of the

high-flying habit of the birds. It is almost impossible to obtain any of the Swifts except during the rainy season, as at other times they fly high, far out of gun range. This appears to be the only record for the species north of Panama. For a note on the nest of this bird see *The Auk*, x, January, 1893, 84.

176. *Chætura gaumeri* Lawr.

Common on the Escondido. Specimens of this and the following species taken about the last of May were apparently breeding. The reference to *Chactura rauxi* on the Escondido, in the *Biologia, Aves*, II, 376, belongs to this species, as I did not find *rauxi*.

177. *Chætura cinereiventris guianensis* Hartert.

Two specimens shot on the Rio Frio, from a large company of Swifts, and others were collected on the Escondido, at "L. P." plantation, where, with *C. gaumeri*, it appeared to be common.

On the Rio Frio I saw numbers of a larger, black Swift, about the size of *C. brunecitorques*, but was unable to get specimens.

Family TROCHILIDÆ.

178. *Glaucis hirsuta* (Gmel.).

Common in the forest, where it keeps near the ground, as do the two following species. Feet flesh-colored.

179. *Threnetes ruckeri* (Bourc.).

Much less common than the above; its habits are the same. It was noted on the Escondido. Feet flesh-colored.

180. *Phaëthornis longirostris* (Less. and Delattre).

Common in the forest on the Escondido, and not infrequently seen in the banana plantations, near the woods. It is quite partial to the flowers of the "Wild plantain" (*Heliconia*). This and the other forest or Hermit Hummers are often found along streams, which they follow through the woods, pausing an instant here and there to investigate a spider's web or bright-colored flower, of which there are many in these places. When darting rapidly through the woods, it utters a sharp, shrill "chweep" at short intervals, and it is not a little startling to have one of these birds shriek as it shoots by within a few inches of one's head. Feet flesh-colored.

181. *Pygmornis adolphi* (Bourc.).

Common on the Escondido. It is confined to the forest. I did not hear it utter any note. One is made aware of its presence by the noise produced by its wing—a faint buzz not louder than that made by a humble bee.

The crimson blossoms of a small spreading tree, common in the woods, are quite attractive to this species.

Basal half of mandible Naples yellow; feet flesh-colored.

182. *Lampornis prevosti* (Less.).

Taken at Los Sábalos and San Carlos. It was rather common at the latter place in trees which bore trumpet-shaped carmine flowers.

183. *Florisuga mellivora* (Linn.).

A pair obtained in a cacao plantation on the San Juan, near Greytown. It was rather common there.

184. *Amazilia fuscicaudata* (Fras.).

Very abundant at all places visited, far outnumbering the other Hummingbirds. This species is confined to clearings, and does not occur in the forest. On the Escondido it haunts the banana plantations, where it is attracted by the large purple flowers of the banana plants. The note is almost identical with the "tuck" of the Junco (*Junco hyemalis*).

Bill brownish carmine, except tip, which is black.

185. *Polyerata amabilis* (Gould).

Rather uncommon. Observed on both rivers. It is usually found in clearings and plantations, but occasionally in open woods. I once shot a specimen as it hovered before some flowers, on the opposite side of a small creek. It fell into the water, and almost immediately a green lizard ran to it, brought it out, and, after shaking it, deposited it on the moss, with which the ground was covered. The lizard then assumed a ludicrous position and contemplated the victim, which was still alive, and would probably have devoured it had I not shot it also, thus securing two specimens instead of one. Mr. Mitchell one day had his attention called to an Iguana in a tree near the house by the cries of a small bird, which the reptile had caught. The large lizards and Iguanas probably catch small birds for food whenever the opportunity offers.

Family CUCULIDÆ.

186. *Crotophaga sulcirostris* Sw.

Abundant in plantations and clearings. Seems to be gregarious all the year round. The stomachs of many of those I examined contained grasshoppers, with which they often gorge themselves.

187. *Piaya cayana mehleri* (Bonap.).

Common. This species has a habit of running along the limbs, which gives it a close resemblance to a squirrel. It is indifferent as to choice of surroundings, being found in trees in clearings or in the forest, sometimes only a few feet from the ground, and again in the high trees.

188. *Coccyzus minor* (Gmel.).

One specimen secured at Greytown.

A Cuckoo noticed on the Escondido was either *C. americanus* or *C. erythrophthalmus*.

Family RAMPHASTIDÆ.

189. *Ramphastos tocard* Vieill.

Common. This and the following species are seldom seen during the summer months, but from October or November on through the winter they are seen daily, sometimes in large flocks, and often come out into the plantations. Both of these species make a curious croaking noise, while assembled in some solitary tree or retired place, but if disturbed they fly silently away. It is the only note I have heard them utter.

190. *Ramphastos brevicarinatus* Gould.

This species is more abundant than the above. Its habits are the same. I shot a young one which had been feeding on the ground, judging from the mud on the feet and bill.

• 191. *Pteroglossus torquatus* (Gmel.).

Very common. Frequently found in small companies of from five to eight. Several may sometimes be killed out of a flock before the remaining ones make up their minds to fly away. The note resembles "palice," which is the pronunciation of the Spanish word *feliz*, meaning happy. It is uttered in a shrill, squeaky tone, and the natives call the bird by this name, but I have heard it applied to neither of the other Toucans here.

When a flock of the birds are disturbed they call excitedly, and emphasize their displeasure by rapping their bills against their perch.

Iris lemon-yellow; orbital space, poppy-red, becoming brownish black immediately around eyes; feet and legs sage-green.

Family PICIDÆ.

192. *Campephilus guatemalensis* (Hartl.).

Common. Although a forest bird, it often occurs in the clearings. Iris yellow.

193. *Ceophlœus scapularis* (Vigors).

Not as common as the above species. Iris almost white.

194. *Celeus castaneus* (Wagl.).

One individual obtained on the San Juan, near Greytown.

195. *Chloronerpes yucatanensis* (Cabot).

One obtained at San Carlos February 25. It was a female, and would shortly have deposited eggs.

196. *Eleopicus** *caboti* (Malh.).

Common in the woods on the Escondido. Often found near the colonies of traveling ants.

197. *Melanerpes pucherani* (Malh.).

The most abundant Woodpecker in the region. Found in open places in the woods, and in clearings.

198. *Picumnus olivaceus* Lafr.

One adult male was taken at San Carlos February 26. Judging from its actions and the high development of the testes, it had a nest somewhere in the vicinity. This bird appears to be true *olivaceus*; it does not agree with Mr. Ridgway's *flavotinctus*. Feet plumbeous.

Family PSITTACIDÆ.

199. *Ara macao* (Linn.).

Very common. Generally in pairs or companies of pairs. A tree cut down late in February contained two eggs of this species. Naked skin on head flesh-color.

200. *Ara militaris* (Linn.).

Somewhat less common than the above. Habits and notes similar. Naked skin on head pale carmine-purple; iris dark yellow, but varies in different individuals.

201. *Brotogeris jugularis* (Müll.).

Observed at San Carlos, on the lake, if my memory serves me right, but I do not find any reference to the species among my notes.

202. *Conurus finschi* Salv.

Common on the Escondido. Feeds usually in the large trees standing in the plantations, but at times in small trees bordering the forest, where one day I found a flock of about twenty-five scattered about in low trees that were laden with berries. The birds were tame and allowed me to approach them very closely.

203. *Conurus aztec* Souaucé.

Abundant. Often seen in large flocks.

204. *Amazona salvini* (Salvad.).

Common. Collected at Greytown and on the Escondido. Iris orange.

205. *Pionus senilis* (Spix).

Very common on the Escondido. Iris orange.

*The name *Dendrobates*, Sw., usually employed for this genus, is preoccupied (Wagler, 1830; *Batrachia*).

206. *Pionopsitta hæmatotis* (Sel. and Salv.).

Observed on the Rio Frio, where a flock of about a dozen were found in a fruit tree. The birds were perfectly quiet and made no noise, even after I had shot into the tree several times and wounded some.

Family STRIGIDÆ.

207. *Strix pratincola guatemalæ* Ridgw.

One specimen obtained on the Escondido.

Family BUBONIDÆ.

208. *Syrnium virgatum* Cass.

One specimen was brought to me alive on the Escondido. Iris mummy-brown.

209. *Syrnium perspicillatum* (Lath.).

Collected by Wickham on the Escondido.

Family FALCONIDÆ.

210. *Pandion haliaëtus carolinensis* (Gmel.).

Common during the winter months, particularly near the coast. Observed as late as May.

211. *Falco albigularis* Daud.

Common on the Escondido. This bird flies very rapidly, and is quite noisy. Its note slightly resembles that of the Sparrow Hawk (*F. sparverius*), and also that of the Killdeer (*Egialitis vocifera*). Food consists largely of grasshoppers. One evening just after sundown I saw one of these birds pursue and catch a large moth that was flitting above the tree tops.

This Hawk appears to be confined to the plantations and clearings, where it prefers a perch on some prominent dead limb, from which it makes frequent forays.

On cloudy afternoons or just about dusk the birds often fly up and down over the river until they can hardly be distinguished in the growing darkness.

Iris dark brown; cere and naked space around eyes yellow; feet and legs pale orange.

212. *Falco sparverius* Linn.

Very common in winter. First seen October 16, and one shot late in February.

213. *Micrastur guerilla* Cass.

One specimen shot on the Escondido, in a thicket bordering the forest.

214. *Herpetotheres cachimans* (Linn.).

Common on the Escondido. The guttural laugh which usually precedes the long call of this species can be heard only a short distance. The birds call most frequently about dusk, and keep it up until after dark. The first individual I saw was in a large dead tree on the Rio Frio, near where I was encamped for the night. It began its monotonous call about dark and continued it for fully fifteen minutes. It is often called "Rain Crow" by the Americans on the Escondido.

Iris burnt umber.

215. *Elanoides forficatus* (Linn.).

A small company noticed circling about on the Escondido on May 15.

216. *Circus hudsonius* (Linn.).

Common during the winter on the Escondido. I shot one October 2, in the act of carrying off a chicken. In Nicaragua it never lets an opportunity pass to get a chicken, probably because it fails to secure enough food in other ways, as the conditions are totally different from those prevailing in its hunting grounds in the United States. Small mammals appear to enter very little into the food of the birds of prey there, owing to the dense vegetation and the difficulty of securing them, but lizards, snakes, and insects are much sought for.

217. *Accipiter velox* (Wils.).

Found by Wickham on the Escondido; I did not meet with it.

218. *Urubitinga anthracina* (Licht.).**219. *Urubitinga urubitinga ridgwayi* (Gurney).**

Not very common. Found usually in pairs. The above two species were observed on the Escondido, where Wickham secured specimens. Also noted at San Carlos.

220. *Leucopternis ghiesbreghti* (DuBus).

Mr. G. E. Mitchell got one specimen in the forest on the Escondido.

A Hawk that may be *Leucopternis plumbeus* Salv. was often noticed on the Rio Frio. It was usually found perched on limbs over the water, and was very tame, allowing the dory to pass under it at a distance of less than 10 feet, in some cases. One was observed to catch a large green lizard. Unfortunately no specimens were preserved, and the identification must remain in doubt.

221. *Rupornis ruficauda* (Sel. and Salv.).

This is the most abundant Hawk on the Escondido. It is found in the plantations and cleared places, usually in pairs.

Iris noted as yellow, and in some specimens as light brown, the latter probably immature birds; cere yellow.

222. *Buteo latissimus* (Wils.).

Rather common on the Escondido during the winter months. First seen September 30.

223. *Buteo brachyurus* Vieill.

One specimen secured on the Escondido.

224. *Busarellus nigricollis* (Lath.).

Observed at Greytown on several occasions.

Family CATHARTIDÆ.

225. *Gypagus papa* (Linn.).

Frequently observed on the Escondido, and occasionally several were seen in one day, but the birds habitually pass the time so high in the air that they will ordinarily escape notice. One secured on the Rio Frio. It was attracted to the clearing by a large snake killed a few days previous. As the bird came sailing overhead several Black Vultures out of respect vacated the tree in which it was about to light.

It would be quite useless to attempt a description of the colors of the naked skin of the head and neck of this bird without a diagram.

Iris white.

226. *Catharista atrata* (Bartr.).

Very common. One afternoon while paddling up the creek I heard a remarkable hissing noise, as of some body going rapidly through the air, and looking in the direction of the sound, saw a dark object shoot through the air in a downward direction and disappear behind some trees, but the movement was so swift that I could not identify it, even as a bird. Shortly afterward another object came down with the same rapidity and noise, but I could not place it. About a month later I was in a cattle pasture containing solitary dead trees here and there, with a few Black Vultures perched about, when I heard this same noise and saw a bird dive down and make a sharp turn when near the tree tops to check its speed, then sail up and perch with the other birds on the trees. This operation was repeated by several other birds, all of this species, which were very high in the air, and it was no doubt the means taken by them to reach the earth quickly. The birds observed on the first occasion were also doubtless of this species.

227. *Cathartes aura* (Linn.).

Common, but less abundant than the above.

Family COLUMBIDÆ.

228. *Columba nigrirostris* Sel.

This is the common mourning Pigeon of the region. Abundant, particularly along streams, where its favorite perch is in the trumpet tree. It is confined mostly to the forest.

Iris vinaceous; bill black; feet pink.

229. *Columba speciosa* (Gmel.)

Two specimens secured on the Escondido. Mr. G. E. Mitchell shot a young bird in first plumage October 26.

Colors of adult: iris, brown; feet, lavender; bill, vermilion.

230. *Columba rufina* (Temm.).

One specimen taken on the Escondido.

231. *Engyptila cassini* (Lawr.).

Several secured on the Escondido.

232. *Engyptila vinaceiventris* Ridgw.

Specimens supposed to be this species were taken on the Escondido, and others seen. My identification rests on the description (Proc. U. S. N. M., x, 1887, 583), the type not being available at this time.

The bird occurs in clearings. Iris light yellow.

233. *Peristera cinerea* (Temm.).

Quite common on the Escondido, where it appears to be resident only part of the year. First noted about September 20, when its peculiar two-syllabled call was frequently heard.

Found in bamboos along streams, or in solitary trees in the plantations, usually in pairs.

234. *Columbigallina passerina pallescens* (Baird).

One shot at San Carlos.

Family CRACIDÆ.**235. *Penelope cristata* (Linn.).**

Common in the forests on the Escondido, where it is found usually in the loftiest trees, as is *Crax globicera*. These birds are much hunted by the natives, who call them "Qualms." A hunter is guided almost entirely by the low, prolonged cry of the birds, uttered at times while feeding, as without this clew it is almost impossible to find them.

Iris carmine; naked shin of throat dull carmine; scutellæ of tarsus and feet coral red.

236. *Ortalis cinereiceps* (Gray).

Common. Known as "Chachalaca" by the Spaniards, and often called "Wild Chicken" by the Americans on the Escondido. It is frequently seen on the borders of banana plantations and in open places in the forest, usually in small flocks.

These birds are heard most frequently about dusk, chanting their monotonous notes, which resemble their Spanish name.

On one occasion I fired into a tree over a dozen times while a small flock of these birds were feeding in it. They remained throughout the disturbance, clucking to one another occasionally, as if uncertain as to the propriety of remaining. At other times I have noticed them exhibit undue haste in retreating from view, but ordinarily they are moderately tame.

237. *Crax globicera* Linn.

Rather common. Observed on the Rio Frio and on the Escondido. It is often kept in captivity. A fine male on the Magnolia plantation was very tame, and answered to the name of "Touie." One of Touie's peculiarities was an abhorrence of women. The moment a dress appeared on the plantation he began to show great distress, uttering his low, plaintive whistle, and running after the object of his wrath, with body leaning forward and almost brushing the ground, head thrown back, and tail raised, giving him a laughable appearance. After picking at the offending dress and following its wearer about for a time, Touie would quiet down a bit, but would continue to sulk and utter his note of complaint until the cause of the trouble had departed. This bird raised its crest when excited, or when its curiosity was aroused, but on other occasions kept it depressed.

Iris dark brown; cere Naples yellow.

Family PERDICIDÆ.

238. *Odontophorus melanotis* Salv.

A flock of over a dozen was observed in the forest on the Escondido. When approached the birds flew into the surrounding trees and afterwards off into the woods, two or three at a time. Two were secured.

239. *Odontophorus spodiostethus* Salv.

One specimen. It was one of a pair found running in a path in the woods on the Escondido. Following is a description of this bird, which has been compared with a specimen from Panama, belonging to the American Museum of Natural History:

Pileum and cervix sepia, edged with mummy brown, some of the feathers with slender shaft-streaks of buff; a line of feathers on sides of head bordering superciliary stripe tipped with fine, tear-shaped buff spots, edged with blackish, these feathers most numerous and markings largest just above, and posterior to, black auricular marks; interscapular region, including sides of neck, dark gray, broadly edged or bordered with light chestnut; this is followed posteriorly and on the scapulars by light olive-brown, the feathers for the most part faintly and almost imperceptibly vermiculated with a darker shade, having slender buff shaft-streaks, and usually the inner web black, with deep chestnut mottlings. Back, rump, and upper-tail coverts light olive, an occasional feather with a narrow black shaft-streak; the feathers minutely

and indistinctly barred with wavy lines and specks of blackish; tail similar, but with a faint chestnut tinge. Wings dull blackish brown; the primaries, except the first, with faint, nearly obsolete barrings on the outer web; exposed portion of secondaries irregularly spotted or marked with buff; wing-coverts light grayish olive, irregularly and finely mottled and spotted with buff and dull black, some of the feathers dull black on the inner web, with brownish edgings. Breast and jugulum dark gray, feathers faintly tipped with burnt-umber, just enough to give the gray color a soiled appearance; throat dusky grayish white, passing gradually into the gray of the jugulum; chin, malar region, auriculars, lores, anterior part of forehead, and broad superciliary stripe tawny; a dusky streak before eyes; upper part of auriculars brownish black. Lower breast, sides, and encroaching to some extent on abdomen, buffy ochraceous; rest of sides light olive-brown; abdomen creamy buff, changing to almost white posteriorly; flanks and under tail coverts buff, rather conspicuously but unevenly barred with black.

The American Museum specimen has more tawny on the head, the whole pileum being tinged with it; the buffy ochraceous is more extensive on the sides; the flanks and under tail-coverts are not nearly so conspicuously barred, and the back, rump, upper tail-coverts, and tail are strongly tinged with brownish buff.

The following measurements may be useful:

Number.	Collection.	Locality.	Exposed culmen.	Wing.	Tarsus.	Tail.
128406	U. S. N. M.	Escondido River, Nicaragua.....	.60	4.51	1.30	1.88
45162	American Museum.	Panama.....	.60	4.47	1.35	1.83

The length of wing, given in Mr. Salvin's original description is 4.20 inches. The American Museum specimen, formerly in Mr. Lawrence's collection, is labeled "*Odontophorus rubigenis* Lawr.," but I am not aware that any description was ever published. The specimen was collected a year or so after the description of *O. spodiostethus* appeared.

Family TINAMIDÆ.

240. *Tinamus robustus* Sel.

Rather common in the forest on the Escondido. Those shot were extremely fat, and the flesh very tender, white, with a greenish tinge. These birds are known as "Mountain Hens," and probably one of the species of Tinamon is the one called "Six o'clock Bird," which has a very melancholy call of three syllables, uttered about sundown, and also occasionally during the day.

241. *Crypturus pileatus* (Bodd.).

Common in the forest on the Escondido. Iris light brown.

242. *Crypturus*, sp.?

A bird of this genus, shot on the Escondido, was partly eaten by a cat before I could save it. The wings, back, and some other portions of the plumage were preserved, and later compared with the various species in the National Museum series, but agreed with none of them. In length of wing it matches *C. boucardi* and *C. sallai*, and in regard to plumage comes nearer the former, but appears to be distinct from both. Legs and feet orange-vermilion.

Family CHARADRIIDÆ.

243. *Ægialitis vocifera* (Linn.).

Common; first heard November 11.

244. *Ægialitis collaris* (Vieill.).

One shot February 29 on the Rio Frio.

Family SCOLOPACIDÆ.

245. *Gallinago delicata* (Ord).

Common at San Carlos in February, and exceedingly abundant at Magnolia Plantation on the Escondido, during my stay there in November and December. First observed October 16.

246. *Totanus flavipes* (Gmel.).

One seen on the Escondido October 16.

247. *Totanus solitarius* (Wils.).

Rather common. First noticed September 30.

248. *Actitis macularia* (Linn.).

Common. Observed from July 30 to May 16.

249. *Bartramia longicauda* (Bechst.).

One seen November 26 on the Escondido.

250. *Tringa minutilla* Vieill.

Two shot on the Rio Frio February 29, and another shot on the Escondido in December. This latter had been noticed associating with a flock of Killdeers some time previous to its death.

Family RECURVIROSTRIDÆ.

251. *Himantopus mexicanus* (Müll.).

A small flock observed on the Rio Frio February 29.

Family CICONIIDÆ.

252. *Mycteria americana* Linn.

Noticed on the Rio Frio, and at Magnolia Plantation on the Escondido. Mr. Bowman, a plume hunter, informed me that he occasionally saw it on the lake, where it was known as "Beterano."

253. *Tantalus loculator* Linn.

Common on the Rio Frio, and on the Escondido. On the latter river the birds were quite abundant in a marsh back of Magnolia Plantation.

Family PLATALEIDÆ.

254. *Ajaja ajaja* (Linn.).

A flock of seven noticed on the Rio Frio.

Family COCHLEARIIDÆ.

255. *Cochlearia zeledoni* Ridgw.

Common on the Rio Frio, where several colonies were noticed. Two specimens obtained on the Escondido. The note of this species is a squawk, something like that of the Night Heron, and like the latter bird this species is nocturnal.

Eyes black and very large; feet and legs pale green.

Family ARDEIDÆ.

256. *Ardea tricolor ruficollis* (Gosso).

Two specimens noted on the Escondido.

257. *Ardea candidissima* Gmel.

Rather common on the Rio Frio; not often noticed on the Escondido.

258. *Ardea egretta* Gmel.

Abundant on Lake Nicaragua, where it breeds in large colonies on the islands. Common on all the rivers and lagoons.

The plume hunter is at work on the lake, engaged in exterminating these birds. Two men are established at San Carlos, and have been engaged in this business for three or four years. They sell their plumes to a New York dealer. A firm in Greytown offers 50 cents for each bird of this species brought in, and this probably explains the scarcity of the birds about Greytown.

259. *Ardea herodias* Linn.

Common

260. *Ardea virescens* Linn.

Apparently a winter resident only, at which season it is very common. First noticed early in October.

261. *Ardea cœrulea* Linn.

Abundant. Barring *A. egretta*, it is the most abundant of the Herons. Individuals in the white plumage largely predominate.

262. *Tigrisoma excellens* Ridgw.

One specimen shot on the Escondido, and others supposed to belong to this species, heard on the same river. The bird is nocturnal, and

has a very distressing note, like the groan of some one in agony. A *Tigrisoma* was common on the Rio Frio, but no specimens were obtained.

263. *Tigrisoma cabauisi* Heine.

Given in the list of birds obtained by Wickham on the Escondido.

264. *Nycticorax nycticorax nævius* (Bodd.).

Common, especially on the Rio Frio.

Family ARAMIDÆ.

265. *Aramus giganteus* (Bonap.).

Several noticed on the Rio Frio.

Family RALLIDÆ.

266. *Aramides plumbeicollis* Zeledon.

One pair observed on the Escondido. They were in the woods on the bank of a stream, and were cackling very much like a Guinea fowl. I shot one of them, at which the other set up a loud scolding. My bird agrees with the original specimens of *A. plumbeicollis* obtained at Jiménez, Costa Rica, by Sr. Alfaro, who informs me that he has found the *A. cayennensis* only on the Pacific side of Costa Rica. In looking over the *Aramides* in the National Museum, I find one specimen of *cayennensis* labeled "Talamanca" (Gabb), but with this exception all others from the east side are *plumbeicollis*. An immature bird from Honduras (Segovia River) is also referable to this species. Two from David, Chiriqui, are *cayennensis*.

267. *Fulica americana* Gmel.

Several seen on the Escondido.

268. *Porzana cinereiceps* Lawr.

Abundant at all places visited. It is especially numerous in the tall grass that lines the river banks. The bird is quite fearless, and is easily called out of hiding by imitating the squeak of a young bird, or by making any unusual noise. It breeds commonly in the plantations on the Escondido, where it builds its nest in the grass, generally about a foot from the ground. The nest is made of dried grass, lined with a broad-leaved grass. It is almost globular in shape, and has a small entrance in the side. It is very difficult to find the bird on the nest, as it leaves on the slightest suspicion of danger, and skulks off through the grass uttering a sharp "chip."

The call is a curious, harsh, grating chatter. These birds were frequently caught in traps set for small mammals along the river's edge.

The eggs are from three to five, short ovate, pale creamy white, spotted, principally at the large end and sparingly over the rest of the surface, with cinnamon-rufous, mixed with lavender. Measurements of three sets are as follows: 1.11 by 0.85, 1.10 by 0.83, 1.08 by 0.85, 1.07 by 0.85; 1.12 by 0.84, 1.10 by 0.82, 1.13 by 0.82, 1.07 by 0.83, 1.08 by 0.81; 1.10 by 0.82, 1.07 by 0.82, 1.10 by 0.83. Nests were found from early in May until late in August.

In a series of seventeen adults, including the type of the species and also that of *P. leucogastra* Ridgw., I find a wide range of variation, especially in the amount of white on the underparts. In individuals recently adult, the white extends from the throat to the under tail-coverts, including the tibia. In some specimens this is uninterrupted, but in most of them there is a narrow pectoral band of cinnamon, with faint white edges to the feathers when the plumage is fresh. In these young adults the gray on the forehead and sides of head is often entirely absent, or very dull and much restricted. The specimens before me show these variations in all stages. In some of the apparently old adults the gray of the head is very restricted, and in one example its place is taken by umber brown. The black and white bars of the lower sides, flanks, and under tail-coverts varies much. In some the white bars are very narrow and in others quite broad. The black is intense in some individuals and dull in others. The variation in size is also considerable, as an examination of the accompanying table of measurements will show. The smallest specimen in the series is a female from the Rio Frio. This bird, in addition to its small size, has the shoulders and some of the wing-coverts very distinctly barred with white; the feathers thus barred are much darker than in ordinary birds, in fact almost black. A bird from the Escondido also has these barred shoulders, and one other shows a faint approach to it. In the type of *P. leucogastra* some of the feathers of the under tail-coverts are tinged with light rufus, an approach to which is noticed in other specimens of the series. I am unable to separate *P. leucogastra* from *P. cinereiceps*.

Number.	Collection.	Locality.	Sex.	Culmen.	Wing.	Tarsus.
67904	U. S. N. M.	Type, Costa Rica (Gabb.)	♂	0.63	2.90	1.12
126286	do	Greytown, Nicaragua	♂	.70	2.82	1.10
126334	do	Rio Frio, Costa Rica	♂	.63	2.67	1.02
127050	do	Escondido River, Nicaragua	♂	.73	2.90	1.26
128387	do	do	♂	.71	2.85	1.21
128388	do	do	♂	.71	2.83	1.17
4042	C. W. R.	do	♂	.70	2.80	1.11
4049	do	do	♂	.70	2.87	1.16
4084	do	do	♂	.71	2.95	1.19
4085	do	do	♂	.66	2.84	1.15
128390	U. S. N. M.	do	♂	.65	2.75	1.10
4250	C. W. R.	do	♂	.64	2.92	1.15
4319	do	do	♂	.70	2.95	1.19
128391	U. S. N. M.	do	♂	.65	.....	1.11
4321	C. W. R.	do	♂	.70	.....	1.15
128389	U. S. N. M.	do	♂	.75	2.83	1.19
91302	do	Type of <i>P. leucogastra</i> Ridgw., Los Sábalo, Nicaragua.	♂	.70	2.75	1.20

The downy young are entirely black above, slightly glossy; underparts dull black, deepest on chest and sides; throat dull light gray, mixed with black down; abdomen and flanks dark smoke gray, with a tinge of buff on the former; a sooty grayish streak along the median line.

Immature birds are clove brown above, becoming dull black on the tertials, rump, and tail. Top of head dull dark grayish, the feathers indistinctly edged with dark brown; sides of neck, and nape, with faint tinge of rufus; sides of head, neck, and breast smoke gray, obscurely tipped with dusky; throat, and underparts medially, dull white, the latter more or less tipped with dusky; lower sides and flanks dark grayish, obscurely barred with dull white. Wings sepia brown. In birds slightly older than this there is a buffy suffusion on the abdomen and under tail-coverts, and isolated cinnamon feathers appear on the breast.

Iris of the adult, carmine; feet and legs, olive; bill apple green at base; in immature birds the iris is dark brown; mandible plumbeous.

269. *Porzana exilis vagans* Ridgw.

One specimen taken on the Escondido. It was caught while running through the grass by one of the laborers.

This specimen agrees very minutely with the type in most points, but has rather less barring on the wing coverts and the tarsus is much shorter. Measurements are as follows:

Number.	Locality.	Sex.	Culmen.	Wing.	Tarsus
112255	Type: Segovia River, Honduras	♂	0.66	2.82	1.05
127053	Escondido River, Nicaragua .....		.63	2.82	.86

Eyelids clay color; feet raw umber; iris carmine, bill as in the above species.

Family JACANIDÆ.

270. *Jacana spinosa* (Linn.).

Very common at Greytown, and at Magnolia plantation on the Escondido. Young birds about a week old were noticed April 10. Birds in immature plumage seem to predominate at all seasons of the year.

Family HELIORNITHIDÆ.

271. *Heliornis fulica* (Bodd.).

Common on the Rio Frio, but much less so on the San Juan and Escondido, no doubt on account of the traffic on the latter rivers. The birds are usually found close to the patches of tall grass that occur at intervals along the banks of the streams. They are almost invariably in pairs, rather shy, and quick to seek shelter if approached. A favor-

ite hiding place is under the fringes of bushes and trees which hang over the water in many places. When disturbed they swim at once for cover, to reach which they are sometimes obliged to cross the river, and will fly if hard pressed or if the distance is considerable. After a hiding place is reached they fly into the bushes overhead or swim uneasily about until forced to take to another place. A bird will often sink below the surface leaving only the head exposed, but as it always faces the object in pursuit its white breast is readily seen, even under water. When suddenly surprised, as for instance at a bend of the river, the bird dives quickly and is not seen again. It also dives when wounded, but only when escape by flight or swimming is impossible. My observations are to the effect that it dives only as a last resort.

Family ANATIDÆ.

272. *Dendrocygna autumnalis* (Linn.).

On an overflowed piece of land on the Rio Frio I saw a flock of over two thousand birds of this species. Small flocks of a dozen are often seen on the Escondido. Known as "Whistling Duck" from its note. It is commonly kept in captivity.

273. *Cairina moschata* (Linn.).

Rather uncommon and extremely shy. Frequently seen in the domestic state. Noted singly or in pairs.

274. *Anas discors* Linn.

Three individuals, one of which was shot, observed swimming in the Escondido, December 27.

275. *Dafila acuta* (Linn.).

One specimen shot and a few others seen on the Escondido in December.

Family PELECANIDÆ.

276. *Pelecanus fuscus* Linn.

Common near Greytown and Bluefields on the lagoons.

Family SULIDÆ.

277. *Sula piscātor* (Linn.).

The evening before we reached Greytown, from Kingston, a pair of Boobys flew around the ship as if intending to spend the night on board, and, after considerable reconnoitering, one of the birds perched on the rigging at the bow of the boat, where it was caught by W. L. Richmond.

278. *Sula leucogaster* (Bodd.).

Very abundant along the coast, nesting on the various keys which there abound. No specimens were secured, but the identification is supposed to be correct.

Family FREGATIDÆ.

279. *Fregata aquila* (Linn.).

Very common along the coast, and not rare on Lake Nicaragua. Occasionally seen on the Escondido, at a distance of 50 miles from its mouth. The birds breed abundantly on the keys off the coast.

Family PHALACROCORACIDÆ.

280. *Phalacrocorax* sp.?

A Cormorant was abundant on the lake, and numbers were seen on the Rio Frio. Rarely noted on the Escondido.

On the lake I one day saw over a thousand, fishing. They nest on the islands of the lake, where, Mr. Bowman told me, he had found as high as five thousand in one breeding place. Such a place was visited by him during my stay at San Carlos in February, and he reported finding eggs and young in all stages at the breeding grounds.

Family ANHINGIDÆ.

281. *Anhinga anhinga* (Linn.).

Abundant on the Rio Frio, and often seen on the Escondido.

Family LARIDÆ.

Terns of several species were seen at Greytown and Bluefields, but no specimens were secured.