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**Notes on a collection of birds from Panama,  
Costa Rica and Nicaragua.**

By

**HIALMAR RENDAHL.**

Communicated October 9th by **CHE. AURIVILLIUS** and **E. LÖNNBERG.**

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In the years 1882 and 1883 the late Docent at the University of Upsala, Dr. **CARL BOVALLIUS**, made a journey in Central America, chiefly for zoological purposes.

The ornithological collections brought home by him from this expedition were for the main part obtained by the State Museum of Natural History in Stockholm, while a small part of the same came into the possession of the Zoological Museum of the R. University of Upsala. The former remained, however, partly approximately determined, partly undetermined, until the removal of the State Museum to its new building, when at the arrangement of the collections the First Intendant, Professor Dr. **EINAR LÖNNBERG** entrusted me with the task of revising and determining the birds collected by Dr. **BOVALLIUS**. The result of this revision is put forth in the present paper.

The birds from the same expedition which belong to the Zool. Museum of Upsala were also looked over by me and are indicated in the following list with U. Z. M.

Dr. **BOVALLIUS** made his collections in the states of Panama, Costa Rica and Nicaragua. He also visited the Las Perlas Archipelago, but about the birds, collected by him on these islands, I am preparing a separate paper.

Not counting these latter birds the present collection contains 189 different species and subspecies. Moreover, there are in the popular account of his travels, published by Dr. BOVALLIUS 1887 (*Resa i Central-America 1881—1883. 2. vols. Upsala 1887*), some remarks about birds and bird-life. In the following list I have only quoted those, about which I could with certainty decide to which species the statements were to be referred. These comprehend 10 further species. Thus the number of species mentioned in my paper is 199, divided as follows:

Panama 28 species (skins of 27, references about 1); Costa Rica 73 species (resp. 69+4); Nicaragua 139 species (resp. 130+9).

The localities, at which the birds were collected, are the following:

Bitéi, in Talamanca, Costa Rica. Great Indian village at Rio Bitéi, a tributary to Rio Estrella.

Castillo Viejo. Nicaraguan village at the San Juan river, about 130 km from San Juan del Norte. Castillo is situated close to the boundary between Nicaragua and Costa Rica. Dr. BOVALLIUS says about the nature in the vicinity: »All heights round Castillo were cleared and covered with a dense grass-vegetation. — — In the immediate vicinity of the village there were several plantations of maize and banana-trees.»

Caymito River, Panama; falling into the Chorrera Bay on the Pacific side. The banks are covered with mangrove-trees as far as the sea-water reaches at high tide, or about 3 km. Inside the mangroves there is a rich palm-vegetation.

Charco Verde, a double lagoon in the Ometepe Island, south of the Volcano.

Ciste Island, an islet in the Lake of Nicaragua, close to the Ometepe Island.

Culebra. Between Panama and Colon.

Estrella. A river in Talamanca, Costa Rica. It falls into the Caribbean Sea about 9—10 km north-west of Punta Calmita.

Gmokul, a small plantation at the western side of Tilire River in Talamanca, C R., between the outflow of Rio Culebras o Dorados and Rio Urén.

Granada, a town at the western shore of the Lake of Nicaragua, near the northern end of that lake.

Laguna de Santa Rosa, a small fresh-water lagoon in the north-western part of the Ometepe Island.

Las Isletas or Corrales, a group of islets in the Lake of Nicaragua just south of Granada and close to the volcano Mombacho. Most of these islets, the largest of them being named Isla de Vela, have a very rich vegetation.

Masaya, an old Indian town a little north-west of Granada and about 15 km from the lake.

Manares, a river on the western side of the Lake of Nicaragua, falling into Charco Muerte, a cove between Zapatera I. and the mainland. The mouth of Rio Manares widens to a lagoon, the shores of which are grassy and covered with bush. Here was a very rich bird-life.

Menco, a peninsula bounding Charco Muerte on the south. The outermost point of Menco is named *El Boquete*. The latter is forest-clad and rises above the rest the peninsula which is occupied by bogs, bordered by a rich but low vegetation. Rio Menco is a small river, that falls into Charco Muerte at the basis of the peninsula.

Muyogalpa, a village in the Ometepe Island, north-west of the volcano.

Ochomogo River, falls into Charco Muerte.

Ometepe Island is the greatest island in the Lake of Nicaragua. It is composed of two halves, each of them occupied by a volcano and bordered by a narrow strip of shore. They are connected by a low tongue of land. The volcano in the northern half is named Ometepe (or Ometepic, the name being of aztekial origin, ome = two and tepec = point). It is nearly 1,700 m high. Whole the volcano, except a part of the western grassy side, is densely forested. The shore is cultivated on the northern and western sides, the eastern part of the island is covered with primeval forest. The southern half of the Ometepe Island is occupied by the volcano Madera. The shore is steep. That half is cultivated but for a very inconsiderable part.

Pacora River falls into the Bay of Panama.

Pacuare, one of the greatest rivers in eastern Costa Rica. It has its source at Cerro Chirripo and falls into the Caribbean Sea about 40 km north of Puerto Limon.

Pacuarito, a tributary to the former; in the vicinity of Siquirres.

Panama Viejo, the old Panama at Rio Algorrobo, at a distance of 5 km from the present city of Panama.

Pueblo Nuevo, a village near the mouth of Rio San Carlos at the Pacific side of Panama.

Punta Arenas. The Pacific seaport of Costa Rica, situated on a long point of sand running into the Gulf of Nicoya, from which it takes its name.

Punte de San Roque. A 3—400 m long and very narrow point of land at the western shore of the northern half of the Ometepe Island.

Rio San Juan. The great river on the boundary between Nicaragua and Costa Rica, coming from the southeastern end of the Lake of Nicaragua and falling into the Caribbean Sea.

San Carlos. A small town at the northern side of Rio San Juan, immediately at its outflow from the Lake of Nicaragua. The river resembles here more a long creek of the sea than a river. The land along the river-sides is flat and swampy, except in the northern corner, where San Carlos is situated.

San Juan del Norte, or Greytown, is situated on a small lagoon at the mouth of the Rio San Juan. It is almost surrounded by marshes and swamps with a growth of palms. Dr. BOVALLIUS visited the town during the rainy season, which according to RICHMOND reaches eight or nine months, from May to January.

Sipurio. It is the Government headquarters in the Talamanca district of Costa Rica, situated on the Rio Urén, a tributary of the Rio Tilire, in a flat, forest-covered plain not more than 800 to 1000 feet above the sea.

Siquirres. A town in eastern Costa Rica one mile to the east of the Rio Revenazón and at a small stream with the same name as the town. Dr. BOVALLIUS had his headquarters here in the hacienda Caño Secco in the vicinity, situated at the brook Caño Secco, which like R. Siquirres falls into the Pacuare River.

Tilire River. Indicated by CARRIKER (Ann. Carn. Mus. VI. 1910) in the map as Rio Tarire, in the text as Rio Sicsola. It is the greatest river in the Talamanca district, flowing from the Cordillera de Talamanca into the Caribbean Sea. On its way it receives numerous tributaries.

Zapatera is an island in the Lake of Nicaragua off the Menco peninsula, and separated from the mainland by Charco Muerte.

In the following list the measurements are in millimeters, and the colours are according to RIDGWAY, *Color Standards and Color Nomenclature*, Wash. D. C. 1912.

1. *Anhinga anhinga* L. — 1 ♂, Nic., Rio Ometepe, Chaño Verde, Jan. 1; 1 ♂, Nic., San Juan del Norte, Nov. 21.

The Darter, »Pato de aguja», was observed at Rio San Juan, and the present specimen from this locality was shot at Harbour Head, one of the outflows of the San Juan River, north-east of San Juan del Norte. The river widens here, to form a lagoon with small islets, some of them being only grassy, others covered with a rich vegetation of trees. Here, as well as at the with rushes and low bushes overgrown shore, water- and shore-birds had their favourite haunts. The Darter is said to be extremely cautious and sharp-sighted.

2. *Fregata aquila* L. — 1 ♂ (U. Z. M.), Nic., R. Ometepe, Ciste Island, Jan. 20. Culmen 100 mm. Iris, as noted on label, brown.

Common at Ciste Island.

3. *Botaurus pinnatus* WAGL. — 1 ♂, Nic., R. Menco, Febr. 21.

This rare species is mentioned by LAWRENCE (*Ann. Lyc. N. Y.* viii, p. 184) as found at Greytown (San Juan del Norte). So far as I know, no further statements of its occurrence in Nicaragua, or on the whole in Central America, are published.

The specimen collected by Dr. BOVALLIUS is a young male, undoubtedly belonging to the present species.

The colour agrees entirely with the description given by Mr. R. BOWDLER SHARPE in the *Cat. Birds Brit. Mus.* xxvi, p. 263. The dimensions, compared with the measurements, quoted by SALVIN and GODMAN (*Biol. C.-A., Aves*, III, p. 184) according to SCLATER and SALVIN's *Exotic Ornithology*, indicate without doubt *B. pinnatus*. They are as follows:

wing 303; tarsus 103; middle toe and claw 123,5; hind toe 51,5; claw 38 mm. Iris flame-coloured.»

4. *Herodias egretta* WILS. — During an excursion along Pacore River, one of the 130 watercourses, which fall into the Bay of Panama, Dr. BOVALLIUS met with great flocks of Egrets in a fen, a couple of kilometers in length. The bird was observed at Tilire River, C. R. It also occurred at San Juan, Nic., where it was observed in the neighbourhood of Rio Randal and Rio Mosquito. It was not as usually seen in flocks, but in single specimens, these being in 14 cases of 17 in company with *Florida cærulea*. Single specimens were seen in Ometepe I.

5. *Egretta candidissima candidissima* GM. — Occurring in great flocks in the Lake of Nicaragua, at the outflow of this lake in San Carlos River. Instead of as usually wading in the water in search of food, Dr. BOVALLIUS here observed the Snowy Egrets flying over deep water, in the flight catching their prey at, or just under the surface of the water. It was also common at Ometepe Island.

6. *Hydranassa tricolor ruficollis* GOSSE. — 1 ♂, Nic., San Juan del Norte, Nov. 23.

7. *Florida cærulea* L. — 1 ♂, Nic., Rio Ometepe, Muyogalpa, Jan. 1.

8. *Butorides virescens virescens* L. — 1 ♀, Nic., San Juan del Norte, Nov. 16.

Said to be common at the mouths of most rivers in Costa Rica and Nicaragua and also on the islands in the Lake of Nicaragua.

9. *Nycticorax nycticorax naevius* BODD. — 1 ♂, Nic., Rio Ometepe, Chaño Verde, Jan. 21.

About this bird Dr. BOVALLIUS says: »A low rustle was heard in the densest leafage above us, and with long cautious strides a white-breasted 'Correo', Night Heron, stalked along the branches, suspiciously looking round, and at the least noise concealing itself behind the trunk or a thicker branch. But as a makeshift it took its recourse to the wings —

10. *Heterocnus cabanisi* HEINE. — 1 ♂, young (U. Z. M.), San Juan del Norte, April 22. »Iris flame-coloured.»

11. *Cochlearius zeledoni* RIDG. — 1 ♂, Nic., Rio Ometepe, Chaño Verde, Jan. 19; 1 ♂ (U. Z. M.), same date and locality.

»At the shallowest places of the lagoon the 'Coaca' waded about, picking up fishes with a surprising rapidity. — At a slight splashing of a paddle it disappeared with hurried, stealing steps among the tree-roots and lianas, where it emitted its anxiously belling cry.»

12. *Mycteria americana* L. — A specimen of the Wood Ibis was shot at the outflow of Rio Ochomogo in the Lake of Nicaragua.

13. *Jabiru mycteria* LICHT. — Also a specimen of the Jabiru was shot at Rio Ochomogo at the same time and locality.

14. *Guara alba* L. — Observed at Tilire River, C. R.

15. *Anas platyrhyncha* L. — Dr. BOVALLIUS says, there occurred great flocks of Mallards, Baldpates, Blue-winged and Cinnamon Teals, Shovellers and Pintails at El Boquete (Peninsula Menco, Lake of Nicaragua).

16. *Mareca americana* GMEL. — El Boquete, Lake of Nicaragua. See the preceding species.

17. *Querquedula discors* L. — 1 ♂, Pa., Pacora, March 2; 1 ♀, Nic., San Juan del Norte, Nov. 7.

Great flocks at El Boquete, Lake of Nicaragua.

18. *Querquedula cyanoptera* VIEILL. — 1 ♀ (U. Z. M.), San Juan del Norte, Nov. 19.

Great flocks at El Boquete, Lake of Nicaragua.

19. *Spatula clypeata* L. — 1 ♂, Nic., San Juan del Norte, Nov. 7.

Great flocks at El Boquete, Lake of Nicaragua.

20. *Dafila acuta* L. — 1 ♂, Nic., San Juan del Norte, Nov. 7.

Great flocks at El Boquete, Lake of Nicaragua.



21. *Sarcoramphus papa* L. — 1 ♀? (U. Z. M.), C. R., Siquirres, Caño Secco, Aug. 16.

To obtain some specimen of the »Rey de los Zopilotes», Dr. BOVALLIUS bought an old mule, that was shot in an open place. After two days the carcass stank enough to decoy the expected guests. In the early morning of the third day a score of the two common species *Catharista urubu brasiliensis* and *Cathartes aura aura* was concordantly ravelling at the dainties. If a hawk approached, it was immediately driven away. Suddenly a King Vulture perched in the top of a high mangotree close by the place. Instantly the feeding flock was seized with fright, and retired, with the tails dragging on the ground and the heads bent down, from the mule to stumps and stones at a respectable distance.

Dr. BOVALLIUS remarks, that the King Vulture as a rule is hunting by pairs, and on this occasion, too, two specimens were shot, male and female.

22. *Catharista urubu brasiliensis* BP. — 1 ♂, C. R., Siquirres, Caño Secco, October.

The Black Vulture was observed here and there in the vicinity of Punta Arenas, C. R. It was common in that town and protected as a useful scavenger. Common at Siquirres.

23. *Cathartes aura aura* L. — Was not observed at the Pacific side. Common at Siquirres, C. R.

24. *Rostrhamus sociabilis* VIEILL. — 1 ♀, Nic., Rio Ometepe, Laguna S:ta Rosa, Jan. 1; 1 young (U. Z. M.), Rio San Juan del Norte, March 9.

Measurements. Female sp.: Wing 366; bill from cere 25,5 mm.

25. *Accipiter bicolor schistochlamys* HELLMAYR. — 1 ♀, C. R., Pacuarito, Esperanza, Aug. 12.

26. *Geranospizias niger* DU BUS. — 1 ♂, C. R., Talamanca, Sipurio, Aug. 28.

CARRIKER remarks (An ann. list of the birds of C. R. etc. In Ann. Carn. Mus. VI. 1910, p. 454), that he believes this bird »to be confined to the Pacific lowlands of Costa Rica,

for in all my collecting on the eastern slope I have never seen it, nor are there any records for that side.»

The present specimen taken at Sipurio, situated in a flat, wooded plain 800 to 1000 feet above the sea in the southeastern part of Costa Rica, is thus the first find of this bird on the Caribbean lowlands.

27. *Parabuteo unicinctus harrisi* AUDUB. — 1 ♂, Pa., Pacora, March 4.

28. *Buteo platypterus* VIEILL. — 1 ♂, young, Nic., R. Castillo Viejo, Dec. 3.

29. *Urubitinga anthracina* LICHT. — 1 ♀, Nic., San Juan del Norte, Nov. 4.; 1 ♀ (U. Z. M.), same locality, March 31; 1 ♂, Nic., Rio Ometepe, Muyogalpa, Jan. 13; 1 ♂, young, Nic., G. Zapatera, Febr. 10.

30. *Leucopternis ghiesbreghti* DU BUS. — 1 ♂ (U. Z. M.), C. R., Siquirres, Esperanza, Aug. 12. »Iris yellow.»

Dr. BOVALLIUS states this bird as »very rare» at Siquirres.

31. *Leucopternis semiplumbea* LAWR. — 1 ♂, C. R., Talamanca, Bitéi, Sept. 13.

32. *Asturina plagiata* SCHL. — 1 ♂, Nic., G. Zapatera, Febr. 10.

33. *Rupornis ruficauda* SCI. et SALVIN. — 1 ♂, young, 1 ♀, C. R., Talamanca, Sipurio, Sept. 1, Aug. 27; 1 ♂, Nic., Zapatera, Febr. 16.

34. *Busarellus nigricollis* LATK. — 1 ♂, Nic., Rio Menares, Febr. 23. »Iris brown.»

35. *Falco sparverius sparverius* LIN. — 1 ♀, C. R., Siquirres, Oct. 4; 1 ♀, Nic., San Juan del Norte, Nov. 24; 1 ♂, Nic., G. Masaya, Dec. 11; 1 ♂, Nic., G. Granada, Dec. 28; 1 ♀, Nic., G. Zapatera, Febr. 12; 1 ♀, Nic., R. Ometepe, Muyogalpa, Jan. 2; 2 ♀♀, Nic., Ometepe, The Volcano, 750 and 1,600 feet, Jan. 31 and Febr. 1.

36. *Polyborus cheriway* JACQ. — 1 ♂, Pa., Panama viejo, Febr. 26; 1 ♂, Nic., Rio Menco, Febr. 20.

37. *Ibycter americanus* BODD. — 1 ♀, C. R., Pacuare, Esperanza, Aug. 12.

In contrary to CARRIKER (l. c. pag. 451), who states this bird as »invariably seen in pairs», Dr. BOVALLIUS says that it is living in flocks. It makes great havoc in the poultry-yards, and is therefore eagerly pursued by the inhabitants.

38. *Tinamus fuscipennis* SALVAD. — 1 ♂, Nic., San Juan del Norte, Oct. 17. »Iris brown.»

39. *Crypturus cinnamomeus* LESS. — 1 ♀ (U. Z. M.), Nic., G. Zapatera, Febr. 24.

40. *Crax panamensis* GRANT. — 1 ♀ (U. Z. M.), C. R., Siquirres, Nov. 3; 1 ♂, Nic., G. Zapatera, Febr. 26.

Common on the Volcano Ometepe, especially in a height of about 600 m.

41. *Penelope cristata* L. — Dr. BOVALLIUS says, that »*P. purpurascens*, by the inhabitants named Pavo» was common on the Volcano Ometepe, occurring to a height of 1,450 m. Undoubtedly this refers to *Penelope cristata* L.

42. *Eupsychortyx leylandi* MOORE. — 1 sp. (U. Z. M.), Nic., G. Granada, Febr. 7.

43. *Aramides plumbeicollis* ZELEDON. — 1 sp., Nic., San Juan del Norte, Nov. 29.

44. *Fulica americana* GM. — 1 ♂, Nic., Ch. San Carlos, Dec. 5.

45. *Amaurolimnas concolor* GOSSE. — 1 ♂, Nic., San Juan del Norte, March 22.

The single record for this bird in Nicaragua, is that by SCLATER (Ibis, 1873, p. 373) referring to a skin in the British Museum brought by T. BELT from Contales. Further this species has been stated from Honduras, Guatemala, Jamaica, Guiana and Brazil. There are, however, no records from Costa Rica and Panama.

As I have but a single specimen from Guiana (sign. Paris 1833) for comparison, it is impossible to decide if there are any subspecific differences in the Nicaraguan example. The measurements of that are as follows: wing 116, tail 58, exposed culmen 25.3, tarsus 38, middle toe with claw 37.

46. *Aramus vociferus* LATH. — 1 ♀, Nic., Ometepe, Laguna S:ta Rosa, Jan. 1.

47. *Eurypyga major* HARTL. — Here and there in the highest tree-tops single specimens of this bird were observed at Laguna de Santa Rosa, a little lake in the north-western corner of Ometepe Island.

48. *Gallinago delicata* ORD. — 1 ♂, Nic., San Juan del Norte, Nov. 7.

49. *Pisobia minutilla* VIEILL. — 1 ♂, 1 ♀, Nic., San Juan del Norte, female specimen April 5.

50. *Ereunetes pusillus* L. — 1 ♀, Pa., Panama viejo, Febr. 26; 1 ♀, Nic., San Juan del Norte, Nov. 9.

51. *Totanus flavipes* GM. — 1 ♀, C. R., Talamanca, Estrella, Sept. 20; 1 ♀, Nic., San Juan del Norte, Oct. 26.

52. *Helodromas solitarius solitarius* WILS. — 1 ♀, C. R., Siquirres, Caño Secco, Oct. 1.

53. *Actitis macularia* L. — 1 ♂, Pa., Culebra, March 12; 1 ♀, C. R., Siquirres, April 24; 1 ♂ (U. Z. M.), same locality, Oct. 4.

The specimen from Panama is moulting, that from Siquirres in April in breeding plumage, the October specimen in winter plumage.

54. *Aegialitis collaris* VIEILL. — 1 ♂, Nic., Rio Menco, Febr. 20.

55. *Himantopus mexicanus* MÜLL. — 1 ♀ (U. Z. M.), Nic., Rio Menco, Febr. 20.

56. *Jacana spinosa* L. — 1 ♀, Nic., San Juan del Norte, Nov. 3; 1 ♀, 1 ♀ young (U. Z. M.), same locality, Oct. 26;

1 ♂, Nic., G. Granada; 1 ♀ (U. Z. M.), Nic., Ch. San Carlos, Dec. 5.

Common at Laguna S:ta Rosa, Ometepe Island.

57. *Parra nigra* GM. — 1 ♀, young, Pa., Pacora, March 3.

58. *Rynchops melanura intermedia* subsp. nov. — 1 ♂, Nic., Harbour Head, Ch. San Juan del Norte, Nov. 22 (type).

*Syn. Rynchops melanura* SAUNDERS. Cat. Birds Brit. Mus. XXV. p. 156. part. (Cozumel I., off Yucatan.)

*Rynchops nigra cinerascens?* BERLEPSCH and HARTERT. Nov. Zool. IX. 1902, p. 132 (Venezuela, Caicara).

*R. melanura similis*, sed rectricibus latius albido limbatis, secundariis intus et ad apicem late albis. Al. 405,5; caud. 126; culm. 80; gonys 110; tarsus 37,5; digit. med. cum ung. 32,5 mm.

By comparing the present specimen with the American species of the genus *Rynchops*, I have arrived at the result, that this specimen is to be characterized as a new form of *Rynchops*, coming evidently nearest to *R. melanura* SW. This subspecies, named by me *R. melanura intermedia*, includes also the specimens, differing from true *melanura*, quoted above, and is easily distinguished by the following combination of characters.

Under wing-coverts smoky grey; rectrices dark umber-brown on the upper surface, their white edges wider than in *R. melanura*, being about 2 mm broad. The white tips on the secondaries are also considerably wider, reaching 15 mm.

»Iris blackish brown.»

Concerning the distribution of this subspecies, nothing is positively to be stated from the three known localities, even if it may easily be supposed, that it deals with a northern form of *R. melanura*.

59. *Chloroenas rufina pallidicrissa* CHUBB. — 1 ♂, Nic., San Juan del Norte, March 24.

60. *Oenoenas nigrirostris* SCL. — 1 ♂, 1 ♀, C. R., Talamanca, Bitéi, Sept. 15; 1 ♀, juv., C. R., Caño Secco, Sept. 29; 1 ♀, Nic., San Juan del Norte, Nov. 6.

CARRIKER (l. c. page 395) described the Costa Rica birds as belonging to a separate subspecies, *Oe. nigrirostris brunneicauda*, differing from true *nigrirostris* »in its smaller size, deeper vinaceous tint of under parts, in having the under tail-coverts concolour with the abdomen. True *nigrirostris* from British Honduras has the tail decidedly sooty grayish, while the coverts are bluish slate, tipped with bluish vinaceous. In Costa Rica birds there is only a slight amount of bluish at the base of the feathers, or none. The Costa Rica birds have the basal two-thirds of the inner web of three outer rectrices bright russet-brown, while in true *nigrirostris* there is only a trace of brown. The new form has the upper parts paler and more olive-brown and the pileum brighter with no trace of purplish.»

Mr. C. gives the following measurements:

*C. nigrirostris nigrirostris*: male, wing 161; tail 129.

*C. nigrirostris brunneicauda*: male, wing 155; tail 123.

Mr. RIDGWAY remarks (l. c. page 329) about the variation of *Oe. nigrirostris*, that there is a tendency among more southern examples to a more brownish tone of coloration, but that the difference is far from being sufficiently constant to warrant their subspecific separation.

Of course, a great material is necessary to decide, if there is a distinct difference between the Costa Rica birds and those from other localities, in particular if such a variable character as the coloration essentially is regarded.

Dr. CARRIKER unfortunately gives no informations about the greatness of the material, upon which he bases his conclusions. He only states, that the collection of the Carnegie Museum contains four skins.

The three specimens collected by Dr. BOVALLIUS are naturally not sufficient for a critical examination; while, however, the two birds from Costa Rica do not at all show any distinct difference from the Nicaraguan one, I think it may be of some interest to point out their relations in the critical characters.

♂, Costa Rica, Bitéi. Under tail-coverts concolor with the abdomen.

♀, Costa Rica, Bitéi. Under tail-coverts bluish slate, tipped with bluish vinaceous.

♀, Nicaragua, San Juan del Norte. Under tail-coverts concolour with the abdomen.

The under surface of the remiges shows in the Costa Rica specimens a somewhat brighter tone of brown colour on the inner web of some of the feathers, than in the specimen from Nicaragua, most of the feathers are, however, alike.

Measurements:

Specimen	Wing	Tail	Culmen	Tarsus	Middle toe with claw
♂. Costa Rica . . .	159	121	14,5	22,5	33,5
♀. » » . . .	165	129	14	22,5	34
♀. Nicaragua . . .	155,5	120	12	21	30

It is thus impossible to state according to Mr. CARRIKER'S description any subspecific difference in the present specimens, neither concerning the coloration, nor the size.

The young has a transitory dress, intermediate between that the adult bird and the first plumage. The general colour agrees with that of the mature bird, but the colour of the neck and chest has a softer tone, being slate-bluish on the head, where the feathers are margined with rusty brown. There are also traces of a similar margination of rusty brown to be seen on the sides of the chest and on the under wing- and tail-coverts.

61. *Zenaidura macroura carolinensis* L. — 1 ♂, Nic., Rio Ometepe, Muyogalpa, Jan. 6.

62. *Leptotila verreauxi nuttingi* RIDGWAY. — 1 ♂, Nic., Ometepe, the Volcano, 700 feet, Jan. 3. »Iris golden yellow.»

As remarked by RIDGWAY, the coloration of the under surface of the inner webs of the remiges is intermediate between *L. verreauxi* and *L. fulviventris*.

Measurements:

Wing 148; tail 122; culmen 17; tarsus 30,5; middle toe without claw 25,7.

63. *Melopelia asiatica asiatica* L. — 1 ♀, Nic., Rio Ometepe, Muyogalpa, Jan. 2.

64. *Chaemepelia passerina neglecta* CARRIKER. — 2 ♀♀, Nic., G. Granada, Dec. 27; 1 ♀, Nic., Rio Ometepe, Muyogalpa, no date.

65. *Chaemepelia rufipennis rufipennis* BP. — 1 ♂, 1 ♀, Nic., G. Masaya, Dec. 18.

66. *Scardafella inca* LESS. — 1 ♀, Nic., G. Granada, Dec. 27; 1 ♂, juv., Nic., G. Masaya, Dec. 12.

Iris light red (♀) or light yellow (♂ juv.), as noted on labels.

SALVIN and GODMAN remark about the young: »juv. adultis similis, sed magis brunnescens — —».

In the present specimen this prevalence of brown is easily to be seen with regard to the cinnamon colour of the wing. While the primaries of the female specimen have the apical half of the outer web more or less dark brown, or at least (on the proximal primaries) edged with this colour, the five distal primaries of the young are distinctly edged with cinnamon outside the brown on the outer web; on the other primaries the cinnamon colour is prevailing on both webs, the feathers only being tipped with dull brown.

67. *Coccyzus minor minor* GM. — 1 ♀ (U. Z. M.), Nic., San Juan del Norte, March 15.

68. *Crotophaga sulcirostris* SWAINS. — 1 ♂, C. R., Siquirres, no date; 1 ♀, Nic., G. Granada, Dec. 27.

69. *Tapera naevia excellens* SCLATER. — 1 ♂, Pa., Rio Caymito, June 8.

70. *Morococcyx erythropygus erythropygus* LESS. — 1 ♂, Nic., G. Masaya, Dec. 16.

71. *Piaya cayana thermophila* SCLATER. — 1 ♂, Pa., Cerro di Ancon, May 22; 1 ♀, C. R., Talamanca, Sipurio, Sept. 4.

72. *Ara macao* L. — 1 skull, C. R. Punta Arenas, no date; 1 sp., no sex, Nic., G. Zapatera, Febr. 10.



Of this Macaw a flock was seen in a dense palm-grove near Punta Arenas, two specimens were shot at the hacienda Ciruela in the vicinity. It was common at Sipurio, C R. Also observed at Rio San Juan in the vicinity of Rio Pocosal.

73. *Pionus senilis* SPIX. — 1 ♂, Nic., San Juan del Norte, Nov. 8.

74. *Amazona albifrons nana* MILLER. — 1 ♂, Nic., G. Masaya, Dec. 15; 1 ♀, imm., Nic., Ometepe, Laguna S:ta Rosa, Jan. 7; 1 ♂ (U. Z. M.), Nic., G. Masaya, Dec. 14.

The immature female has the white colour on forehead restricted to a narrow line at the base of the bill, the remainder of the forehead being greenish blue.

75. *Amazona auropalliata* LESS. — 1 ♂, Nic., G. Zapatera, Febr. 16.

76. *Brotogeris jugularis* MÜLLER. — 1 ♂, Nic., G. Granada, Dec. 22.

77. *Eupsittula canicularis* L. — 1 ♂, 1 ♂ (U. Z. M.), 1 ♀, Nic., G. Granada, Dec. 26; 1 ♀, Nic., G. Masaya, Dec. 14. »Iris enamel-withe.»

78. *Aratinga finschi* SALVIN. — 1 ♂, 1 ♀, C. R., Siquirres, Aug. 20.

79. *Momotus subrufescens conexus* THAYER and BANGS. — 1 sp., Pa., Rio Caymito, June 3.

80. *Momotus lessonii lessonii* LESS. — 1 ♀ (U. Z. M.), Nic., G. Granada, Dec. 25.

81. *Streptoceryle torquata torquata* L. — 1 ♂, Nic. Ometepe, Laguna S:ta Rosa, Jan. 7; 1 ♂, Nic., G. Granada, Dec. 23. »Iris dark-brown to blackish brown.»

82. *Chloroceryle amazona* LATH. — 2 ♀♀, Nic., San Juan del Norte, Oct. 26 and Nov. 18; 1 ♀, Nic., R. Ometepe, Muyogalpa, Jan. 1; 1 ♀, Nic., R. Ometepe, Punta San Roque, Jan. 6.

83. *Chloroceryle americana isthmica* GOLDMAN. — 1 ♂, 1 ♀, Pa., Pacora, March 2 and 3; 1 ♂, C. R., Siquirres, no date; 1 ♀, C. R., Talamanca, Bitéi, Sept. 16; 1 ♂, Nic., R. Ometepe, Caño Verde, Jan. 6.

84. *Pulsatrix perspicillata saturata* RIDGWAY. — 1 ♂, Nic., G. Los Isletoz, I. de Vela, Febr. 6.

85. *Lophostrix stricklandi* SCL. et SALVIN. — 1 ♀, C. R., Talamanca, Sipurio, Aug. 28.

86. *Tyto perlata guatemalae* RIDGWAY. — 1 ♀, Nic., R. Ometepe, Muyogalpa, Jan. 17.

87. *Stenopsis cayennensis albicauda* LAWR. — 1 ♀, C. R., Talamanca, Sipurio, Aug. 30.

88. *Phaethornis longirostris cephalus* BOURC. et MULS. — 1 ♂, C. R., Talamanca, Bitéi, Sept. 16.

89. *Threnetes ruckeri* BOURC. — 1 ♀, Nic., San Juan del Norte, Oct. 19.

90. *Amizilis tzacatl tzacatl* DE LA LLAVE. — 3 ♂♂, Nic., San Juan del Norte, Oct. 18, Nov. 10 and 11.

91. *Amizilis rutila rutila* DEL. — 1 ♂, Nic., G. Masaya, Dec. 12; 1 sp., Nic., G. Granada, Febr. 7.

92. *Anthracothorax prevostii gracilirostris* RIDGWAY. — 1 sp., Nic., G. Granada, no date.

93. *Polyerata amabilis* GOULD. — 1 ♂, C. R., Talamanca, Bitéi, no date.

94. *Thalurania colombica venusta* GOULD. — 1 ♂, C. R., Talamanca, Sipurio, Sept. 5; 1 ♀, C. R., Talamanca, Bitéi, Sept. 14.

95. *Florisuga mellivora* L. — 1 ♀ (U. Z. M.), Nic., San Juan del Norte, Oct. 26.

96. *Curucujus massena* GOULD. — 1 ♂, C. R., Talamanca, Bitéi, Sept. 15; 4 ♂♂, 2 ♀♀, Nic., San Juan del

Norte, March 20—30, April 4—5, Nov. 4; 1 ♂ (U. Z. M.), same locality, April 4.

»Iris light yellow (♀). light yellow, light red, brown (♂).»

97. *Curucujus melanurus macrourus* GOULD. — 1 ♂, Pa., Pacora, March 4.

98. *Trogon melanocephalus illætabilis* BANGS. — 1 ♂. Nic., R. Ometepe, Muyogalpa, Jan. 6; 1 ♂, Nic., G. Los Isletoz, I. de Vela, Febr. 8; 2 ♂♂, Nic., G. Granada, Dec. 21 and 25.

Mr. BANGS (Proc. Biol. Soc. Wash. XXII, 1909, p. 30) separated the Costa Rica birds from the northern ones. He also remarks, that specimens from western Nicaragua appear to be quite the same as those from Costa Rica, distinguished from true *T. melanocephalus* by a paler and grayer colour of head, throat and chest (dark gray-slate to blackish slate instead of black in adult male), averaging slightly larger size and slightly heavier bill.

As to the colour of the adult male Mr. RIDGWAY, however, states (Birds North Middle Am. V, 1911, p. 756) not only uniform black as the characteristic colour of the northern form, but also slate black. He describes the male of the southern form as »more slaty, slightly larger». From this it seems very difficult to settle some distinct difference with regard to the coloration of the males of the two forms.

Unfortunately no specimens of this Trogon were collected by Dr. BOVALLIUS in eastern Nicaragua, and the only ones in the collections of the Swedish State Museum is a pair (♂, ♀) from Honduras. They are, however, immature birds.

To judge from the present specimens, I cannot help suspecting, that it may be a direct connection between the intensity of the black colour and the developing of the coloration on the whole. The richest coloured specimen is that from Ometepe. The back is very strongly intermixed with violet, the upper tailcoverts are rich violet with a purplish gloss. Head, neck and chest are dark slate black. The second is the bird from G. Granada <sup>95/12</sup>. In this specimen as well, there is a distinct mixing with violet on the whole back, although not so strong as in the preceding specimen, the upper tail-coverts are more bluish

violet. Head, throat and chest are a little more slaty. In the remaining two specimens, which have the back more greenish and the upper tail-coverts more bluish, the black colour is a very pronounced slaty one. Perhaps this difference is to be referred to different ages of the birds? In the immature specimens from Honduras the mentioned colour is slaty-black.

The measurements of the specimens of this collection are as follows:

Specimen	Wing	Tail	Tarsus	Culmen
Granada <sup>21/12</sup> . . . . .	154	158	14	21
» <sup>25/12</sup> . . . . .	147	141	14	20,5
I. de Vela . . . . .	146	152	15	20
Ometepe . . . . .	144,5	148	15	21

In the following I have quoted as well these measurements as those recorded by BANGS and RIDGWAY, to see if there is to be found any distinct and reliable difference in size between the northern and southern specimens:

*T. melanocephalus melanocephalus* (36 ♂♂): wing 146,5—130 (136,7); tail 165—133 (143,8); tarsus 15—13 (13,9); culmen 21,5—18 (20).

*T. melanocephalus illaetabilis* (29 ♂♂): wing 154—132,5 (145,1); tail 158,5—134 (147,2); tarsus 15—13,5 (14,5); culmen 24—19,5 (21,3).

A comparison between these measurements gives according to my opinion no sufficient reason for a separation in two subspecies, because, if in the northern form as well the male can have the head slate-black, there remains only the difference in size, that should be of a decisive value.

The quoted measurements prove, however, that the southern birds (*T. m. illaetabilis*) in their minimi-measurements only are some few millimeter larger than the northern ones (*T. m. melanocephalus*) resp.

Considering the extensive width of variation of this species, we can scarcely regard the obtained average values

as absolutely correct, as the distribution of the measured birds within the range of variation may easily enough be only a chance, when the material is not greater.

I am inclined to think, that the southern birds certainly show a tendency to a larger size and a more slaty colour of head, throat and chest than the northern ones, but that it is impossible to determine a distinct limit between them, because they blend into each other.

As I have not had the opportunity of comparing a sufficient material, I have to leave the question open with these remarks, until additional material can decide it definitely one way or the other.

99. *Trogonurus curucui tenellus* CAB. — 1 ♂, Nic., San Juan del Norte, Nov. 4.

100. *Galbula melanogenia* SCL. — 1 ♂, C. R., Talamanca, Sipurio, Sept. 6; 1 ♀, C. R., Siquirres, Caño Secco, Sept. 30; 1 ♂, Nic., San Juan del Norte, March 16.

101. *Monasa grandior* SCL. et SALVIN. — 1 ♂, 1 ♀, C. R., Siquirres, Sept. 25.

102. *Ramphastos swainsoni* GOULD. — 1 ♂, C. R., Siquirres, Sept. 25. »Iris greyish brown.»

103. *Ramphastos piscivorus brevicarinatus* GOULD. — 1 ♂, C. R., Talamanca, Sipurio, Sept. 4; 1 ♂, skull, Nic., Zapatera, no date.

The skull from Zapatera is of a large specimen, having the culmen 150 mm.

104. *Pteroglossus torquatus torquatus* GM. — 1 ♀, Nic., G. Zapatera, April 16.

The present specimen has the feathers on the upper parts of the head tipped with brownish, giving these parts a brownish tint. The pattern of the bill is sharply defined.

105. *Celeus castaneus* WAGL. — 1 ♂ (U. Z. M.), C. R., Siquirres, Caño Secco, Aug. 18.

106. *Centurus subelegans wagleri* SALV. et GODM. — 1 ♂, Pa., Pacora, March 3.

107. *Centurus hoffmanni* CAB. — 3 ♂♂, 1 ♀, Nic., G. Granada, Dec. 24 to 28; 1 ♀ (U. Z. M.), same locality, Dec. 22; 6 ♂♂, 3 ♀♀, Nic., G. Masaya, Dec. 14 to 18; 1 ♂ (U. Z. M.), same locality, Dec. 18.

»Iris yellowish brown.»

The average measurements of the males are larger than those recorded by RIDGWAY from three adult males from Nicaragua (Birds North Middle Am. VI, 1914, p. 77). I have found the following dimensions:

*Nine adult males from Nicaragua:* wing 127—121 (123,9); tail 65,5—59 (62,7); culmen 30—25 (27,1); tarsus 21,5—19 (20,6); outer anterior toe 20,5—17 (18,9).<sup>1</sup>

108. *Tripsurus pucherani pucherani* MALHERBE. — 2 ♂♂, C. R., R. Castillo viejo, Nov. 29 and Dec. 3; 1 ♂, 1 ♀, C. R., Talamanca, Sipurio, Aug. 28; 1 ♂, C. R., Talamanca, Gmokol, Aug. 26; 1 ♀, Nic., San Juan del Norte, March 16. »Iris light brown.»

109. *Ceophloeus lineatus mesorhynchus* CAB. et HEINE. — 1 ♂, Pa., Pacora, March 3; 2 ♂♂, Nic., San Juan del Norte, March 21 and 26.

After a careful examination I find no reason for referring the present Nicaragua specimens to *C. l. similis*, which is stated to be the in Nicaragua occurring form of *C. lineatus*. They agree entirely with *C. l. mesorhynchus*, but differ from the present Panama specimen in their smaller size, in having the bill somewhat more dusky and the under wing-coverts and basal half of inner webs of remiges a little more buffy.

Measurements:

Specimen	Wing	Tail	Culmen	Tarsus	Outer anterior toe
♂ ad. Panama . . .	189	122	38	30	29
♂ ad. Nicaragua <sup>20/3</sup> . . .	185	119	38,5	30	28
♂ ad. » <sup>21/3</sup> . . .	175	108	39	29	24

»Iris white.»

<sup>1</sup> In the male specimen in the collection of Upsala Zoological Museum, that I later measured, I found: wing 119,5; tail 65; culmen 29; tarsus 18,5; outer anterior toe 15

110. *Scapanus guatemalensis guatemalensis* HARTL. — 1 ♀, C. R., Siquirres, Caño Secco, Aug. 7; 1 ♀, C. R., Talamanca, Bitéi, Sept. 16; 1 ♂, 1 ♀, Nic., G. Zapatera, Febr. 14 and 16; 1 ♀, Nic., San Juan del Norte, April 6.

111. *Veniliornis oleaginus sanguinolentus* SCLATER. — 1 ♂, 1 ♀, Nic., San Juan del Norte, March 26 and April 2.

112. *Rhamphocaenus rufiventris rufiventris* BP. 1 ♀, C. R., Talamanca, Sipurio, Sept. 3.

113. *Cercomacra tyrannina crepera* BANGS. — 1 ♂, C. R., Talamanca, Sipurio, no date.

114. *Erionotus punctatus atrinucha* SALV. et GODM. — 2 ♀♀, C. R., Talamanca, Sipurio, Sept. 4 and 6.

115. *Thamnophilus doliatus mexicanus* ALLEN. — 4 ♂♂, 1 ♀, Nic., San Juan del Norte, April 3, Oct. 22, Nov. 11 to 18.

116. *Taraba transandean transandean* SCLATER. — 2 ♂♂, 2 ♀♀ (one female in U. Z. M.), Nic., San Juan del Norte, March 25 to 29, Nov. 4 and 8. »Iris clear red, red, light red, purplish.»

117. *Dendrocolaptes sancti-thomae sancti-thomae* LAFR. — 1 ♂, Nic., San Juan del Norte, Nov. 8.

118. *Xiphorhynchus nanus costaricensis* RIDGWAY. — 1 ♂, C. R., Talamanca, Sipurio, Sept. 4.

119. *Xiphorhynchus lachrymosus lachrymosus* LAWR. — 1 ♂, C. R., Talamanca, Sipurio, Aug. 28. »Iris brown.»

120. *Xenops genibarbis mexicanus* SCLATER. — 1 ♂, Nic., San Juan del Norte, March 29.

121. *Synallaxis pudica nigrofumosa* LAWR. — 1 ♀, Nic., San Juan del Norte, March 31; 2 ♀♀, Nic., R. Castillo viejo, Dec. 3. »Iris light brown to light red.»

122. *Querula purpurata* MÜLLER. — 1 ♀, C. R., Talamanca, Sipurio, Sept. 11; 1 ♀ (U. Z. M.), C. R., Siquirres, Caño Secco, Aug. 11.

123. *Lathria unirufa clara* RIDGWAY. — 1 ♀, C. R., Siquirres, Sept. 27.

124. *Carpodectes nitidus* SALVIN. — 1 ♂, 1 unsexed, C. R., Pacuarito, Aug. 23; 1 unsexed (U. Z. M.), same locality, Aug. 19.

The Snowy Cotinga, »Paloma blanca», was said to be very rare in the vicinity of Pacuare, the inhabitants declared it to appear »only every five years». It kept in the tops of the highest trees and was extremely shy.

Four specimens (three by Dr. BOVALLIUS himself) of this bird were shot at Pacuarito, a tributary of Pacuare River. They were feeding in »a tree, that bore a large quantity of small bluish red, berry-like fruit». (Cfr. CARRIKER, l. c., page 675.)

125. *Pachyrhamphus cinnamomeus* LAWR. — 1 ♀, C. R., Siquirres, Sept. 30; 1 ♀, Nic., San Juan del Norte, April 3.

126. *Tityra semifasciata costaricensis* RIDGWAY. — 1 ♂, C. R., Pacuarito, Aug. 23; 1 ♂ (U. Z. M.), same locality, Aug. 28; 1 ♂, 2 ♀♀, Nic., San Juan del Norte, March 31 and April 9; 1 ♂, Nic., Ometepe, the Volcano, 200 feet, Febr. 1; 1 ♀, Nic., R. Ometepe, Muyogalpa, Jan. 1.

127. *Cephalopterus glabricollis* GOULD. — 1 ♂ (U. Z. M.), C. R., Siquirres, Caño Secco, no date; 1 ♀ (U. Z. M.), same locality, Aug. 21.

128. *Manacus candei* PARZ. — 10 ♂♂ (one in the coll. U. Z. M.), 2 ♀♀, Nic., San Juan del Norte, March 15 to 30, Oct. 28, Nov. 16 to 19.

129. *Chiroprion lanceolata* WAGL. — 1 ♂, Pa., Cerro di Ancon, March 22.

130. *Copurus leuconotus* LAFR. — 1 ♂, 1 ♀, C. R., Talamanca, Sipurio, Aug. 28 and 31.



The elongated middle rectrices attain in the male specimen 178 mm; the wing being in the same one 76,5 mm.

131. *Pipromorpha assimilis dyscola* BANGS. — 1 ♂, Nic., San Juan del Norte, Oct. 27.

Compared with a Mexican specimen of *P. a. assimilis* the present one is easily recognized as belonging to the southern subspecies *P. a. dyscola* by its smaller size and paler under surface.

Measurements:

Wing 58,5; tail 45,5; culmen 11,5; tarsus 14,5; middle toe without claw 9 mm. »Iris brown.»

132. *Myiozetetes cayanensis cayanensis* LIN. — 1 ♂, Pa., Pacora, March 3.

133. *Myiozetetes texensis texensis* GIRAUD. — 1 ♀, C. R., Siquirres, no date; 1 ♀, Nic., G. Masaya, Dec. 17; 1 unsexed, Nic., R. Castillo viejo, no date; 3 ♂♂, Nic., San Juan del Norte, Nov. 3 and 6.

»Iris grayish brown, reddish brown or brown.»

134. *Myiozetetes texensis columbianus* CAB. et HEINE. — 1 ♀, Pa., Panama Viejo, Febr. 26; 1 ♀, young, Pa., Pacora, March 3.

The coloration of the young is similar to that of the adult, except that the edgings on the remiges are pale russet. Only the head is remarkably different. In the young the superciliary stripes are still not developed, only the pre-frontal region is at the base of the bill and laterally to the upper eyelids dull white. Pileum with the gray feathers intermixed with olive-green ones, and without red on crown.

135. *Myiodynastes maculatus nobilis* SCLATER. — 1 ♂, Pa., Pacora, March 3.

136. *Megarhynchus pitangua mexicanus* LAFR. — 1 ♀, C. R., Siquirres, Aug. 21; 1 ♂, young, C. R., Talamanca, Sipurio, Aug. 30; 1 ♀, Nic., San Juan del Norte, Oct. 23.

The young has the yellow underparts much paler than the adult birds and the superciliary stripes distinctly con-

fluent on the nape. For the rest it agrees with the description of the young given by RIDGWAY (op. cit.).

137. *Pitangus sulphuratus derbianus* KAUP. — 1 ♂ (U. Z. M.), C. R., Siquirres, Caño Secco, Aug. 18.

138. *Muscivora forficata* GMELIN. — 2 ♀♀, Nic., G. Granada, Dec. 26 and 28; 1 ♀ (U. Z. M.), same locality, Dec. 21; 1 ♀, young, Nic., G. Masaya, Dec. 15; 1 ♀, young, Nic., R. Ometepe, Muyogalpa, Jan. 12.

The young ones have the upper parts light grayish brown, not suffused with pinkish; rectrices brownish, the grayish margins on the middle ones indistinct.

139. *Myiarchus brachyurus* RIDGWAY. — 1 ♂, Nic., Ometepe, the Volcano, 400 feet, Jan. 31; 1 ♂, Nic., Ometepe, the Volcano, 1,500 feet, Jan. 29; 1 ♂, Nic., G. Masaya, Dec. 17. »Iris brown.»

As BANGS (Proc. Biol. Soc. Wash. 1909, p. 34) and CARRIKER (l. c. page 694) remark, this form cannot be a subspecies of *M. nuttingi*, having practically the same range as the latter, and like the authors quoted I therefore accept NELSON's arrangement in placing it as a separate species.

Average measurements: wing 95,6 (94—98); culmen (2 specimens) 21; tarsus 20 (20—22).

140. *Myiarchus ferox panamensis* LAWR. — 1 ♀, Pa., Panama Viejo, Febr. 26; 1 ♀, Pa., Culebra, no date.

141. *Myiarchus lawrenceii nigricapillus* CAB. — 1 ♂, Nic., San Juan del Norte, Oct. 23; 1 ♀, Nic., G. Masaya, Dec. 18.

142. *Myiarchus lawrenceii bangsi* NELSON. — 4 ♂♂, C. R., Talamanca, Sipurio, Aug. 31, Sept. 1 and 3.

There are in the literature very diverging statements as to the occurrence of BANGS' Flycatcher in Costa Rica. RIDGWAY (op. cit. IV, 1907, p. 646) gives the range of it in that country as the eastern part thereof. To this CARRIKER (l. c. page 692) remarks, that all birds which he examined from the Carribean slope were typical *nigricapillus*, and that *M. l. bangsi* is found only in the extreme south-western

portion of the country, from Chiriqui up to the foot of the Dota Mountains.

I have no doubt that these varying statements depend upon the difficulty in classifying birds exhibiting intermediate characters. We must remember, that NELSON (Proc. Biol. Soc. Wash. XVII, 1904, p. 45) based his description of this subspecies only upon two examples, male and female, and these were from Panama. Of his description we therefore obtain no knowledge about the possible variation of the new form, neither concerning colour nor dimensions.

If we compare NELSON's description with that given by RIDGWAY, we shall find the latter leaving room for more aberrant individuals. NELSON characterizes the crown as intensely black in contrast to the sooty-black crown of *nigricapillus*. RIDGWAY, however, describes it (basing himself upon specimens from eastern Costa Rica and NELSON's description of two specimens from north-eastern Panama) as sooty-black to deep black in *M. l. bangsi*, dark sooty-brown to sooty-black in *M. l. nigricapillus* (specimens from Honduras, Nicaragua, northern and central Costa Rica; op. cit. p. 613 comp. with pp. 644 and 646). CARRIKER remarks, that *M. l. bangsi* can be distinguished from *M. l. nigricapillus* by the very sooty pileum, which colour is abruptly defined posteriorly.

About the colour of the back the two authors agree with each other; it is said to be greenish olive, being olive or brownish olive in *M. l. nigricapillus*. The inner webs of rectrices are in *M. l. bangsi* not at all, or slightly edged with rufous or cinnamon, in *M. l. nigricapillus* they are distinctly edged with this colour.

As to the size we shall find divergencies in the statements by NELSON and RIDGWAY.

The measurements of the type (♂ ad.) are:

wing 84; tail 81; culmen 15,5; tarsus 21.

According to RIDGWAY the measurements of six adult males from eastern Costa Rica are:

wing 79,3; tail 73,3; culmen 17,9; tarsus 18,9.

The average measurements of eight adult males of *M. l. nigricapillus* were stated by RIDGWAY as follows:

wing 80; tail 73,9; culmen 18,2; tarsus 19,6.

The measurements of *M. l. bangsi* thus show the fol-

lowing relations to those of *M. l. nigricapillus* (+ *bangsi* mm. greater, — mm. smaller than the latter).

	Wing	Tail	Culmen	Tarsus
Type specimen, ♂ ad. Panama (NELSON) . . . . .	+ 4	+ 7,1	— 2,7	+ 1,4
Six. ♂♂. E. Costa Rica (RIDGWAY) . . . . .	— 0,7	— 0,6	— 0,3	— 0,7

In consequence of the above statements, I think, that the Costa Rica birds, which RIDGWAY refers to *M. l. bangsi* must be intermediate between the latter, as characterized by NELSON, and true *M. l. nigricapillus*, but doubtless belong to the former race. I leave the question open, if NELSON's type-specimen is an extremely developed example, or if this subspecies in the southern parts of its range shows a greater divergency from *nigricapillus*, than in the northern parts. Additional researches are very desirable. The present specimens confirm my supposition. Those, which I have determined as *M. l. bangsi*, have the pileum sooty black, abruptly defined against the decidedly greenish olive back. The tail-feathers have no or nearly imperceptible edgings of an indistinct light colour on the inner webs.

The two males of *M. l. nigricapillus* from Nicaragua have the pileum clove brown, the back brownish olive and the tail-feathers very distinctly edged on the inner webs with cinnamon rufous.

The average measurements are as follows:

	Wing	Tail	Culmen	Tarsus
2 ♂♂, <i>M. l. nigricapillus</i> (Nicaragua)	82	80	17,5	19
4 ♂♂, <i>M. l. bangsi</i> (Costa Rica) . .	79,5	77,7	16,6	18,5

143. *Tyrannus tyrannus* LIN. — 1 ♂, Nic., San Juan del Norte, Oct. 29.

144. *Tyrannus melancholicus satrapa* CAB. et HEINE. — 1 ♂ (U. Z. M.), C. R., Siquirres, Aug. 12; 1 ♂, C. R.,

Talamanca, Sipurio, Sept. 3; 3 ♂♂, 4 ♀♀, Nic., San Juan del Norte, Oct. 23 and 29, Nov. 1 to 11; 2 ♂♂, Nic., G. Masaya, Dec. 17; 1 ♂, Nic., G. Granada, Dec. 28.

145. *Camptostoma imberbe* SCLATER. — 1 ♂, Nic., G. Granada, Dec. 22.

The records of the Beardless Flycatcher from the north-western portion of Costa Rica (BANGS, Proc. Biol. Soc. 1909; CARRIKER, Ann. Carn. Mus. 1910) make it probably, that this bird is a regular winter-visitor, but very likely not a common one, in western Nicaragua, although before this recorded only from Realejo (RIDGWAY, Birds N. M. Am., IV, 1907, 414).

146. *Sayornis nigricans amnicola* BANGS. — 1 ♀, C. R., Talamanca, Sept. 2.

147. *Myiochanes virens* LIN. — 2 ♂♂, C. R., Siquirres, Febr. 26, Sept. 30; 1 ♂, Nic., San Juan del Norte, April 9.

148. *Calocitta formosa azurea* NELSON. — 1 ♀, Nic., G. Masaya, Dec. 14; 1 ♂, 1 ♀ (U. Z. M.), 1 skull, Nic., R. Ometepe, Muyogalpa, Jan. 9, 6 and 12; 1 skull, Ometepe, no locality or date. »Iris brown.»

At his visit in the Ometepe Island in January, Dr. BOVALLIUS found the »Uraccas» breeding and having eggs in their nests. He also states their occurrence high on the Volcano, where they frequented the numerous with a dense vegetation covered ravines.

149. *Psilorhinus mexicanus cyanogenys* SHARPE. — 1 ♂, C. R., Talamanca, Sipurio, Sept. 6. »Iris blackish brown.»

150. *Cyanocorax affinis zeledoni* RIDGWAY. — 1 ♀, Pa., Pueblo Nuevo, June 13; 1 ♀, C. R., Talamanca, Sipurio, Sept. 5.

151. *Gymnostinops montezuma* LESS. — 1 ♂, C. R., Talamanca, Sipurio, Aug. 28; 1 ♀, Nic., G. Granada, Dec. 21; 1 ♂ (U. Z. M.), Nic., G. Los Isletoz, I. de Vela, Febr. 7.

152. *Cacicus flavicrissus vitellinus* LAWR. — 4 ♂♂, 2 ♀♀, Pa., Pacora, Febr. 3 and 4, March 3.

This northern form has been placed differently in relation to the southern *C. flavicrissus* SCL. from western Ecuador. Some authors found them unseparable from each other, others have placed the birds from Colombia and Panama as a distinct species (cfr. SALVIN and GODMAN, Biol. Centr. Am. Aves, I, 1886, p. 441). RIDGWAY follows (Birds N. M. Am. II, 1902, p. 188) the latter way of arrangement (adopted by SHARPE, Hand-List, V, 1909, p. 486) and says the northern birds quite distinct from *C. flavidicrissus*, at least sub-specifically, in being decidedly larger and having the yellow patch on the wing conspicuously smaller. Unfortunately I have no specimens from Ecuador for comparison, but as to the size the present examples from Panama entirely agree with those measured by RIDGWAY and belonging to *C. vittellinus*.

I can, however, not find any sufficient reason for separating these forms as two species on account of the differences stated by RIDGWAY, but far more, with regard to their distribution, it seems to me most convenient to indicate them as subspecies, *C. flavicrissus flavicrissus* SCLATER inhabiting Ecuador to western Peru, and *C. flavicrissus vittellinus* LAWRENCE from Colombia and Panama.

153. *Cacicus microrhynchus* SCL. et SALVIN. — 1 ♂, C. R., Talamanca, Sipurio, Sept. 5.

154. *Amblycercus holosericeus* LICHT. — 2 ♂♂, 1 ♀, Nic., San Juan del Norte, March 29, Oct. 18, Nov. 1; 1 ♀ (U. Z. M.), same locality, March 22.

155. *Agelaius phoeniceus sonoriensis* RIDGWAY. — 2 ♂♂, Nic., Rio Menco, Febr. 20. »Iris brown.»

As Dr. BOVALLIUS collected no females and only these two males of the Red-wing, it is naturally almost impossible to decide with absolute certainty, to which subspecies of *A. phoeniceus* these birds are to be referred.

RIDGWAY states (op. cit. II, 1902, p. 335) *A. ph. richmondi* NELSON to be the only subspecies, that extends its winter-range to Nicaragua and Costa Rica, and refers to this the birds from San Carlos and Rio Frio, mentioned by RICHMOND (Proc. U. S. Nat. Mus. XVI, 1893, p. 496) as *A. phoeniceus*.

As to the Costa Rica specimens, CARRIKER (l. c. page 826) found them not agreeing with *A. ph. richmondi*, but nearer to *A. ph. sonoriensis*, or intermediate between these two forms.

The present specimens from Rio Menco are larger than true *A. ph. richmondi*, and it seems to me most correct to refer them to *A. ph. sonoriensis*.

Measurements:

	Wing	Tail	Culmen	Tarsus
♂, A.	122	97	23	31,5
♂, B.	125	102	?	29,5

156. *Leistes militaris* LIN. — 1 ♂, Pa., Pacora, March 2.

157. *Icterus galbula* LIN. — 1 ♀, Nic., G. Masaya, Dec. 14.

158. *Icterus spurius* LIN. — 1 ♂, C. R., Talamanca, Sipurio, no date; 1 ♀ (U. Z. M.), Nic., San Juan del Norte, March 22; 1 ♂, Nic., R. Castillo viejo, Dec. 3; 1 ♂, Nic., G. Masaya, Dec. 14.

159. *Icterus prothemelas* STRICKLAND. — 1 ♂, young (U. Z. M.), C. R., Siquirres, Caño Secco, Aug. 19; 1 ♀, young, C. R., Talamanca, Sipurio, Sept. 4.

160. *Icterus mesomelas salvinii* CASSIN. — 1 ♂, C. R., Siquirres, Aug. 22; 1 ♀, C. R., Talamanca, Sipurio, Sept. 3; 2 ♂♂, 4 ♀♀, Nic., San Juan del Norte, March 15 and 25, April 1, Nov. 4 and 19. »Iris dark brown.»

161. *Megaquiscalus major macrourus* SWAINS. — 1 ♂, Pa., Pacora, March 4.

162. *Megaquiscalus nicaraguensis* SALVIN et GODM. — 1 ♂ (U. Z. M.), Nic., Ch. San Carlos, Dec. 5; 1 ♂, 1 ♀, Nic., G. Granada, Dec. 29 and 26. »Iris withish-yellow (not. on male), grayish-yellow (not. on female).»

This Grackle seems to be peculiar to the western lake-district of Nicaragua, having been recorded before from Mo-

motombo and Managua and stated by RICHMOND as very likely seen by him at San Carlos, where it was »mingling with the above species (*Dolichonyx oryzivorus* L.) at the wharf and along the lake shore».

As to the colour the present specimens agree with the descriptions given by SALVIN and GODMAN, and by RIDGWAY, except in the under-parts of the female. Only the chin and the throat are dirty white; the rest of the under-parts of a cinnamon-buff colour, clearest on the malar region, foreneck and breast, gradually passing into the brown of the flanks and under tailcoverts, the latter indistinctly tipped with paler.

The measurements are as follows:

	Wing	Tail	Culmen	Depth of culmen at base	Tarsus	Middle toe
♂, San Carlos	132,5	136	33,75	10	37	—
♂, G. Granada	124	131	—	9	35,2	28
♀, G. Granada	103	103	25	7,5	31,5	22,5

163. *Callothrus robustus* CAB. — 1 ♀, Nic., G. Granada, Dec. 26.

164. *Cyanospiza ciris* LIN. — 1 ♂, Nic., G. Masaya, Dec. 18.

165. *Sporophila corvina* SCLATER. — 3 ♂♂, C. R., Talamanca, Sipurio, Sept. 3 and 6; 1 ♂ ad., 1 ♂ juv., 2 ♀♀. Nic., San Juan del Norte, Oct. 25 and 28, Nov. 11. »Iris brown or blackish brown.»

166. *Sporophila morelleti* BP. — 1 ♂, C. R., Talamanca, Sipurio, Sept. 6. »Iris brown.»

167. *Cyanocompsa concreta cyanescens* RIDGWAY. — 1 ♂ ad., 1 ♂ imm., C. R., Talamanca, Sipurio, Sept. 6 and Aug. 28; 1 ♀ (U. Z. M.), Siquirres, Caño Secco, Aug. 14. »Iris brown.»



168. *Aimophila ruficauda ruficauda* BP. — 1 ♂, Nic., G. Masaya, Dec. 16; 1 ♂ (U. Z. M.), same locality, Dec. 17; 1 ♂, Nic., G. Granada, Dec. 21. »Iris reddish brown.»

169. *Spiza americana* GM. — 1 ♂, young, Nic., G. Masaya, Dec. 16.

170. *Euphonia luteicapilla* CAB. — 1 ♂, imm., Pa., Pacora, March 2.

This specimen is intermediate in colour between the adult female and the adult male, having forehead and crown between lemon chrome and light cadmium, the former narrowly black along base of maxilla; lores black; sides of head, chin, throat and upper chest dark steel blue, being somewhat glossy indulin blue on sides of head; hindneck, back, scapulars, upper wing-coverts, rump and upper tail-coverts yellowish olive-green, becoming more yellow (between warbler green and pyrite yellow) on the two latter; feathers on hindneck and some of those on upper back and upper tail-coverts broadly tipped with dark steel black; remiges and rectrices dusky with yellowish olive-green edgings; under parts of body of the same colour as crown, brighter and deeper on chest, more olivaceous on flanks; under tail-coverts empire yellow.

171. *Calospiza larvata larvata* DU BUS. — 1 specimen, unsexed, C. R., Talamanca, Sipurio, August; 2 ♂♂, Nic., San Juan del Norte, March 26 and 31. »Iris brown.»

CARRIKER remarks (l. c. page 858) about the Costa Rica specimens of this bird, examined by him: »Costa Rican skins of *Tangara larvata* may be separated at a glance into two series, all from the Caribbean slope falling into one, and those from the Pacific into the other. When compared with skins from British Honduras, the Caribbean birds are found to be identical with them, agreeing also with Mexican specimens, and must therefore be true *larvata* and not *larvata fanny*, as called by Mr. RIDGWAY. I should not say that they are typical *larvata*, because they are not, but they are so much nearer that race that they may be distinguished from *fanny* at a glance. The birds doubtless intergrade in Costa Rica, several skins showing a tendency in that direction.»

In the same year as CARRIKER's above cited list appeared, Count BERLEPSCH published his »Revision der Tanagriden» (Ber. über d. V. Int. Orn.-Kongr., 1910, page 1001). In that paper Count BERLEPSCH describes the individuals occurring from Southern Honduras to Panama as a separate subspecies, *C. larvata centralis*, distinguished from *C. larvata* (from southern Mexico to Honduras) by their somewhat smaller size and paler coloration.

I think, however, that this central race must be very closely allied to the northern one, and in many cases almost impossible to distinguish. Before me I have five specimens of typical *C. larvata* from Guatemala (sex not det.), and compared with those, the Nicaraguan examples are paler than the most richly colored of the Guatemalan birds, there are, however, specimens among the latter, which agree very well with those from Nicaragua. The Costa Rica specimen on the contrary is decidedly more greenish on head, the blue colour on sides of body is paler than in the Guatemalan and Nicaraguan birds and the edgings of remiges and greater wing-coverts more restricted. As to the colour of the throat, this is in the most richly coloured Guatemalan specimens distinctly darker than in the species from Nicaragua and Costa Rica, but also in this character they intergrade, one of the birds from Guatemala being in this respect unseparable from the Nicaraguan examples. In other characters I cannot state any differences in the present material.

The length of wing is as follows:

Guatemalan sp. 75, 74, 72,5, 70,5, 70,5; Nicaraguan sp. 69,5, 66,5; Costa Rica sp. 70,5.

The corresponding measurements stated by RIDGWAY (Birds N. M. Am., II, 1902, p. 48) in birds from southern Mexico to Honduras are 68,1—72,6 (71,1) in male, 65,5—69,9 (67,8) in female. Count BERLEPSCH states for *C. l. centralis* 70 and 68<sup>1</sup>/<sub>4</sub>.

From this will be seen, that all the measurements of wing found in the southern birds lies within the limits of the range of variation of the true *C. larvata*.

I don't know the greatness of the material, upon which Count BERLEPSCH based his separation of a southern form. We must, however, remember, that it seems to be a great deal of variation in the characters in question, referable to

individual and sexual differences and perhaps also to differences in age, thus a very great material from many parts of the range must be carefully examined before the question can be solved. Until that has been done, I think it better to refer the birds from Nicaragua and Costa Rica to *C. l. larvata*, with an indication, as already remarked by CARRIKER, that *C. l. larvata* doubtless intergrades into *C. l. fanny* in the southern parts of its range.

172. *Tanagra cana diaconus* LESS. — 1 ♂, Pa., Pacora, March 3; 2 ♂♂, 2 ♀♀, Nic., San Juan del Norte, March 30, Oct. 27, Nov. 3 and 8. »Iris dark brown.»

173. *Tanagra palmarum melanoptera* SCLATER. — 1 ♀, C. R., Siquirres, Caño Secco, Oct. 2. »Iris blackish brown.»

174. *Ramphocelus passerinii* BP. — 2 ♂♂, C. R., Talamanca, Sipurio, Aug. 29 and 31; 2 ♂♂ (U. Z. M.), C. R., Siquirres, Caño Secco, Aug. 11, Oct. 1; 5 ♂♂, 15 ♀♀, Nic., San Juan del Norte, March 21 to 31, April 1 to 3, Oct. 19 and 22, Nov. 3, 16 and 21; 1 ♀ (U. Z. M.), same locality, March 20. »Iris red or reddish brown.»

175. *Ramphocelus dimidiatus isthmicus* RIDGWAY. — 2 ♂♂, Pa., Pacora, Febr. 4, March 4.

176. *Piranga rubra rubra* LIN. — 2 ♀♀, Nic., San Juan del Norte, March 23, Nov. 9; 1 ♂, Nic., G. Masaya, Dec. 16.

177. *Phoenicothera fuscicauda* CAB. — 1 ♂, 2 ♀♀, Nic., San Juan del Norte, Nov. 8, March 27 and 30. »Iris brown.»

178. *Tachyphonus delatrii* LAFR. — 1 ♂, Nic., San Juan del Norte, March 31. »Iris dark red.»

As northernmost range for the occurrence of the Tawny-crested Tanager was hitherto stated Costa Rica, where it is said by CARRIKER (l. c., p. 845) to be confined to the Caribbean foot-hills and the higher parts of the lowlands from about 500 to 2,000 feet, being on the whole a very rare bird.

The present Nicaraguan specimen is rather a great one, slightly exceeding the greatest measurements recorded by RIDGWAY (op. cit. II, 1902, p. 136), in having wing 78, tail

66,5, culmen 15,5, depth of bill at base 6,5. tarsus 19, middle toe 12,5 mm.

179. *Arremonops conirostris richmondi* RIDGWAY. — 1 ♀, C. R., Siquirres, Oct. 4; 1 sp., unsexed, C. R., Talamanca, Sipurio, Aug. 30; 6 ♂♂, 2 ♀♀, Nic., San Juan del Norte, March 13, 29, 31, April 1 and 3, Oct. 29. »Iris brown to red.»

180. *Saltator magnoides medianus* RIDGWAY. — 1 ♂, C. R., Siquirres, Sept. 26; 5 ♂♂, 2 ♀♀, Nic., San Juan del Norte, March 22 to 30, Nov. 6 and 21. »Iris grayish brown.»

181. *Iridoprocne albilinea* LAWR. — 1 ♂, Nic., Ch. San Carlos, Dec. 5; 1 ♀, Nic., R. Ometepe, Muyogalpa, Jan. 13; 1 specimen, unsexed, Nic., G. Los Isletoz, I. de Vela, Febr. 8; 1 ♂ (U. Z. M.), Nic., R. Ometepe, Chaño Verde, Jan. 21.

182. *Progne chalybea chalybea* GMELIN. — 1 ♂, Pa., Pacora, March 4.

183. *Vireosylva olivacea* LIN. — 1 ♂, Nic., San Juan del Norte, Oct. 27.

184. *Cœreba mexicana* SCLATER. — 1 ♂, Nic., San Juan del Norte, March 25. »Iris brown.»

185. *Chamæthlypis caninucha* RIDGWAY. — 1 ♂, Nic., G. Masaya, Dec. 18. »Iris dark brown.»

186. *Geothlypis semiflava bairdi* NUTTING. — 2 ♂♂, Nic., San Juan del Norte, April 3 and 5. »Iris light yellow.»

187. *Seiurus noveboracensis noveboracensis* GMELIN. — 3 ♂♂, 1 ♀, Nic., San Juan del Norte, March 15, 30 and 31, Oct. 26.

188. *Dendroica castanea* WILSON. — 1 ♂, 1 ♀, young birds, Nic., San Juan del Norte, Oct. 26 and 27.

Of this bird there are but few records from Mexico and Central America, on account of which RIDGWAY (op. cit. II, 1902, 592) presumes it to have its line of migration chiefly across the Gulf of Mexico and the Caribbean Sea to Colombia. This first meeting with the bird in Nicaragua may therefore be of some interest.

189. *Dendroica coronata* LIN. — 1 ♂, Nic., San Juan del Norte, March 22.
190. *Dendroica æstiva sonorana* BREWSTER. — 1 ♂, Nic., San Juan del Norte, Nov. 16. »Iris black.»
191. *Euthlypis lacrymosa lacrymosa* CAB. — 1 ♀, Nic., R. Ometepe, the Volcano, 1,500 feet, Jan. 29. »Iris brownish red.»
192. *Basileuterus semicervinus leucopygius* SCL. et SALVIN. — 1 ♂, C. R., Siquirres, Sept. 24. »Iris brown.»
193. *Pheugopedius atrogularis* SALVIN. — 4 ♂♂, Nic., San Juan del Norte, March 23, 27, April 2, Nov. 23. »Iris reddish brown.»
194. *Thryophilus castaneus costaricensis* SHARPE. — 1 ♀ (U. Z. M.), Siquirres, Caño Secco, August; 1 ♀, C. R., Siquirres, Sept. 29; 1 ♂, Nic., San Juan del Norte, March 13.
195. *Heleodytes zonatus costaricensis* BERLEPSCH. — 2 ♀♀, C. R., Talamanca, Sipurio, Sept. 1. »Iris red.»
196. *Heleodytes capistratus capistratus* LESS. — 2 ♂♂, 1 ♀, Nic., G. Masaya, Dec. 17 and 18. »Iris red.»
197. *Polioptila superciliaris superciliaris* LAWR. — 1 ♂, Nic., San Juan del Norte, Nov. 16. »Iris grayish brown.»
198. *Planesticus grayi casius* BP. — 2 ♂♂, Pa., Pacora, March 3 and 4; 1 ♂, 1 ♀, Nic., San Juan del Norte, April 3, Oct. 24; 1 ♂, 1 ♀, Nic., G. Masaya, Dec. 15 and 18.
199. *Galeoscoptes carolinensis* LIN. — 6 ♂♂, 6 ♀♀, Nic., San Juan del Norte, March 13 and 22, April 2, Oct. 31, Nov. 3, 4, 6, 8, 16 and 20; 1 ♂ (U. Z. M.), same locality, April 1.



Tryckt den 31 mars 1919.