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## STUDIES OF PERUVIAN BIRDS. NO. 56 THE GENERA *EUTOXERES*, *CAMPYLOP-* *TERUS*, *EUPETOMENA*, AND *FLORISUGA*

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In the following studies, names of colors are capitalized when direct comparison has been made with Ridgway's "Color standards and color nomenclature."

### ***Eutoxeres aquila aquila* (Bourcier)**

*Trochilus Aquila* BOURCIER, 1847, Proc. Zool. Soc. London, pt. 15, p. 42—vicinity of Bogotá, Colombia.

Mouth of Río Curaray, 1 ♀.

This specimen is the first example of the present species to be taken in Perú. It agrees well with other specimens from eastern Colombia and eastern Ecuador, although it shows the minimum development of white at the tips of the rectrices with little basal extension of this mark. The dark basal coloration, however, extends well toward the tip of the feathers along the inner margin, presenting one feature of the characteristic pattern.

### ***Eutoxeres condamini condamini* (Bourcier)**

*Tr[ochilus] Condamini* BOURCIER, 1851, Compt. Rendus Acad. Sci., Paris, vol. 32, p. 187—Archidona, Ecuador; Amer. Mus. Nat. Hist.

*E[utoxeres] La Condaminei* SIMON, 1921, Histoire naturelle des Trochilidae, pp. 24, 263—*nom. emend.*

The typical form of the species reaches the north bank of the Marañón as well as the mouth of the Curaray, both in Peruvian territory, and thus may be added to the Peruvian list. The two Peruvian specimens available are inseparable from east-

Ecuadorian and southeast-Colombian specimens, including the type.

There are no earlier Peruvian records.

***Eutoxeres condamini gracilis* Berlepsch and Stolzmann**

*Eutoxeres condaminei gracilis* BERLEPSCH AND STOLZMANN, 1902, Proc. Zool. Soc. London, p. 19—Vitoc, Perú; type formerly in Warsaw Mus., now lost.

Most of the characters given by Berlepsch and Stolzmann for this subspecies are not apparent in the specimens before me. The color of the upper parts is no different from that of the typical subspecies, the light streaks of the under parts are no wider, and the outer rectrices show only an average of lighter ochraceous coloration, not adequately diagnostic. The bill, however, is definitely weaker and presents the best character for the distinction of the two forms.

Young birds of both subspecies have the usual acuteness of the rectrices that accompanies juvenility, and in addition have prominent buff or whitish tips on the feathers of the upper surface, sometimes restricted to the lower back and uropygium, sometimes involving even the top of the head. There are also white tips on the remiges, primary-coverts, and scapulars in a varying degree of development.

A female from southeastern Perú shows these characters of immaturity and in addition has the basal portion of the outer three rectrices paler than in the males (adults and young) from central Perú, and the terminal portion of these feathers and of the submedian pair more broadly white. The blackish chin spot is smaller than in any other specimen at hand, and the light streaks on the breast are somewhat broader. In view of the fact that these characters show resemblance to those postulated for *gracilis* by Berlepsch and Stolzmann, it is possible that they represent only an extreme of individual variation of that form. A series from southeastern Perú will be necessary to determine any constant differences that may exist.

Earlier Peruvian records of *gracilis* are from Huánuco, Vitoc, Garita del Sol, Amable Maria, Pumamarca, and Paltaypampa.

SPECIMENS EXAMINED

*E. c. condamini*.—

COLOMBIA:

La Morelia, 1 ♂;

“Bogotá,” 1 (?).

## ECUADOR:

Archidona, 1 (?) (type);  
 "Ecuador," 1 ♂, 2 (?).

## PERÚ:

Mouth of Río Curaray, 1 ♂;  
 mouth of Río Santiago, 1 ♂.

*E. c. gracilis*.—

## PERÚ:

Vista Alegre, 1 ♂<sup>1</sup>;  
 Huachipa, 1 ♀<sup>1</sup>;  
 Chilpes, 2 ♂;  
 Cushi Libertad, 1 ♂;  
 Santo Domingo, 1 ♀.

***Campylopterus largipennis aequatorialis* Gould**

*Campylopterus Aequatorialis* GOULD, 1861, An introduction to the Trochilidae, p. 54—neighborhood of Quito; [♀]; British Mus.

I can find no distinctions in the series of birds from the eastern face of the Andes, from southeastern Colombia to eastern Bolivia. Birds from the Rio Madeira, Brazil, are somewhat puzzling since they show intermediacy with *C. l. obscurus* of the Pará region. A single example from the left bank of the Madeira (Marmellos) is rather clearly assignable to *aequatorialis*, and a young male from Santa Isabel, above the fork of the Gy-Paraná, approaches it in respect to the whitish gray tips on the rectrices. Another male from Santa Isabel and three specimens from the right bank of the Madeira are, in my opinion, definitely closer to *obscurus* as are a single male from the right bank of the Tapajoz and three from the Tocantins. I would place the boundary between the two forms directly on the Madeira, in conflict with Hellmayr's assignment (1910, *Novitates Zool.*, vol. 17, p. 375) of all the Madeiran examples to *aequatorialis*.

The characters of paler under parts and more bluish green dorsal surface of the tail in *aequatorialis* as compared with *obscurus* are not so constant, according to the material at hand, as the longer and more whitish gray tips of the outer two or three pairs of rectrices. Even the length of these tips is not a safe criterion taken alone, since they may be as short in *aequatorialis* as in *obscurus*, although in most cases they are noticeably longer.

There is a record of the species (under the name of *obscurus*), ostensibly from Lima, published by Taczanowski (1874, *Proc. Zool. Soc. London*, p. 541; 1884, *Ornithologie du Pérou*, vol.

<sup>1</sup> Specimens in Chicago Natural History Museum.

1, p. 275). The record was queried by Berlepsch (Berlepsch and Stolzmann, 1892, Proc. Zool. Soc. London, p. 401) who obtained an admission from Taczanowksi that "Lima" (but not Perú) was erroneous. It is quite possible, however, that even Perú was not the country of origin; see account of *Phaethornis malaris ucayalii* for a similar case.

Records of *aequatorialis* are from Chayavitas, Tarapoto, Huaynapata, Marcapata, and "Upper Amazons."

#### SPECIMENS EXAMINED

##### *C. l. largipennis*.—

###### CAYENNE:

(Pied Saut and Cayenne), 4 ♂, 2 ♀, 2 (?).

###### BRITISH GUIANA:

(Kamakusa, upper Mazaruni River, Merumé Mountains, and Potaro Landing), 3 ♂, 3 ♀, 2 (?).

###### VENEZUELA:

(Mt. Auyan-tepui, Sacupana, Suapure, Nericagua, Nicaré, Solano, El Merey, junction of Río Huaynia with Casiquiare, and Caño Seco [Mt. Duida]), 16 ♂, 4 ♀.

###### BRAZIL:

(Yucabí, Tahuapunto, and Manaos), 4 ♂, 1 ♀.

###### COLOMBIA:

Río Uaupés, opposite Tahuapunto, 2 ♂, 2 ♀.

##### *C. l. obscurus*.—

###### BRAZIL:

Pará (Utinga and Prata), 4 ♂, 4 ♀;

Rio Tocantins, Mocaçuba, 3 ♂;

Rio Tapajoz, Tauary, 1 ♂;

Rio Madeira (Calamá, Alliançá, and Porto Velho), 3 ♂;

Rio Preto, Santa Isabel, 2 ♂.

##### *C. l. aequatorialis*.—

###### BRAZIL:

Rio Madeira, Marmellos, 1 ♂;

Matto Grosso, Barão Melgaço, 1 ♂.

###### BOLIVIA:

Mouth of Río San Antonio, 1 ♂;

San Agustín, 4 (?).

###### PERÚ:

Astillero, 3 ♂, 1 ♀, 1 (?);

La Merced, 3 ♂, 3 ♀;

Chuchurras, 1 ♀;

Santa Rosa, Río Ucayali, 1 ♂;

Lagarto, 1 ♂;

Pomará, 1 ♂;

mouth of Río Santiago, 1 ♀;

Pebas, 1 ♂, 1 ♀;

mouth of Río Curaray, 2 ♂.

## ECUADOR:

- Río Suno, above Avila, 3 ♂, 2 ♀;  
 lower Río Suno, 1 ♂, 1 ♀;  
 below San José, 1 ♂, 2 ♀;  
 "Napo," 2 ♂, 2 ♀, 3 (?);  
 "Ecuador," 1 [♂], 1 ♀.

## COLOMBIA:

- La Morelia, 1 ♂.

[*Campylopterus falcatus* (Swainson)]

*Trochilus falcatus* SWAINSON, 1821, Zoological illustrations, vol. 2, pl. 83—  
 "Spanish Main" = northern Venezuela.

Cabanis and Heine (1860, Museum Heineanum, vol. 3, p. 13) recorded a young male specimen of the present species (under the name *Campylopterus lazulus*) as from Perú. Berlepsch (1889, Proc. U. S. Natl. Mus., "1888," p. 560) noted a specimen in the United States National Museum similarly labeled which he considered to be a Bogotá trade-skin. It is quite possible that Cabanis and Heine's specimen had a comparable origin. No exact locality was given on either specimen, and other undoubted Bogotá-skins have come to my attention similarly and erroneously ascribed to Perú. Without an authentic record I am unwilling to include this bird in the Peruvian list although, as does *Campylopterus villaviscensio* (Bourcier), it occurs in eastern Ecuador and may reach Perú.]

***Eupetomena macroura macroura* (Gmelin)**

[*Trochilus*] *macrourus* GMELIN, 1788, Systema naturae, vol. 1, pt. 1, p. 487—  
 "Jamaica" (errore; subst. Cayenne, Hellmayr, 1929).

[*Trochilus*] *forcipatus* LATHAM, 1790, Index ornithologicus, vol. 1, p. 304—  
 "Cayana."

*Ornismya hirundinacea* LESSON, 1829, Histoire naturelle des oiseaux-mouches, pp. xii, 98, pl. 25—Brazil.

[*Eupetomena*] subsp. *mac[rura]* *prasina* SIMON, 1897, Catalogue de la famille des trochilides, p. 9—"Gui., Bras. int. (Matto Grosso)"; based on Surinam specimens (Simon, 1921); Paris Mus.

Sclater (1857, Proc. Zool. Soc. London, pt. 25, p. 263) recorded a specimen of the species collected by Bates on the Río Javarrí that forms the boundary between eastern Perú and western Brazil. There is no means of knowing from which side of the river the specimen came, and there is no other record of the species from nearer than the Río Madeira (*m. macroura*) and the Urubamba Valley (*hirundo*). The record is not cited by Salvin in

the "Catalogue of birds in the British Museum," although Sclater mentions it in his "Catalogue of a collection of American birds" (1862, p. 287) without comment. There are no other Peruvian records except of *hirundo*, so the record may be left as it stands, with a statement of the need for confirmation.

### ***Eupetomena macroura hirundo* Gould**

*E[eupetomena] hirundo* GOULD, 1875, Ann. Mag. Nat. Hist., ser. 4, vol. 16, p. 370—Huiro, 4800 feet, Valley of Santa Ana, Perú; ♂, ♀ cotypes in British Mus.

This form is separable from the other subspecies by its generally duller coloration, with a strong greenish hue on the top of the head when the specimens are held away from the light, showing less distinction from the green of the back than is present in the other forms. Since the material includes two adult males, with basally expanded shafts of the outer remiges, it is obviously not due to immaturity. As a matter of fact, the specimen with the brightest color and least greenish tone on the cap is one (not sexed) just reaching maturity, with some of the immature feathering still in place. Another female, still more immature, is, however, duller than any of the others. This bird is marked as "A Type" and is one of the specimens collected at Huiro by Whitely, from which Gould obtained his material for description. Still another Huiro bird collected by Whitely is at hand. It is not certain, however, that Gould actually had either of these specimens in his possession at the time of description; he did not comment on the number of examples used as a basis for his *hirundo*. These two birds, therefore, are possible cotypes but not certain ones.

Several authors have commented on Bolivian examples of *macroura*, in some cases referring them to *hirundo* without assurance. I have 10 examples at hand from northern Bolivia which are different enough from *hirundo* to prevent assignment to that form, and equally different from *m. macroura*. They are intermediates, it is true, but agree so well among themselves in their distinctive characters that I believe they deserve recognition as a recognizable form. Accordingly I describe them hereunder.

The only records of *hirundo* are from Huiro and Santa Ana, both represented in the material examined.

### ***Eupetomena macroura boliviana*, new subspecies**

TYPE: From Reyes, [Dept.] Beni, Bolivia, No. 479428,

American Museum of Natural History. Adult [? male], collected in August, 1895, by A. Maxwell Stuart.

DIAGNOSIS: Intermediate between *E. m. macroura* of Cayenne, Brazil (southward to Matto Grosso and São Paulo), and Paraguay, and *E. m. hirundo* of the Urubamba Valley, Perú, having the breast a little bluer, less violaceous, than *macroura* but more deeply hued than *hirundo*; top of the head more greenish blue than in *macroura*, but not so greenish as in *hirundo*, and more distinctly contrasting with the green of the back; all coloration clearer and more lustrous than in *hirundo*.

RANGE: Northwestern Bolivia on the Río Beni and possibly portions of Bolivia farther to the eastward.

DESCRIPTION OF TYPE: Top of the head (held away from the light) lustrous Sorrento Green  $\times$  Peacock Blue, becoming a little greener on the hind neck and changing to a bright, yellowish Meadow Green on the back; a prominent white patch on the sides of the middle back (spinal tract) where they are concealed when the wings are at rest; upper tail-coverts dark steel blue, with purplish outer webs on some of the feathers. Sides of the head above like the cap, passing into the Spectrum Blue of the throat and breast; belly mostly bright Cossack Green, with anal region white; under tail-coverts steel blue. Remiges brownish black with purplish lights and with a slight trace of green on the outer webs of the tertials; outermost primaries with shafts strongly expanded on the basal half; subexternal feather with slight expansion; greater upper wing-coverts like the remiges; median and primary series with outer margins green; lesser series with exposed portions green like the back; under primary-coverts dull brown; rest of under coverts green. Tail steel blue, deeply forked. Bill (in dried skin) black; feet black. Wing, 78 mm.; tail, 86; culmen, 20.5; tarsus, 5.

REMARKS: The blue colors are less greenish or approaching violaceous when the specimen is held toward the light.

Five specimens, including the type, have the shafts of the outer primaries expanded basally and presumably are males. Two others lack this expansion but have the colors about as intense as the supposed males and are probably adult females. The remainder of the series lack the expansion of the remigial shaft but have the colors dull, being obviously young birds whose sex is indeterminate. None of the specimens was sexed by the collectors.

Todd (1942, Ann. Carnegie Mus., vol. 29, p. 290) comments on two birds from the Río Quiser, Bolivia (Río Quizer, Chiquitos, on American Geographical Society map), which he found to differ from Brazilian specimens of *m. macroura* by less intense blue of the throat, which was also less extended over the breast, and by narrower and more rounded tips on the outer rectrices, with the opinion expressed that these might be characters of immaturity. A specimen from San Lorenzo River, Matto Grosso, Brazil (now before me), he found to agree best with his Bolivian birds. Simon (1921, Histoire naturelle des Trochilidae, p. 33) had already noted birds from the Río Beni, Bolivia, as intermediate between *macroura* and *hirundo*. I am unable to appreciate the supposedly lesser extension of the blue of the cap and breast in my Bolivian material (or in *hirundo*) but find much the same extent of color in all the forms, with variations due to preparation of the skins. The shape of the tips of the outer rectrices is also difficult to appraise since it is variable, although reaching the greatest extreme of sharpness in some examples of *simoni*.

Nevertheless, it is possible that east-Bolivian birds belong to the present form. The San Lorenzo River specimen, on the other hand, is not distinguishable from *m. macroura* except that it has a slight tendency to greenish coloration on the forehead. In the hue of blue on the rest of the head and on the breast it is a good *macroura*.

Simon (1897, Catalogue de la famille des trochilides, p. 9) described a supposed subspecies *prasina* from "Gui. Bras. int. (Matto-Grosso)" without specifying a type locality. Hellmayr (1929, Field Mus. Nat. Hist., zool. ser., vol. 12, p. 387) reached the conclusion that Simon had redescribed *m. macroura*, through misidentifying as that form the population which Hellmayr thereupon named *simoni*. Simon (1921, Histoire naturelle des Trochilidae, p. 33) stated that his *prasina* had been based on two specimens labeled as from Surinam; the characters he restated are those that distinguish *macroura* from *simoni*. There is no reason, therefore, not to accept Surinam as type locality of *prasina*, which makes *prasina* quite unavailable as a possible name for the form I describe above, a possibility suggested by Todd (*loc. cit.*).

#### SPECIMENS EXAMINED

*E. m. macroura*.—

"SURINAM": [=Cayenne-skin], 1 (?).

## BRAZIL:

- Amazonas (Humaythá and Santarem), 1 ♂, 2 ♀, 1 (?);  
 Matto Grosso (Chapada and San Lorenzo River), 7 ♂, 2 ♀, 1 (?);  
 Minas Gerais (Campos de Diamantina), 2 (?);  
 Goyaz (Fazenda Esperança and Goyaz), 4 ♂, 2 ♀;  
 São Paulo (Ypanemá), 2 ♂;  
 Espirito Santo, 3 (?).

## PARAGUAY:

- Zanja Morotí, 2 ♂.

*E. m. simoni*.—

## BRAZIL:

- Maranhão (Barra de Grajau), 1 ♂;  
 Ceará (Viçosa and Quixadá), 8 ♂, 1 ?♂, 1 ♀, 2 (?);  
 Piauhy (Corrente, Floriano, Gilbues, Santa Maria, and Urussuhy), 8 ♂,  
 6 (?);  
 Bahia (Barra, Santa Ritta, Morro de Chapeu, Bahia, Joazeira, and  
 "Bahia"), 14 ♂, 4 ♀, 9 (?);  
 "Rio" (? , apparently Bahia-skins), 3 (?);  
 Brazil, 1 ♀.

## NO LOCALITY, 2 (?).

*E. m. boliviana*.—

## BOLIVIA:

- Reyes, 5 [?♂] (including type), 2 [♀], 4 (?).

*E. m. hirundo*.—

## PERÚ:

- Huiro, 2 ♀;  
 Idma, 1 ♂;  
 Santa Ana, 2 ♂, 1 "?♀."

**Florisuga mellivora mellivora (Linnaeus)**

[*Trochilus*] *mellivorus* LINNAEUS, 1758, *Systema naturae*, ed. 10, vol. 1, p. 121—"India" (*errore* = Surinam); *ex* Edwards, *Natural history of uncommon birds*, p. 35, pl. 35, upper fig.

*Mellisuga surinamensis* STEPHENS, 1826, *in* Shaw, *General zoology*, vol. 14, p. 243—Surinam.

*Florisuga salli* BOUCARD, 1891, *Humming Bird*, vol. 1, p. 18—South México; ?Paris Mus.

[*Florisuga*] *guianensis* BOUCARD, 1895, *Genera of humming birds*, p. 340—Demerara and River Atapuroni, British Guiana; ?Paris Mus.

[*Florisuga*] *peruviana* BOUCARD, 1895, *Genera of humming birds*, p. 340—Ecuador and Pebas, Perú; ?Paris Mus.

*Florisuga mellivora speideli* FLOERICKE, 1920, *Mittheil. über die Vogelwelt*, vol. 19, pp. [2-4]—Colombia ?

Mouth of Río Curaray, 1 ♂, 2 ♀; Puerto Indiana, 1 "♂"  
 [= ♀], 1 ♀; Iquitos, 1 ♂, 1 ♀; Pebas, 3 ♂; Huarandosa, 3 ♂,  
 1 ♀; Yurimaguas, 1 ♂; mouth of Río Santiago, 1 ♂; Santa

Rosa (Río Ucayali), 12 ♂, 9 ♀; Yarina Cocha, 1 [ ♀ ]; Pachisa, 1 ♀; Astillero, 1 ♂; "Perú," 1 ♂.

This is one of the most widely distributed hummingbirds, ranging unchanged, apparently, from southern México to southern Perú, Bolivia, and central Brazil, and to Venezuela, the Guianas, and Trinidad. The Tobago form, *F. m. flabellifera*, averages larger (wing, tail, and bill) than the birds of the rest of the specific range, but otherwise is not distinct as far as I can determine. Specimens have been examined from Guatemala (10), Nicaragua (2), Costa Rica (19), Panamá (30), Colombia (36), Venezuela (45), Trinidad (10), British Guiana (2), Surinam (3), Cayenne (2), Brazil (26), Bolivia (5), Ecuador (15), and unspecified (4). Of *flabellifera* I have examined 19 from Tobago.

Other Peruvian records are from Jeberos, Chayavitas, Chamicuros, Callacate, Río Javarri, and "Upper Amazons."

The study of the 250 specimens from various parts of the range of *F. m. mellivora* has brought to light some interesting facts concerning the plumages that appear to have escaped previous record. Six types of plumages are in evidence, with various stages of intermediacy between some of them and not always clear distinction between females and males, demonstrating with some certainty that the females are dimorphic. The plumages are as follows:

A. Back rather dull green, with a prominent light brownish stripe from the middle of the mantle to the lower rump, with traces of brownish tips on some other feathers on head and back, particularly the upper tail-coverts; white patch on the hind neck well developed, sometimes with a brownish tinge posteriorly; top of the head greenish or dull bluish, with remains of brownish feathers that suggest a still earlier stage of more general brownish coloration. Chin, throat, and chest steel blue (sometimes varied by brownish or whitish terminal margins), forming a large patch that is bordered laterally by a broad stripe of buffy brown; sides of breast, lower breast, and flanks dull brownish; belly and under tail-coverts pure white. Three median rectrices basally white and quite narrowly tipped with white, with a subterminal, broad band of dull steel blue, more sooty proximally, and passing basad along the outer margins of the feathers; outer two pairs white, occasionally with a dark subterminal band on one or both of them, and with a dark stripe along the outer margin of the subexternal feather; subexternal feather usually longest.

B. Apparently an intermediate stage between A and C. Top of head bluish but not so deep blue as in C and D; nuchal patch variable in extent; point of chin brownish buff like the malar stripe; throat and chest blue, sometimes with whitish or brownish tips; tail as in A.

C. Whole head and upper part of the breast violaceous blue; greenish on the occiput; a few gular feathers sometimes with narrow tips of white or brownish; white nuchal patch broad and clear white; rest of upper parts shining green. A band of green across lower breast, widest laterally. Tail and under tail-coverts as in A.

D. Head and body as in C, but tail white except for a narrow terminal band of bluish black, passing basad in a narrow marginal stripe on all but the outermost feather which is usually the longest.

E. Upper surface nearly uniform green, with the white nuchal patch usually reduced and weak, sometimes strong. Point of chin white; throat and chest occupied by particolored feathers which have a rounded central spot of green or bluish color, bordered by a prominent white lunule which is followed by a narrow terminal margin of brown or blackish brown; malar stripe whitish, often with some traces of dark terminal margins; breast, sides, and flanks with dull greenish centers, drab subterminal lunules, and inconspicuous terminal edges; belly dull whitish; under tail-coverts with strong white tips, preceded by a broad, blackish, subterminal band showing a certain amount of bluish or greenish reflections. Tail largely dark green or bluish green, with a broad subterminal band of varying width and dark steel blue color, narrowly tipped with white; outermost pair largely bluish black with the white tip decidedly broader and with the basal half or so of the outer web grayish or dull whitish, at least along the outer margin, rarely continuing distad to join the white tip.

F. Similar to B but point of chin and malar stripe whitish, sometimes with dusky tips; throat and chest blue or greenish blue with remains laterally of the squamate gular markings of E; shorter tail-coverts as in E, but longer median ones as in A, B, and C—pure white. Apparently a development from E but not impossibly intermediate between E and C.

The specimen showing the most complete pattern of A is not sexed, but several males have advanced but little beyond it, indicating that A is an immature plumage of the males. One female (as sexed) is in this plumage, not complete, and there is other

evidence that this sex may have something like it, as will be mentioned below. The males, however, pass from A through B to C by what seems to be a protracted molt, losing the dorsal stripe, acquiring a more strongly green back, and getting a bluer tone on the top of the head. Traces of the malar stripe, and even of the pale-tipped feathers of the throat, when they have been present in A, persist the longest, and it is possible that C constitutes a "first winter" plumage that is worn until the next breeding season; it is not inconceivable that some young males may wear B during this period.

The change from C to D is made by molting the immature tail and acquiring rectrices of the fully adult pattern. Probably the remiges are similarly changed, but without noticeable change in pattern it is not demonstrable. I have no males marked as with enlarged gonads except in plumage D. With two exceptions, presumably wrongly sexed by the collectors, all specimens with D are sexed as males if the sex is recorded on the labels, and all the birds sexed as males, with two exceptions, fit into the series A to D.

It is in the females that diversity is most striking. Plumage E is shown by about two-thirds of all the females at hand, including individuals with various indications of immaturity (weak texture of plumage, dull colors, somewhat undeveloped bills, or even a notation of immaturity given by the collector) and others that are certainly adult, including one marked as with ovaries greatly enlarged. None of the younger examples, however, has so immature an appearance as the youngest males in plumage A. Nevertheless, I believe that E constitutes a standard female plumage that is worn by some young females and some adults. One example shows the tail molting without change of pattern. This is the plumage that has heretofore been recorded as *the* female plumage.

There are, however, some 30 specimens at hand (about one-third of all the females), sexed as females by such veteran collectors as Cherrie, Hoffmanns, the Olalla brothers, Klages, Rosenberg, Watkins, and others, that show the plumages B, C, and F, and even remains of A. It is difficult to believe that they were all erroneously sexed, especially since one B and one C are marked as with somewhat enlarged gonads, and one F has the symbol ♀ double-underlined for emphasis. I can find no indication of molt from the tail of E to the tail of F, but such change may sometimes take place; the males assuredly must change the tail of C to that

of D in the last stage of molt, although that also is not actually shown in progress in any of my material.

There is ample evidence of the development of the blue gular area of F from the squamate pattern of E, and one female in process of such change is renewing the dark-tipped feathers of the malar region and sides of the throat at the same time, suggesting that plumage F may persist, not inconceivably as a fully adult stage in some cases. One female in C also is noted as with enlarged gonads.

Three "females" are in plumage C, resembling adult males except for the tail, which is that of the immature males, and since one of the three is marked as with somewhat enlarged gonads (three males collected at the same time had greatly enlarged testes), it is evident that certain "advanced" females may reach this stage as breeding adults.

One female, as noted above, is in modified plumage A; 11 are in B, with three of them showing pale tips on the blue throat feathers but none of the quite different lunate markings of E and F; one bird is in probable B, although the malar stripe is paler and more buffy whitish than in the 11 mentioned; 10 are in F; one is in E, except that the tail is that of A, B, C, and F, just completing change from an unknown antecedent but giving a most puzzling combination.

One bird of uncertain sex is in plumage E, apparently renewing the tail of that plumage but replacing with blue the squamate pattern on the sides of the throat. One female in F has the left median rectrix as in plumage A, while the rest of the tail remains of the usual F pattern; no molt is evident. Still another of this sex has the two external left rectrices of modified adult-male type and the two right external ones modified E feathers, while the rest of the tail is that of A, B, C, or F; an obviously abnormal condition.

The general weight of evidence leads me to conclude that some females have the early stage E and progress to F; some remain in E; and perhaps some retain E with a certain amount of blue color established on the throat. On the other hand, some presumably start with A, as do the males, and pass through B to C, while others may possibly remain in B. The possession of enlarged gonads by birds in B, C, and E is significant. Whether any females starting with E reach C remains to be determined, but if F is a development from E, the further progress to C is not diffi-

cult to postulate. There is also the still smaller possibility that very "advanced" females might reach D, as intimated by the two specimens sexed as females but in full adult male plumage, which I consider as probably wrongly sexed.

The distribution of the different plumages in the material studied is as follows:

A	7♂	1♀
B	42♂	12♀
C	9♂	3♀
D	97♂	[?2♀]
E	0	57♀
F	[?2♂]	10♀

There is an excellent opportunity for field investigation on this problem, and it is hoped that someone favorably situated may undertake the full elucidation of the points still requiring explanation.

It is interesting to note that in *Florisuga fusca* of southeastern Brazil the pattern of the tail is different in young and fully adult males, and the young males have a deep brown malar stripe that they lose before the rectrices are changed. Furthermore, there is some evidence that certain females resemble the young males while others are quite different, paralleling rather exactly the circumstances in *mellivora*. These facts add weight to my belief that *fusca* is not generically distinct from *mellivora*, a belief in accord with the nomenclature adopted by Berlioz (1934, L'Oiseau et Rev. Française d'Ornith., vol. 4, no. 3, pp. 414, 419).

One of the characters commonly used to substantiate a claim for the recognition of "*Melanotrochilus*" as a separate genus is the normal length of the upper tail-coverts in contrast to the lengthened ones of *Florisuga*. I do not consider this character of generic value. The probable function of the added length of these feathers in *Florisuga* is the concealment of the conspicuous white basal area of the tail. In the young males and those females that have white on the median rectrices, the median upper coverts are shorter than they are in the adult males, though still long enough to conceal the white when the tail is closed. In the females with green tails, these coverts are also of moderate length. In the species *fusca* the median rectrices themselves are dark in color, and there is no need for elongate coverts to effect a concealment of the white on the adjacent tail feathers. It is a simple utilitarian modification of plumage, not greatly significant.