

Article XIX.—A REVIEW OF THE MANAKINS OF THE GENUS CHIROXIPHIA.

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PLATE XXV.

The genus *Chiroxiphia* is a small group of Manakins difficult to define by structural characters alone, on account of the great variations in external form among the several species, but well characterized by the coloration of the adult males, all of which have a blue back and a red or yellow crest. As usually understood, the genus consists of four well known and thoroughly established species:—*C. linearis*, *C. lanceolata*, *C. pareola*, and *C. caudata*. A fifth species, *C. regina*, is also recognized but its standing has recently been questioned. Two additional forms (*atlantica* and *boliviana*) are listed as subspecies of *C. pareola*.

In the present paper, eight species are recognized. *C. regina* is regarded as a valid species, the two forms commonly treated as subspecies are considered worthy of specific rank, and a new species allied to *C. pareola* is described. Reasons are given beyond, why the genus should not be broken up as has recently been done.

In the description of colors in this paper, Ridgway's 'Nomenclature of Colors' has been used. All measurements are in millimeters. The "width of bill" measurement is the width of the lower mandible at the anterior point of the bristles on its sides.

This paper is based upon the series of these birds in the American Museum of Natural History, and I am greatly indebted for the loan of additional material to the authorities of the United States National Museum, through Dr. Charles W. Richmond; to the Philadelphia Academy of Sciences, through Mr. Witmer Stone; and to Mr. Geo. K. Cherrie of the Brooklyn Institute of Arts and Sciences.

The eight species of the genus *Chiroxiphia* fall into four super-specific groups.

I.—The two northernmost species, *linearis* and *lanceolata*, the only ones reaching the Isthmus of Panama, differ from all the others in the form of the primaries, which are much broader, the outer five not conspicuously narrowed and not abruptly longer than the rest. The outermost primary is shorter than the first, instead of being equal to or slightly shorter than the

sixth as in all other species. The central pair of rectrices is more or less elongated and narrowed; the heel is perfectly bare.

II.—*C. pareola* and its three near allies form a group characterized by the plain, slightly rounded tail and the wide bill. The heel is bare. Pattern of coloration and form of crest as in Group I.

III.—*C. boliviana* is unique in the long, broad-feathered and strongly rounded tail and the narrow crest. The heel is feathered, and the bill is small and narrow.

IV.—*C. caudata*, the southernmost member of the genus, is remarkable for the form of the crest, which covers the entire pileum, and for the extension of the blue over the entire body, excepting the head and throat. The form of the tail is like that of section I; the heel is feathered as in section III; the bill is small and narrow.

The species are taken up beyond in their natural sequence as far as this can be expressed in a linear arrangement. This order also agrees with their geographic distribution, beginning with the most northern species. (See accompanying map.)

1. *Chiroxiphia linearis*.

Pipra linearis BONAPARTE, Proc. Zool. Soc. Lond., 1837, 113 ("Mexico").

Pipra fastuosa LESSON, Rev. Zool., 1842, 174 (Realejo, Nicaragua).

Geog. Dist. Southern Mexico (Oaxaca and Chiapas), southward through Guatemala and Nicaragua to, at least, central Costa Rica.

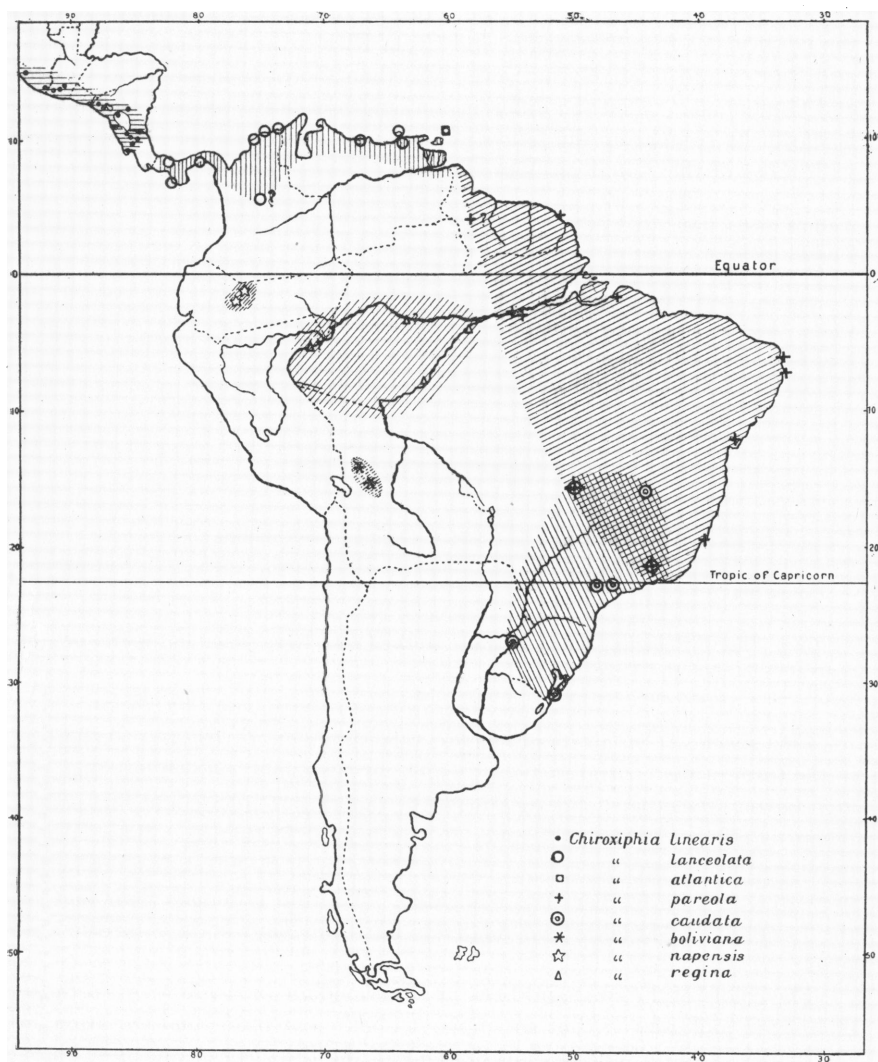
This is the northernmost representative of the genus, and is the only species confined wholly to Mexico and Central America.

C. linearis closely resembles *C. lanceolata* in color but is well characterized by the form of the central pair of rectrices. These are narrowly linear and greatly elongated, particularly in the adult male, in which they project beyond the rest of the tail for a distance of four or five inches. On account of this peculiarity Bonaparte created the genus *Cercophæna*¹ with *C. linearis* as its type and only species.

The bill is black, and is small and narrow compared with that of the *pareola* group. The frontal feathers are decidedly elongated and erect, the anterior-most antrorse. The crest is crimson, averaging darker than that of any other species excepting *C. boliviana*.

The blue of the mantle is paler and more greenish than in any other species of the genus, but some specimens are practically identical with *C. lanceolata* in the shade of the blue.

¹ Consp. Voluc. Anisod., 1854, 6.

Geographic ranges of the species of *Chiroxiphia*.

The under parts have been described as "intense black"; but while not of the strong "olive-slaty" cast of *C. lanceolata*, the plumage nevertheless looks dingy by the side of such deep black species as *C. pareola* or *C. atlantica*.

Mr. Ridgway states that of the series of this species examined by him the adult males from Nicaragua and Costa Rica invariably had longer tails and shorter and relatively narrower bills than those from southern Mexico and Guatemala. That the difference in length of tail is probably fortuitous is shown by comparing the following measurements given by Mr. Ridgway with those of the American Museum series:

3 adult males from Oaxaca	131.7
3 adult males, Chiapas (1) and Guatemala (2)	141
10 adult males, Nicaragua (2) and Costa Rica (8)	155.2
The American Museum series comprises:	
1 adult male from Oaxaca with tail	145
1 adult male from Guatemala	154
9 adult males, Nicaragua (8) and Costa Rica (1), 130-160, average . . .	146.8

2. *Chiroxiphia lanceolata*.

Pipra lanceolata WAGLER, Isis, 1830, 931 ("Guiana sive Cajenna").

Pipra pareoloides D'ORBIGNY & LAFRESNAYE, Rev. Zool., 1838, 165 (Cartagena, Colombia).

Geog. Dist. Panama, nearly or quite to the Costa Rican line, and northern and central Colombia and Venezuela.

This species is, in all its plumages, very similar to *C. linearis*, excepting in the form of the central rectrices, which, in *lanceolata*, project less than an inch beyond the others, and are lanceolate, tapering to a long and fine point. There is also a decided difference in the frontal feathering. This is less developed in the present species than in *C. linearis*, the black frontlet being narrower and the feathers less elongated. The bill is longer than that of the Long-tailed Manakin and relatively narrower, and is dark brown, not black.

The colors of the crest and back are intermediate in shade between those of *linearis* and *pareola*, but so similar to both that individual variation in the shades causes a complete overlapping of the three species in these characters. The red of the crest is almost identical in *lanceolata* and *pareola* but averages a trifle darker in the former. The specimens with the lightest and greenest backs agree with *linearis* in this respect, while those with the darkest and bluest mantles are very similar to *pareola*.

The under parts are less nearly black than in any other of the black-breasted species, being of a decided "olive-slaty" cast.

The females of *linearis* and *lanceolata* are almost indistinguishable in color of plumage, but the latter is usually a lighter and yellower green above. The crown is usually green or merely reddish tinged and the full red crest of the male is rarely acquired.

Bonaparte restricted the genus *Chiroxiphia* to two species, *C. caudata*, the type, and *C. lanceolata*. The latter, however, is much more closely allied to *C. linearis* and bears only a superficial resemblance to *C. caudata*, in the form of the tail.

The Trinidad records of *C. lanceolata*, accepted even by Mr. Ridgway in the recently issued fourth part of his great work,¹ are almost certainly erroneous, as no species of the genus is recorded from that island by Léotaud, nor did either Chapman or Cherrie meet with it. Dr. Hellmayr, in his list of the birds of Trinidad,² has entirely overlooked this Manakin, as no mention is made of it either among the species of known occurrence or in the list of those that have been wrongly accredited to the island. The absence of *Chiroxiphia* from Trinidad is a curious fact in distribution, as the genus is represented on the island of Tobago as well as on the adjoining mainland. Venezuelan specimens, as pointed out by Ridgway, are less black below than the average Colombian skin, having a strong "olive-slaty" tinge. But of four adult males from Panama (Boqueron, etc.), three are duller below than most Santa Marta birds and strongly washed with olive-green on the rump and flanks.

Three specimens (♂ ad., ♂ im., ♀ ad.) from Coiba (or Quibo) Island off the west coast of Panama, indicate the existence there of a slight insular form. Their bills exceed in size those of a majority of Panama and Colombian specimens. The blue of the adult male appears to be just appreciably darker and duller than in mainland birds, and the crest of this specimen is of maximum length. The female is distinctly darker than the typical form; the olive-green of the upper parts is a less golden-green, having less yellow in its composition. The shade of the upper surface agrees closely with that of the female of *C. linearis*.

These differences are probably too slight to necessitate the separate recognition of the island bird, but it is possible that a larger series might show the desirability of such separation.

¹ Birds of North and Middle America, Part IV, 1907, 738.

² Novitates Zoologicae, XIII, No. 1, 1906.

3. *Chiroxiphia atlantica*.

Chiroxiphia pareola atlantica DALMAS, Mém. Soc. Zool. France, XIII, 1900, 139 (Tobago).

Geog. Dist. Island of Tobago.

Chiroxiphia atlantica is confined to the single small island of Tobago, lying immediately north of Trinidad, and is the only insular form of the genus. It is one of those species in which the characters are better developed in the female than in the male. The latter appears to differ from the same sex of *C. pareola* only in its somewhat greater size.

Unfortunately the series of available birds of these two species in the greenish plumage is poor and inadequate, few of the specimens having had the sex determined by the collector and many lacking dates. As nearly as I am able to judge from this material, however, the female of *C. atlantica* lacks the red crest or has it only imperfectly represented, while in *C. pareola* it is always (?) present and well developed. The latter, in fact, evinces a strong tendency to approach the adult male in plumage as shown by the frequent presence of more or less black on the head, and a bluish tinge to the dorsal plumage, as well as by the red crest. This tendency is apparently wanting in the Tobago bird, which is also of a lighter olive-green above and paler and yellower on the under surface. The five outer primaries are slightly broader than in the female of *pareola*.

The description of the female given by Dalmas¹ is difficult to understand, particularly the statement that the under surface is without yellow, as the three of four specimens seen by me all have a decided shade of yellow below, much more so than in *pareola*.

I am also unable to appreciate the differences said to exist in the plumage of the adult males. The red crest undoubtedly averages a trifle longer than in *pareola* but apparently the difference merely corresponds to the larger size of the bird; and the slightly greater extent of the black frontlet and blue mantle are due to the same circumstance.

The females of *atlantica*, although averaging rather smaller than the adult male in length of wing and tarsus, have a longer tail and larger bill. In *C. pareola* there is at least a tendency in the same direction.

Inasmuch as my material shows no intergradation and seems to indicate that complete overlapping of characters is improbable, it seems proper to treat *C. atlantica* as a full species. However, its specific distinctness is not here strongly insisted upon as it is quite possible that a larger and better series would give different results.

¹ "Femelle vert plus foncé sur le dos, sans teinte jaune sur le front ni sur la face inférieure." Dalmas, l. c.

4. *Chiroxiphia pareola*.

Pipra pareola LINNÆUS, Syst. Nat., ed. 12, I, 1766, 339 (Brazil, Cayenne).

Manacus superbus PALLAS, Spic. Zool., I, fasc. 6, 1769, 8 (pl. 3, fig. 1), Surinam; (coll. Mus. Geversianum).

Geog. Dist. Guianas, lower Amazon Valley, and eastern Brazil.

C. pareola has the most extensive distribution of any species of the genus. Its geographic range is in the form of a triangle, two sides of which are coincident with the Atlantic coast line, running from British Guiana south-east to Cape St. Roque and thence southwest to Rio Janeiro. It has been taken as far inland as Santarem and Obidos on the lower Amazon, some 500 miles from the ocean, and at Rio Claro, about 600 miles northwest of Rio Janeiro. South of the Amazon Valley I have found no records away from the coast or the large river valleys of the interior and it is possible that it may be absent from the great Brazilian plateau.

It may perhaps be regarded as the central species of the genus. Several distinct forms have been confused with it. These are compared with *pareola* under their respective heads. As now restricted there is no appreciable geographic variation, in either color or size, in this species.

The color of the crest in this species and in *C. atlantica*, described in the key as 'glowing light crimson,' cannot be matched by any of the shades in the 'Nomenclature of Colors.' It appears to be between scarlet and crimson.

5. *Chiroxiphia regina*.

*Chiroxiphia regina*¹ SCLATER, Ann. and Mag. Nat. Hist. (2), XVII, 1856, 469 (Borba, Brazil; coll. Vienna Mus.).

Geog. Dist. Upper Amazon Valley.

Chiroxiphia regina is a rare species in collections, and, so far as I know, there are no specimens in any museum in this country.

It is unique in the genus in possessing a yellow instead of a red or flame-colored crest. According to the original diagnosis by Mr. Sclater, and the very brief description in the British Museum Catalogue by the same authority, it differs from *C. pareola* in this respect alone, and for this reason Mr. Ridgway lately suggested that *regina* might possibly be only a color variation of that species.

Dr. Hellmayr's recent indorsement² of *C. regina*, however, should set

¹ Not *regina* as given by Ridgway (Bds. N. and M. Amer., Pt. IV, p. 736).

² Novitates Zoologicæ, XIV, No. 2, 1907, 361.

at rest all doubts as to its validity. He records seven specimens, including females and both adult and immature males, collected on the Rio Madeira in 1907. No other species of the genus was taken by the collector. The females, I believe, are the first to be recorded. Dr. Hellmayr states that they "may be easily distinguished from those of the *C. pareola* races by their much darker and greener under surface." He fails to say whether or not the male has any specific character besides the color of the crest, but judging by the collector's notes, the feet are darker than those of *pareola*. The measurements given show that the yellow-crested species agrees closely in length of wing and tail with *pareola*. The crest is described as sulphur yellow by Taczanowski. Sclater's plate (Catalogue of American Birds) represents it as gamboge-yellow. Dr. Hellmayr mentions a difference in the shade of the crest and in the breadth of the black frontal band according to locality.

C. regina evidently has a definite geographic range, the great interior lowlands of Brazil, where it appears to replace the allied species. At least fourteen specimens have been recorded, all from the valley of the upper Amazons. The definite localities are as follows: Borba, Humaytha and Paraizo on the Rio Madeira, 'Lake' Manaqueri on the Rio Solimões, and Rio Javari, which separates Brazil and Peru.

A curious mounted specimen in the collection of the American Museum (Maximilian Coll.), an adult male from "Brazil," may here be mentioned. It agrees with *pareola* except that the crest is chrome, shot with red, mostly much paler than that normally present in *pareola*. This cannot be due to fading and the bird is either an actual intergrade between *regina* and *pareola* or, more likely, merely a variant of the latter.

6. *Chiroxiphia napensis* sp. nov.

PLATE XXV.

Chiroxiphia pareola (not *Pipra pareola* Linn.) SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 307, part (Sarayacu, Ecuador); ALLEN, Bull. Am. Mus. Nat. Hist., March, 1889, 72 (Napo, Ecuador).

Specific Characters.—Similar to *C. pareola* but darker, with lighter crest. General size slightly smaller, bill larger.

Type No. 30459, Am. Mus. Nat. Hist., ♂ ad, Napo, Ecuador, L. Söderström.

Geog. Dist.—Headwaters of the Rio Marañon, Ecuador, (Napo, Sarayacu).

In the collection of the American Museum there are four specimens of a *Chiroxiphia* from Napo, Ecuador, that evidently represent a hitherto undescribed form.

They differ from *C. pareola* in slightly smaller size, with relatively larger

bill; the feet are darker and the upper anterior end of the tarsus is more feathered. The general coloration is deeper, but the crown patch is a lighter, more orange red and less emarginate posteriorly.

In the adult males the back is of a considerably deeper blue. A single unsexed bird in the greenish plumage with red crest, probably an adult female, is much darker than any of the skins of *pareola*, especially on the under surface.

C. napensis is separated geographically from *C. pareola*, with which it has heretofore been united, by an immense area of country inhabited by other species. Its relationship to *C. regina* which lies immediately to the eastward and between *napensis* and *pareola*, may be closer than is at present evident. The orange shade of the crest, the dark plumage of the female, and probably the deeper color of the feet, are an approach to the characters of *C. regina*. The dark blue mantle of the male may be another indication of affinity, for in the colored plate of *regina* published in Sclater's 'Catalogue of American Birds,' the mantle is represented as of a deeper shade than in *pareola*.

As no intergradation is known to take place between *napensis* and its allies, it has seemed best to give this new form full specific rank. Two adult males recorded in the 'Catalogue of Birds in the British Museum' from Sarayacu, Ecuador, which lies about sixty-five miles south-southwest of Napo, doubtless belong to this species.

7. *Chiroxiphia boliviana*.

PLATE XXV.

Chiroxiphia pareola (not *Pipra pareola* Linn.) SCLATER & SALVIN, Proc. Zool. Soc. Lond., 1879, 617 (Nairapi, Tilotilo, Prov. Yungas, Bolivia); SCLATER, Cat. Birds Brit. Mus., XIV, 1888, 307, part (same localities as given above).

Chiroxiphia pareola boliviana ALLEN, Bull. Am. Mus. Nat. Hist., II, March, 1889, 87 (6000 feet altitude, Prov. Yungas, Bolivia).

Geog. Dist. Headwaters of the Rio Beni, Department of La Paz, Bolivia.

The earliest record for this species seems to be in the 'Proceedings' of the Zoölogical Society of London for 1879, where Dr. Sclater recorded several specimens from Bolivia under *C. pareola*. They were said to "agree with Brazilian skins [of *pareola*] except in having the crest rather narrower and of a somewhat deeper color." Ten years later Dr. Allen very properly separated the Bolivian form on the strength of a single rather poor specimen from Yungas (dated Sept. 1885), naming it *C. p. boliviana*.

Besides the type I have seen two other specimens, a fine adult male

collected by Mr. R. S. Williams at Santa Cruz, near Apolobamba, on Aug. 26, 1902, and presented by him to the American Museum, and a similar specimen in the collection of the National Museum from Quebradaonda,¹ taken by G. Garlepp, on June 20, 1892. Both agree closely with the type and emphasize the distinctness of *boliviana*. Indeed so strongly characterized does this form prove to be that there cannot be the slightest doubt of its full specific value.

The salient characters of this excellent species are the small and narrow bill, with all the outlines less curved than in *pareola* or *napensis*; the feathered heel-joint, and particularly the long, broad-feathered and strongly rounded tail. The outer rectrices are 8.5 or 9 mm. wide as compared with 6 to 7 in the above species, and are relatively broader towards the tip. Good additional characters are the great backward extension of the black frontlet, and the very narrow, dark crimson crest, the individual feathers of which are truncate rather than rounded or pointed as in the other species. The mantle is a *dull grayish* azure and somewhat less extensive than in allied forms. The rectal bristles are unusually well developed, and, as in *napensis*, the feet are more deeply colored than those of *pareola*.

These differences trenchantly separate *boliviana* from its nearest relatives, the two species above mentioned, and the possibility of intergradation taking place between them is too remote to need consideration. The geographic ranges of both this species and *C. napensis* as far as known are much more restricted than those of any other of the continental forms.

Unfortunately I have seen neither the female nor the young male of *C. boliviana*. Both are recorded under *C. pareola* in the British Museum Catalogue.

The comparatively long tail of this species is a step in the direction of the monotypic genus *Antilophia* of southwestern Brazil and eastern Bolivia. The latter appears to be nearer *Chiroxiphia* than its present position in the books indicates. In its own range it evidently replaces *Chiroxiphia*, for the Smith Collection of Matto Grosso birds contains a large series of *Antilophia galeata* but not a specimen of the related genus.

8. *Chiroxiphia caudata*.

Pipra caudata SHAW, Nat. Misc., V, pl. 153 (1794).

Pipra longicauda VIEILL., Nouv., Dict., XIX. p. 163 (1817).

Pipra viridis THUNBERG, Mém. Acad. Imp. Sci. St. Pétersb., VIII, 1822 (female).

Pipra ignicapilla WAGLER, Isis, XXIII, 931 (1830).

Geog. Dist. Southern Brazil, Paraguay, and northern Argentina.

¹ This locality I have been unable to find on any map but believe it to be in the same general region as the other localities.

This very distinct species is the type of the genus *Chiroxiphia*. It is the southernmost in distribution not only of the genus but, I believe, of the entire family. The northern part of its range overlaps the extreme southern part of the area inhabited by *C. pareola*. Instead of the truncate or emarginate vertical crest of the other species, *C. caudata* has a full globular crest covering the entire pileum.

In his recent treatment of the family Mr. Ridgway restricts *Chiroxiphia* to *C. caudata*, using Bonaparte's name *Chiroprion* for all the remaining species. The characters used to divide the genus are the differences in form of the crest and frontal feathers, and the supposed discrepancy in the extent of feathering of the tibio-tarsal joint. Even did the latter character hold, the desirability of recognizing *Chiroprion* would certainly be doubtful. But as *C. boliviana*¹ is found to have the heel-joint feathered as in *C. caudata* only the differences in the coronal feathering and in coloration remain, characters surely insufficient of themselves to separate the species generically.

If *Chiroprion* is separated it is impossible to consistently deny recognition to Bonaparte's other genus *Cercophana*, to include *linearis* and *lanceolata*, and to create a new genus for *C. boliviana*. It seems far better to regard these differences as of only specific or subgeneric value and to leave the genus *Chiroxiphia* with its usually accepted limits.

The following key to the species of the groups in which the central rectrices are not elongated, applies to the adult and subadult males only. The series of females at hand is so imperfect that it has been thought best not to attempt to include them in the key.

Key to the Species.

- a. Tail *more* than three-fifths as long as wing, exceeding 44 mm. in length; width of bill at base *less* than width of outer rectrix; extreme lower end of tibia concealed by feathers; crest dark crimson, very narrow, scarcely or not wider than the very broad (anteroposteriorly) black frontlet; back dull grayish azure. (Bolivia.)..... *Chiroxiphia boliviana*.
- aa. Tail *less* than three-fifths as long as wing, *less* than 44 mm. in length; width of bill at base *greater* than width of outer rectrix; extreme lower end of tibia not concealed by feathers posteriorly; crest glowing *light* crimson to yellow, broad, much wider than the moderately broad black frontlet; back azure (lighter or darker).
- b. Crest red.
- c. Larger, with relatively smaller bill, wing usually exceeding 70 mm. (69.2–77.4), tail usually exceeding 33.5 mm. (33.2–40.5), width of bill at base 7.6–9 (av. 8.2), crest glowing, light crimson, decidedly emarginate posteriorly; back light azure; feet pale.

¹ This species had not been seen by Ridgway at the time he divided the genus.

- d. Smaller, wing 69.2-75 (71.2), tail 33.2-36.4 (av. 34.6).
(Northeastern and eastern South America).

Chiroxiphia pareola.

- dd. Larger, wing 75.-77.4 (av. 76.1), tail 38.5-40.5 (av. 39.5).
(Island of Tobago).....*Chiroxiphia atlantica*.

- cc. Smaller, with relatively larger bill, wing usually less than 70 mm.
(68-70.5), tail usually less than 33.5 mm. (31.5-32.8), width of
bill at base 8.5-8.8 (av. 8.6); crest scarlet-vermilion, scarcely
emarginate posteriorly; back dark azure; feet dark. (Ecuador).

Chiroxiphia napensis.

- bb. Crest yellow (Valley of upper Amazons).....*Chiroxiphia regina*.

In the following tables of measurements, the first table gives the measurements of *C. pareola* from different parts of its range. The single large "Bahia" bird, a 'Museum Boucard' specimen without original label, is omitted from the final measurements because of the belief that it may in reality have come from Tobago. Four mounted specimens of *pareola* from Brazil (2 adult males and 2 immature males, or more likely females), the measurements of which are not given below, agree well with the series from Brazil here recorded.

The accompanying map shows the geographic ranges of the eight species of the genus as worked out from all available specimens and published records. Interrogation points indicate that the position of the locality is in doubt, either because it has been impossible to find it on any map or because the records fail to give the exact locality.

Measurements of Adult and Sub-adult Males.

No. of Specimens	Locality.	Wing.	Tail.	Tarsus.	Length of bill from nostril.	Breadth of bill at base.
4	British Guiana	69.2(70.7)71.8	33.5(34.5)35.6	17.4(18.1)18.5	5.7(5.9)6	7.6(8.1)8.3
2	French Guiana	69.2(72.1)75.	33.2(33.9)34.6	17 (17.8)18.5	5.7(5.9)6	8.1(8.3)8.5
2	Vic. Santarem, Brazil	70.1(70.4)70.6	34.4(34.6)34.7	18.3(18.4)18.4	5.7(6.)6.2	8. (8.1)8.1
7	Bahia, Brazil	70.5(71.4)72.5	33.8(34.8)36.4	17 (18.1)19	5.4(5.7)6	7.6(8.)8.5
1	"Bahia" ?	76.8	39	19	6.3	8.1
7	<i>atlantica</i>	75 (76.1)77.4	38.5(39.5)40.5	19 (19.7)20.2	5.9(6.3)6.6	8 (8.5)9
15	<i>pareola</i>	69.2(71.2)75	33.2(34.6)36.4	17 (18.1)19	5.4(5.8)6.2	7.6(8.1)8.5
3	<i>napensis</i>	68 (69.2)70.5	31.5(32.)32.8	17.3(17.6)18	5.7(6.2)6.5	8.5(8.6)8.8
3	<i>boliviana</i>	68 (69.8)71	47.5(47.5)47.5	17.4(17.8)18	5.4(5.5)5.6	6.2(6.6)7

Measurements of Females and Young Males.

3 ♀	(green crest) <i>atlantica</i>	72.2(73.5)75	40 (41.3)42	18.5(18.8)19	6.5(6.8)7	8.2(8.7)9
1 ?	(imperfect red crest) <i>atlantica</i>	72	41.5	19.5	7	8.6
1 "♂ juv."	<i>atlantica</i>	71.2	39.3	19.5	6.4	8.6
5 ♀ & ♂ juv.	<i>atlantica</i>	71.2(72.7)75	39.3(41.)42	18.5(19.1)19.5	6.4(6.7)7	8.2(8.6)9
11 " "	<i>pareola</i>	65 (69.2)73	32.5(34.2)35.5	17.1(17.9)18.7	5.3(5.9)6.4	7.5(8.1)8.7
1 ♀ ?	<i>napensis</i>	68	31.5	18	6.3	8



CHIROXIPHIA BOLIVIANA.
CHIROXIPHIA NAPENSIS.