

The Auk

A Quarterly Journal
of Ornithology

Vol. 111 No. 1 January 1994

The Auk 111(1):1-7 + frontispiece, 1994

A NEW SPECIES OF COTINGA (COTINGIDAE: *DOLIORNIS*) FROM THE ECUADORIAN ANDES, WITH COMMENTS ON PLUMAGE SEQUENCES IN *DOLIORNIS* AND *AMPELION*

MARK B. ROBBINS,^{1,4} GARY H. ROSENBERG,² AND
FRANCISCO SORNOZA MOLINA³

¹Department of Ornithology, Academy of Natural Sciences, 1900 Benjamin Franklin Parkway,
Philadelphia, Pennsylvania 19103, USA;

²8101 N. Wheatfield Drive, Tucson, Arizona 85741, USA; and

³Museo Ecuatoriano de Ciencias Naturales, Casilla 8976-Suc. 7, Quito, Ecuador

ABSTRACT.—We describe a new species of cotinga, *Doliornis remseni*, known from three localities from the Ecuador/Colombia border south to the Ecuador/Peru border. Plumage and syringeal morphology unequivocally place it in the genus *Doliornis*, which was formerly considered to be monotypic and restricted to central Peru south of the Río Marañón. Ageing and plumage sequences in *Doliornis* and *Ampelion* are clarified. Received 16 August 1993, accepted 24 October 1993.

WHEN SNOW (1982) published his treatise on the Cotingidae, the monotypic *Doliornis* (see below for reasons for recognizing *Doliornis*) was known from only three localities in central Peru. Fieldwork by Louisiana State University Museum of Natural Science (LSUMZ) personnel during the mid-1980s established that *Doliornis sclateri* was more widely distributed, but still confined to central Peru, from the Eastern Andes in Depto. San Martín south to Junín.

The first sighting of a *Doliornis* north of the Río Marañón was made by H. Bloch and M. Poulsen, who on 7 March 1989 observed two birds at 3,100 m elevation in Podocarpus National Park, Prov. Loja, Ecuador (Rahbek et al.

1989, Bloch et al. 1991). At the same locality, this cotinga was seen on several additional occasions (C. Rahbek, A. Long pers. comm.). Even more surprising was the discovery of a *Doliornis* in August 1989 on the west slope of Central Andes of Colombia (ca. 04°37'N, 75°28'W; Renjifo M. in press). Details noted during these observations suggested that the birds were quite distinct from *D. sclateri*, but the lack of specimens and inaccuracies in the literature on *D. sclateri* plumage precluded a taxonomic assessment.

During the course of Ecuadorian avifaunal inventories by the Academy of Natural Sciences, Philadelphia, and the Museo Ecuatoriano de Ciencias Naturales, Quito, we collected a small series of *Doliornis* that is strikingly different from *D. sclateri*. We propose to name this a new species

⁴ Present address: Division of Ornithology, Museum of Natural History, University of Kansas, Lawrence, Kansas 66045, USA.



Frontispiece. Male (upper right and below) and female (upper left) Chestnut-bellied Cotinga (*Doliornis remseni* sp. nov.). Upper male perched in *Escallonia myrtilloides* (Saxifragaceae). Painting by Paul Greenfield.

***Doliornis remseni* sp. nov.**
Chestnut-bellied Cotinga

Holotype.—Academy of Natural Sciences, Philadelphia No. 184734, immature male, from ca. 3 km SE of Impueran, west slope of Cerro Mongus, Prov. Carchi, Ecuador (00°27'N, 77°52'W), 3,575 m elevation, collected 20 March 1992 by Mark B. Robbins (original field number, MBR 3164).

Diagnosis.—Size, shape and general color pattern are similar to *D. sclateri*. *Doliornis remseni* has a relatively narrow and less-hooked bill (as is characteristic of *Doliornis*) than *Ampelion* (*sensu stricto*). In all plumages the species is distinguishable from *D. sclateri*, even at great distances in the field, by the rich rufous-chestnut underparts that extend from the middle of the breast through the crissum. As the English name of the Bay-vented Cotinga (*D. sclateri*) implies, the rufous is restricted to the crissum. Moreover, crissum color in *D. sclateri* is less rich, and has a more orange hue than the ventral rufous-chestnut of *D. remseni*. The face, throat, upper chest and upperparts of *D. remseni* are a much darker gray, with less contrast to the crown than in *D. sclateri*. Male *D. remseni* average longer wings and tail than adult male *D. sclateri* (two tailed *t*-test; $P < 0.5$ and 0.001 , respectively; Table 1).

Taxonomic affinities.—Based on Richard O. Prum's published (1990) and unpublished (in litt.) syringeal analysis of the Cotingidae and a clarification of the juvenal plumage in *D. sclateri* (see Plumage Sequence section), we recognize *Doliornis* as a valid genus. Prum (1990) determined that Lanyon and Lanyon (1989) misinterpreted the polarity of some syringeal features in their analysis of *Phytotoma* and the expanded *Ampelion* (including *D. sclateri* and *Zaratornis stresemanni*). Prum (1990) demonstrated that a large portion of the Cotingidae, including *Phytotoma* and the expanded *Ampelion*, is monophyletic, and he recommended that the separate Phytotomatidae not be recognized. We quote Prum's (in litt.) unpublished syringeal analysis that argues for recognizing *Doliornis* as a valid genus:

The syringes of all species in the plantcutter group of Lanyon and Lanyon (1989) are characterized by obliquely angled A1 elements. Among passerine birds, this novel feature is found only in some broadbills and asities (Eurylaimidae; Prum 1993), and it is strong evidence of the monophyly for the group. In *Doliornis*,

the A1s are weakly angled about 45°, whereas in all other genera the A1s are very obliquely angled at approximately 60°. This derived exaggeration of the angle of A1 supports the monophyly of a clade including *Zaratornis*, *Ampelion*, and *Phytotoma*. Other syringeal and morphological features support a sister group relationship between *Ampelion* (*sensu stricto*) and *Phytotoma* (Lanyon and Lanyon 1989, Prum unpubl. data). Taken together with Lanyon and Lanyon's allozyme data, the evidence indicates that the expanded genus *Ampelion* (including *stresemanni*, *sclateri* and *remseni*) is paraphyletic. The genus *Ampelion* should only be expanded from its traditional limits if *Phytotoma* were included as well. Because *Phytotoma* Molina, 1782 has priority over *Ampelion* Tschudi, 1845, the combined name would have to be *Phytotoma*. I would strongly recommend that all four generic names be recognized instead of combining all species in *Phytotoma*. . . .

Plumage characters indicate that the new cotinga's closest living relative is *D. sclateri*. Prum's analysis of two syringes (ANSP 184736, 185684) of the new cotinga corroborates this premise. We quote Prum's findings (in litt.):

The insertion of the syringeal muscle M. tracheolateralis on the A1/B1 lateral membrane confirms that this new taxon is a cotingid (Prum 1990). The syringeal morphology of the new form is very similar to that of *Doliornis sclateri* (LSUMZ 75016, 81150). Unlike other members of the plantcutter group, the pessulus in *Doliornis* fuses dorsally to A3 and A4. This derived syringeal feature further confirms the monophyly of *Doliornis* and the placement of the new species in that genus.

Description of holotype.—Color names and numbers follow Smithe (1975, 1981). Crown, extending to around lower edge of eye, and lores Jet Black (89). Semiconcealed orange-red (closest to 210, but with darker red tone) crest in center of crown. Back, scapulars, upper wing coverts, rump and upper tail coverts Blackish Neutral Gray (82) with heavy Fuscous (21) wash to feather edges. Cheeks, foreneck, chin, and throat Dark Neutral Gray (83) with tinge of Fuscous. Upper chest Dark Neutral Gray with relatively heavy Fuscous wash. Lower breast, belly, flanks and abdomen a rich, deep rufous-chestnut (closest to 132A, but with much more rufous tone). Primaries, secondaries and tail Blackish Neutral Gray. Irides dark brown; bill, tarsi, and feet black.

Immature male; testes, 4×2 mm; bursa 9×4 mm; skull ossification 10%. Heavy body molt.

No flight feather molt; all in fresh plumage. The tips of the rectrices are acutely pointed, and presumably are retained from the juvenile plumage.

Measurements were: wing (chord) 115.9 mm; bill (from base) 18.4 mm; tail 98.1 mm; tarsus 28.2 mm; mass 65.0 g.

Plumage variation.—The new *Doliornis* is sexually dimorphic, like *D. sclateri* as noted by Zimmer (1936), although this was apparently overlooked by Parker (in Snow 1982) and Fjelds  and Krabbe (1990). Among the six males, there is no variation in plumage, regardless of age or distance between known localities. The two adult males (ANSP 185684, 185686; both lacking bursae) are indistinguishable from the four immature males (all of which have bursae). Moreover, despite being separated by about 600 km, the adult male from the Ecuador/Peru border is virtually identical in plumage to the five Cerro Mongus males from near the Ecuador/Colombia border.

The single female specimen (ANSP 184736) and four presumed females observed only under field conditions, all of which appeared inseparable from ANSP 184736, differ from the six males in the following: The centers of the crown feathers are Jet Black, but are heavily fringed with gray, especially in the forecrown and center crown. The hind crown is much less heavily margined with gray. Under field conditions this gives the impression of a crown that contrasts little with the face and throat. The female's lores and the feathers at the base of the maxilla are Jet Black, and the area around the front part of the eye is Light Neutral Gray (85), giving the bird an indistinct spectacled look. Like males, females possess an erectile, orange-red crest.

Distribution.—Presently known from three localities along the Eastern Cordillera of the Andes from northeastern Ecuador to extreme northern Peru: (1) 3 km SE Impueran, W slope Cerro Mongus, Prov. Carchi (00°27'N, 77°52'W; Fig. 1); (2) Cajanuma, Podocarpus National Park, Prov. Loja/Zamora-Chinchipe border (04°06'S, 79°09'W; Rahbek et al. 1989, Bloch et al. 1991; sight records only); (3) extreme southern Ecuador/northern Peru (Prov. Zamora-Chinchipe/Depto. Cajamarca; 04°47'S, 79°24'W). Elevational range 3,100–3,650 m. Renjifo M.'s (in press) description of a *Doliornis* found at Reserva Natural Canon del Quindio, on the west slope of the Central Andean cordillera in Colombia

TABLE 1. Selected measurements ($\bar{x} \pm$ SD with range in parentheses) of *D. remseni* and *D. sclateri*.

Sex	n	Wing chord (mm)	Tail ^a length (mm)	Tarsus (mm)	Bill at base (mm)	Mass (g)
<i>Doliornis remseni</i>						
Male	6	105.0 ± 7.0 (97.8–115.9)	93.4 ± 3.5 (87.1–98.1)	27.3 ± 0.7 (26.5–28.2)	18.8 ± 0.9 (17.3–19.7)	63.0 ± 4.8 (58.5–72.0)
Female	1	101.1	90.4	27.4	20.7	64.0
<i>Doliornis sclateri</i>						
Male	16	100.9 ± 1.9 (99.0–104.6)	85.4 ± 2.8 (81.7–91.2)	26.1 ± 1.0 (24.4–27.8)	19.2 ± 0.6 (18.2–20.2)	60.7 ± 4.0 (54.0–69.0)
Female	12	97.8 ± 3.1 (88.4–101.0)	85.4 ± 2.4 (82.8–90.9)	26.0 ± 1.0 (24.0–27.5)	19.6 ± 0.8 (17.4–21.0)	59.6 ± 4.9 (53.0–67.0)

^a For central rectrices.

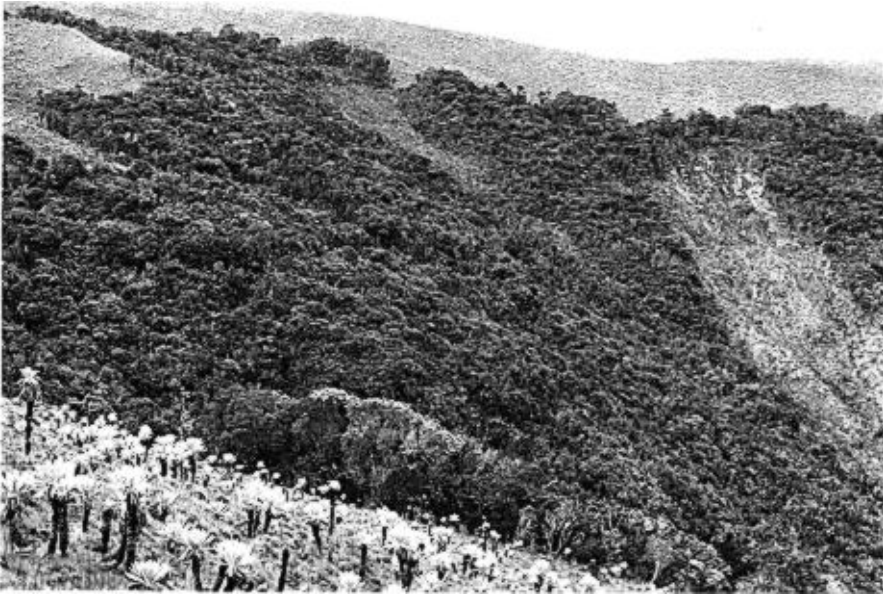


Fig. 1. Type locality of *Doliornis remseni*. Apparent family groups were recorded on each side of landslide (right side of photo) in March 1992 (see text). Photo taken on 23 March 1992 by M. B. Robbins (VIREO r08/16/003).

(04°37'N, 75°28'W) suggests that *remseni* may occur there as well.

The known distribution of the two species of *Doliornis* fits the pattern of many other upper montane taxa, where probable sister taxa are separated by the Río Marañón valley. Several workers have recognized the importance of this barrier to dispersal and speciation along the eastern Andean slope (Vuilleumier 1969, 1970, Parker et al. 1985, Cracraft 1985). Parker et al. (1985) identified 18 probable allospecies pairs separated by this barrier. The plumage differences between *D. remseni* and *D. sclateri* are as great, if not greater, than a number of the taxa that are currently recognized at the species level in the following cotinga genera: *Iodopleura*, *Pipreola*, *Cotinga*, and *Carpodectes* (Snow 1982).

Specimens examined.—All material used in the description is from the following institutions: Academy of Natural Sciences, Philadelphia (ANSP), Field Museum of Natural History (FMNH), Louisiana State University Museum of Natural Science (LSUMZ), and Museo Ecuatoriano de Ciencias Naturales, Quito (MECN).

For *D. remseni* (six males [includes one full skeleton/partial skin], one female): ECUADOR: Prov. Carchi; 3 km SE Impueran, W slope Cerro Mongus (ANSP four males, one female; MECN

one male). ECUADOR/PERU: Prov. Zamora-Chinchipe/Depto. Cajamarca; ca. 25 road km SE Jimbura (ANSP one male).

For *D. sclateri* (14 males, 13 females): PERU: Depto. San Martín; Puerta del Monte, ca. 30 km NE Los Alisos (LSUMZ one female); Depto. La Libertad; Mashua, E Tayabamba, on trail to Ongón (LSUMZ one male); Depto. Huánuco; Unchog, pass between Churubamba and Hda. Paty, NNW Acomayo (LSUMZ four males, six females); Depto. Huánuco; NE Acomayo, Bosque Quiullacochoa (LSUMZ two males, one female); Depto. Huánuco; above Acomayo, Chuchumpunta (FMNH one female); Depto. Huánuco; S Huaylaspampa, Bosque Cutieragra (ANSP one male; LSUMZ three males, one female); Depto. Huánuco; Bosque Shaigua (LSUMZ one male); Depto. Pasco; Millpo, E Tambo de Vacas, on Pozuzo-Chaglla trail (LSUMZ three males, two females); Depto. Junín; Maraynioc (ANSP one male).

Etymology.—We take great pleasure in naming this new cotinga after our friend and colleague J. Van Remsen, Jr., in recognition of his many contributions to Neotropical ornithology, and his special interest in Andean birds. Robbins and Rosenberg express special gratitude to him for his pivotal influence on their careers

while at Louisiana State University. The English name refers to this species' unique plumage character.

Natural history.—On 20 March 1992 at about 0800, near tree line at Cerro Mongus in extreme eastern Prov. Carchi, Robbins and Rosenberg observed three *Doliornis* with an adult *Ampelion rubrocristatus* feeding in the crown of an *Escallonia myrtilloides* (Saxifragaceae). The birds were immediately recognized as a cotinga similar to *D. sclateri*, but the strikingly bright rufous-chestnut underparts and the lack of a pure gray face and throat indicated that the birds represented a new taxon. All three birds were then collected and two proved to be immature males (ANSP 184734-5); subsequent work established that the third bird, which unfortunately was not recovered, was a female.

The following day, shortly after 0800, Rosenberg and Robbins observed four more *Doliornis* (two males, two females) perched in the crown of an *Escallonia* at 3,650 m, just upslope and across a landslide devoid of vegetation from where the three birds were collected the previous day (Fig. 1). From the time they were initially found until 1020, the birds spent the majority of the time perched motionless in tree crowns. For example, one male sat in the crown of an *Escallonia* for a period of 8 min (0905-0913) without moving. Between 0800 and 1020, there were occasional, brief periods (<5 min) when the entire group would disappear from sight. No birds were observed between 1020 and 1100, but at 1100, three individuals momentarily reappeared in tree crowns before disappearing again. None of them were seen until an immature male (MECN 6035) appeared in the top of an unidentified tree at 1230.

On 22 March, at 3,550 m, Robbins observed a female in tree line forest about 2 km north of where the two groups of *Doliornis* were observed on 20 and 21 March. She perched 6 m above the ground in dense tree line scrub, and appeared to be loosely associated with a passing tanager-dominated mixed-species flock (*Anisognathus*, *Iridosornis*, *Buthraupis*). What may have been the same bird was seen at this same site the following day. As on 22 March, it again appeared on the top of *Escallonia* as a mixed-species flock foraged through the area. About an hour later (0920), while watching an apparent family group of three to four *A. rubrocristatus* resting 2 m above the ground, a female *Doliornis*

(ANSP 184736) suddenly appeared at the forest edge, 5 m from the *Ampelion*.

On a return ANSP/MECN trip to the Cerro Mongus site, F. Sornoza M. collected two males (ANSP 185685-6), an adult and immature, from a group of three found on 13 June 1992. This was in the same area that the March series was obtained. One of the above birds or possibly a different individual was observed the previous day by R. S. Ridgely.

The range of the new *Doliornis* was extended south to the Ecuador/Peru border, when on 28 October 1992, during the course of further ANSP/MECN inventory surveys, Robbins located an apparent pair, the male of which was collected (ANSP 185684; Fig. 2) in an isolated patch of tree line forest in the Cordillera de Lagunillas (04°47'S, 79°24'W). In contrast to the Cerro Mongus locality, *Escallonia* was not a conspicuous element of the tree line forest at the Lagunillas site.

Only vegetable matter was found in *D. remseni* stomachs. In addition to *Escallonia* seeds, relatively large (ca. 10 × 5 mm), unidentified purple pulped fruit were taken from specimens at the Cerro Mongus and Lagunillas sites.

Plumage sequences in Doliornis and Ampelion.—The *D. remseni* material and recent data-rich series of *D. sclateri* and *A. rubrocristatus* indicate that these species obtain adult plumage and breed before skull ossification is complete. All five immature specimens of *D. remseni* had large bursae (range 7 × 3 mm to 9 × 4 mm), small gonads (range of three males, 2 × 1 mm to 4 × 2 mm), and minimally ossified skulls (range 0-25%), whereas the two adults lacked bursae and had only 25% ossified skulls. The adult male taken on 28 October on the Ecuador/Peru border had enlarged testes (9 × 4 mm). Aside from the head-pattern sexual dimorphism, all of these specimens are uniform in plumage.

A larger sample size for *D. sclateri* further corroborates this pattern in *Doliornis*. Of the 24 *D. sclateri* specimens that have skull ossification data, 9 have skull ossifications that are incomplete (2, 75%; 1, 60%; 4, 50%; 1, 10%; 1, 0%). Four (ossifications 50% or greater) of the nine have enlarged gonads that are indicative of breeding. Those nine specimens fall within the range of plumage variation of the other 15 specimens that have completely ossified skulls.

A similar pattern of skull ossification and the



Fig. 2. Adult male *Doliornis remseni* (ANSP 185684; VIREO r08/16/001-2) from Ecuador/Peru border, 28 October 1992. Photo by M. B. Robbins.

acquisition of adult plumage is exhibited in *A. rubrocristatus*. Data for 62 specimens (59 LSUMZ, 3 ANSP) with skull-ossification data were tabulated: 34 in adult plumage with 100% ossified skulls; 11 in adult plumage with incomplete ossification (4, 90%; 5, 75%; 1, 60%; 1, 50%); 6 in subadult plumage (1, 50%; 1, 40%; 1, 25%; 1, 20%; 2, 0%); and 2 in juvenal plumage (1, 10%; 1, 0%). Five of the 11 specimens in adult plumage with incomplete skull ossifications were in breeding condition.

Zimmer (1936) noted the sexual difference in head pattern in *D. sclateri*; the adult female lacks the all-black crown of the male. The female's crown, face, and throat are gray (closest to Plumbeous Gray, 87), and the lores are Jet Black (89). Unlike female *D. remseni*, *D. sclateri* lacks the pale gray around the front of the eyes. In fresh plumage, the chest and upper breast of both adult sexes of *D. sclateri* is Raw Umber (223), with subterminal pale buff bars (closest to 124), and a terminal Raw Umber bar. An excellent rendition of an adult female in fresh plumage is in Fjeldså and Krabbe (1990: plate 42, 7b); note that it is incorrectly identified as a juvenile. The dark terminal bar appears to be worn off rather quickly, and in extremely worn individuals the subterminal buff bar may be nearly absent. In adult *D. sclateri* the abdomen is noticeably paler in color than the breast, ranging from Clay (26) to a pale Amber (36).

Parker (in Snow 1982) mentioned that nest-

ling, juvenal and immature plumages were unknown for *D. sclateri*. Of the 30 *D. sclateri* specimens that we have examined, only 1 is in juvenal plumage. Because this plumage stage has never been described, we do so here: juvenile female (LSUMZ 113590; skull unossified, no gonad data), taken on 11 July 1983 in Depto. Huánuco by J. P. O'Neill. Crown Sepia (119), without rufous crest. Forecrown slightly blacker than remainder of crown. Back, rump and upper tail coverts Dark Brownish Olive (129). Upper wing coverts, scapulars, and flight feathers Sepia, with hint, especially on tips of coverts, scapulars and secondaries, of Antique Brown (37). Lores and face Medium Neutral Gray (84) with tinge of olive-brown. Throat and upper chest Olive-Brown (28), mixed with gray. Lower chest, breast and abdomen Clay Color (26), with indistinct streaks of Olive-Brown. Crissum similar in color to that of adult. Bill black, irides dull brown, and tarsi medium olive.

Now that the juvenal plumage of *D. sclateri* is known, a comparison with the juvenal plumage of *A. rubrocristatus* further supports the recognition of *Doliornis*. Parker (in Snow 1982) described the juvenal plumage of *A. rubrocristatus*; he noted that juvenile *A. rubrocristatus* (see Fjeldså and Krabbe 1990: plate 42, 4c) are strikingly similar in a number of features to adult *A. rufaxilla*. We quote Parker's summary statement, "The adult plumage of *rufaxilla* thus appears to

have evolved by retaining elements of the juvenile plumage of the genus and intensifying the colours." The ventral and dorsal streaks and the yellow ventral underparts of juvenile *A. rubrocristatus* and adult *A. rufaxilla* are so strikingly different from the juveniles of *D. sclateri* and *D. remseni* that we believe this character alone is justification for recognizing these genera. The juvenal plumage of *Zaratornis stresemanni* still remains unknown. FjeldsÅ and Krabbe (1990) stated that the juvenal plumage of *Phytotoma rutila* and *P. rara* is unstreaked ventrally.

ACKNOWLEDGMENTS

The ANSP and MECN Ecuadorian program has been supported since 1990 by the MacArthur Foundation. Without the direction, expertise, and companionship of Robert Ridgely the ANSP/MECN project would never have come to fruition. We thank Ing. Miguel Moreno of the Museo Ecuatoriano de Ciencias Naturales, Quito, for facilitating our work in Ecuador. The Ministerio de Agricultura, especially Sergio Figuero, kindly provided authorization for our work. Richard Prum generously examined and provided a diagnosis of the new species' syringes. We are grateful to the following people and institutions for the loan of specimen material: Scott Lanyon and David Willard (Field Museum of Natural History, Chicago); and J. V. Remsen, Jr., and Steve Cardiff (Louisiana State Museum of Natural Science, Baton Rouge). We are indebted to Paul Greenfield for his exquisite painting. We thank Gary Graves, Carstan Rahbek, Robert Ridgely, Thomas Schulenberg, and David Snow for valuable comments on the manuscript. Luis Renjifo M. graciously shared his Colombian observations with us.

LITERATURE CITED

- BLOCH, H., M. K. POULSEN, C. RAHBK, AND J. F. RASMUSSEN. 1991. A survey of the montane forest avifauna of the Loja province, southern Ecuador. I.C.B.P. study report no. 49.
- CRACRAFT, J. 1985. Historical biogeography and patterns of differentiation within the South American avifauna: Areas of endemism. Pages 49–84 in Neotropical ornithology (P. A. Buckley, M. S. Foster, E. S. Morton, R. S. Ridgely, and F. G. Buckley, Eds.). Ornithol. Monogr. 36.
- FJELDSÅ, J., AND N. KRABBE. 1990. Birds of the High Andes. Zoological Museum, Copenhagen.
- LANYON, S. M., AND W. E. LANYON. 1989. The systematic position of the plantcutters, *Phytotoma*. Auk 106:422–432.
- PARKER, T. A., III, T. S. SCHULENBERG, G. R. GRAVES, AND M. J. BRAUN. 1985. The avifauna of the Huancabamba region, northern Peru. Pages 169–197 in Neotropical ornithology (P. A. Buckley, M. S. Foster, E. S. Morton, R. S. Ridgely, and F. G. Buckley, Eds.). Ornithol. Monogr. 36.
- PRUM, R. O. 1990. A test of the monophyly of the manakins (Pipridae) and of the cotingas (Cotingidae) based on morphology. Occas. Pap. Mus. Zool. Univ. Mich. No. 723.
- PRUM, R. O. 1993. Phylogeny, biogeography, and evolution of the broadbills (Eurylaimidae) and asities (Philepittidae) based on morphology. Auk 110:304–324.
- RAHBK, C., H. BLOCH, M. K. POULSEN, AND J. F. RASMUSSEN. 1989. Zoologisk Museums ornithologiske ekspedition til Sydamerikas Andesbjerg 1989. Zoological Museum, Copenhagen.
- RENJIFO M., L. M. In press. First records of the Bay-vented Cotinga (*Doliornis sclateri*) in Colombia. Bull. Br. Ornithol. Club.
- SMITHE, F. B. 1975. Naturalist's color guide. Am. Mus. Nat. Hist., New York.
- SMITHE, F. B. 1981. Naturalist's color guide, part III. Am. Mus. Nat. Hist., New York.
- SNOW, D. 1982. The cotingas. Cornell Univ. Press, Ithaca, New York.
- VUILLEUMIER, F. 1969. Pleistocene speciation in birds living in the High Andes. Nature 223:1179–1180.
- VUILLEUMIER, F. 1970. Insular biogeography in continental regions. I. The northern Andes of South America. Am. Nat. 104:373–388.
- ZIMMER, J. T. 1936. Studies of Peruvian birds. Notes on *Doliornis*, *Pipreola*, *Laniocera*, *Rhytipterna*, and *Lipaugus*. Am. Mus. Novit. No. 893.