

Taxonomy

THE HYBRID ORIGIN OF A VENEZUELAN TROCHILID, *AMAZILIA DISTANS* WETMORE & PHELPS 1956

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INTRODUCTION

Amazilia distans was described as an endemic from SW Táchira, Venezuela (Wetmore & Phelps 1956), and it occupies an isolated position among the 97 Venezuelan hummingbird species. The reasons for this are that the taxon was discovered relatively recently and that only one skin specimen exists. Although the validity of this species has not been questioned by later authors (Mayr 1971, Meyer de Schauensee & Phelps 1978, Sibley & Monroe 1990 among others), and although subsequent, unconfirmed observations of *A. distans* have been made, almost nothing is known of its biological or ecological characteristics (reviewed in Collar *et al.* 1992). As a result of its apparent extreme rarity and its relatively threatened habitat, which can be described as mixed tropical and semideciduous forest (Huber & Alarcón 1988), the species is classified as critically endangered (Collar *et al.* 1992). However, as we point out below, the unusual coloration of the holotype does not allow it to be assigned to any of the currently recognized South American *Amazilia* species groups. We hypothesize that *A. distans* is a hybrid namely *Hylocharis cyanus* x *Amazilia fimbriata*.

MATERIALS AND METHODS

In the course of biogeographical and taxonomic studies of the hummingbird genus *Amazilia*, the type specimen of *Amazilia distans* in the National Museum of Natural History, Smithsonian

Institution (USNM) bird collection (Colección Ornitológica Phelps [COP # 60790], Caracas, presently on loan to USNM, as USNM # 461965; cf. Deignan 1961) was examined and compared directly with skins of other taxa (*Amazilia*, other genera). Data from *Amazilia* specimens in other museums were also included in the comparisons (see "Acknowledgments"). Measurements, rounded to the nearest 0.1 mm (Fig. 2), were made using a digital caliper. Plumage colors were determined by visual inspection under natural light. Because of the presence of iridescence, morphological evaluation of typical hummingbird colors depends to some extent on the subjective judgement of the taxonomist (see also Howell 1993); vernacular names were accordingly used here to describe colors. With regard to the assessment of hybrid origin, the methods of geographical and phenological exclusion of potential parental species explained in detail in Graves (1990) were employed.

According to Wetmore & Phelps (1956) the type specimen of *Amazilia distans* came from "El Salao (300 meters), near Burgua, Táchira, Venezuela," where it was collected by R. Urbano in 1954. Paynter (1982) gives the site coordinates as 07°26'N, 72°00'W. The specimen was sexed as male. Collar *et al.* (1992: 492) state that "There are apparently two specimens, a male in [the] USNM 'the type' and a male in [the] COP;" these are, in fact, one and the same specimen (M. Lentino, pers. comm.).

RESULTS AND DISCUSSION

Characteristic plumage features of the USNM male are its glossy turquoise blue crown and similarly-colored throat and breast. The chin and upper throat show gray-white feather disks. The uppertail coverts appear copper to faint red-violet, the inner rectrices are blackish bronze green while the outer ones are more blue-black. On the underparts, a small white patch on the breast and a gray abdominal coloration are conspicuous in the otherwise faintly gold-green plumage. The undertail coverts have a dark center and a narrow white border. The bill appears horn-colored with a dark brown tip. On the basis of its phenotype *Amazilia distans* was originally judged by Wetmore & Phelps (1956) and by Mayr (1971) to be closely related to *A. fimbriata*. Our own morphological comparisons disclosed few, if any, parallels with the plumage patterns of recognized *Amazilia* species groups (3–4 subgenera), or with other trochilid genera native to northwest South America, and we were therefore led to hypothesize that the specimen was a hybrid.

A number of Venezuelan trochilid genera can be readily excluded as potential hybridization partners, based on the position and altitude of the type locality (*Acestrura*, *Anthracothorax*, *Avocettula*, *Boissonneaua*, *Calliphlox*, *Chalcostigma*, *Chrysolampis*, *Discosura*, *Ensifera*, *Eriocnemis*, *Heliangelus*, *Heliothryx*, *Hylonympba*, *Lafresnaya*, *Leucippus*, *Lesbia*, *Metallura*, *Oxygogon*, *Polypplancta*, *Polytmus*, *Popelairia*, *Ramphomicron*, *Topaza*). Since the characters of the type specimen point unambiguously to it being a member of the Trochilinae, the subfamily Phaethornithinae (e.g., *Phaethornis* spp.) can be eliminated as a source of parental species.

The morphometric results (Fig. 2) show that the specimen is a medium-sized trochiline without extreme lengthening (*Coeligena*, *Doryfera*, *Helioaster*) or clear curvature of the bill (*Campylopterus*, *Sternoclyta*). In addition, the absence of ornamental plumage features such as lengthened crown, throat or tail feathers excludes *Agelaiocercus kingi* and the *Lophornis* species. Further narrowing of the candidate species pool was possible only by examining plumage patterns.

After consideration of *Amazilia distans* color characters that could not have resulted from re-

combination events (e.g., basic plumage color, dark face mask, differently colored throat, breast, and tail pattern) only the genera *Amazilia*, *Chlorostilbon*, *Hylocharis* and *Lepidopyga* remained. The species in question are all relatively uniform in possessing dark green dorsal plumage with mostly contrasting tail feathers.

Since intermediate characters are produced by hybridization, then given the turquoise blue pattern of the head and breast plumage, one parent species can be postulated with a blue or violet coloration in that area. In the genera named, this feature is prominent only in the male *Hylocharis cyanus*. This species is strongly sexually dimorphic; the female lacks the contrasting head and breast coloration and the green mid-belly of the male, and has instead underparts dominated by grayish tones. The disks of the male chin and uppermost throat feathers appear whitish to cream-colored. Both sexes show a gold-bronze rump, grading into the dark red-violet uppertail coverts, and dark steel blue rectrices. The adult male undertail coverts are the same color as the tail, while those of the subadult males and the females are brownish.

The characters described are found only in one *Hylocharis* taxon in the type locality, the subspecies *H. cyanus viridiventris*. This subspecies has a disjunct distribution, with a northwestern population from NE Colombia to W Venezuela (Fig. 1) and a more easterly one (Venezuela south of the Orinoco to SE Colombia, the Guianas, N Bolivia, and SE Brazil).

The main criteria to be taken into account when determining the hybridizing partner are the white breast patch, the gray abdominal coloration, the blackish bronze green inner tail feathers and the slight forking of the tail. Because of the absence of white breast markings and a clearly forked tail (the inner rectrices are much shortened), *Lepidopyga goudoti* and the local *Chlorostilbon* species *C. stenura* and *C. mellisugus* cannot be considered as potential partners. Of the remaining genus *Amazilia*, two species occur in southern Táchira, Venezuela, *A. viridigaster* and *A. fimbriata*. However, the local *viridigaster* population is characterized by rather purplish tail feathers. While it is true that females have grayish underparts, the white breast patch is lacking in both sexes.

Therefore, what remains to be determined is whether *Amazilia fimbriata* could be the parent of *A. distans*. The species occurs sympatrically with *Hylocharis cyanus* in southern Táchira and probably also at the eastern edge of the Venezuelan Andes between the deptos. of Mérida and Portuguesa (Fig. 1; Osés 1995). *A. fimbriata* shows only slight subspecific variation throughout its range. Some of those in the Andes (*fluvialilis*, *laeta*) have a turquoise-iridescent throat, while those at the eastern limit of the range show, among other features, pure white undertail coverts (Brazil: *nigricauda*, *tephrocephala*). Two subspecies have been described from northern and western Venezuela, *A. f. elegantissima* (Todd 1942) and *A. f. obscuricauda* (Zimmer & Phelps 1951). However, notwithstanding possible differences in the colors of the uppertail coverts and central rectrices (more strongly purplish), the subspecies *obscuricauda* from the western states from Cojedes to Táchira (Meyer de Schauensee

& Phelps 1978) cannot be clearly distinguished from the form *elegantissima* found further to the east. One character that all representatives of *A. fimbriata*, including *elegantissima*, have in common with each other, is that the center of the belly is pure white, and, above this, the lower breast bears a small white patch. As in other *Amazilia* species there is no marked sexual dimorphism. Females possess a rather lighter-colored throat and broader white edges to the undertail coverts, as well as light gray tips to the outer tail feathers. The first two characters and the white breast patch are found also in *A. distans*.

All of our measurements of the type specimen (Fig. 2) are intermediate between those of female *Amazilia fimbriata elegantissima* and male *Hylocharis cyanus viridiventris*. Comparing the morphological results and the morphometric data, the conclusion can be drawn that *A. distans* is in reality a hybrid of both taxa. In

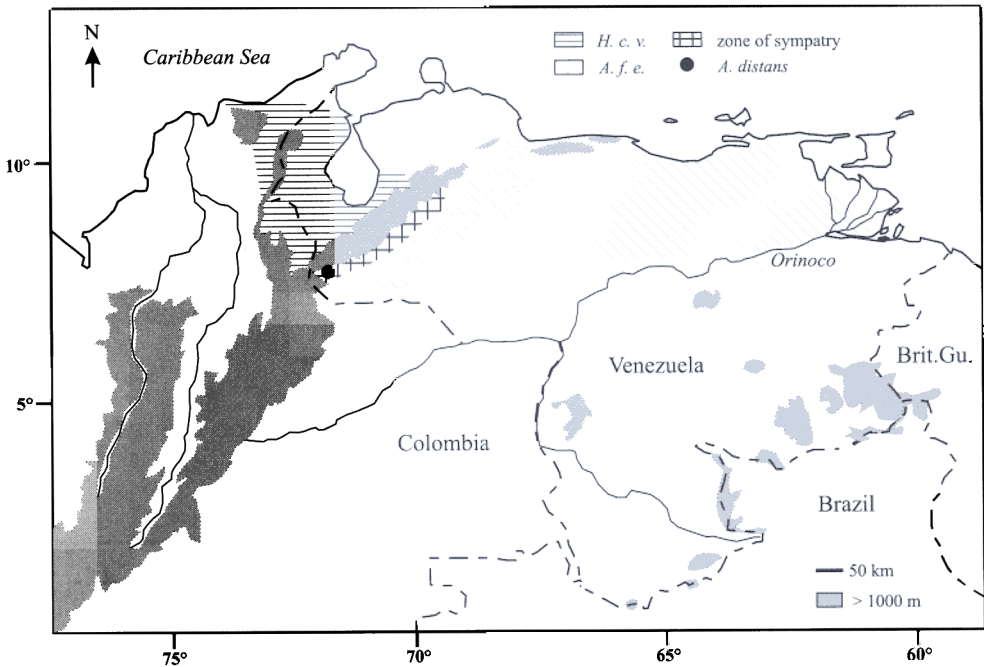


FIG. 1. Distribution of *Amazilia fimbriata elegantissima* and *Hylocharis cyanus viridiventris* (northern population), area of possible hybridization between these taxa, and type locality of *Amazilia distans*. The ranges shown incorporate localities of examined specimens (see Appendix) as well as data in Meyer de Schauensee (1949), Meyer de Schauensee & Phelps (1978), Hilty & Brown (1986), and Osés (1995).

view of the fact that there have been several unconfirmed sightings of *A. distans* it must be presumed that hybridization between the two species in SW Venezuela occasionally occurs. Interestingly, a hybrid of both species (*H. cyanus* x *A. f. nigricauda*) has already been described from Bahia, Brazil, by Berlioz (1929). According to that author, its characters are even closer to *A. fimbriata* than in the *A. distans* type, reflecting in the coloration of its median lower belly and undertail coverts the pure white abdominal parts of *A. f. nigricauda*. In addition, the Berlioz specimen shows a similar turquoise pattern in the throat and upper breast, but apparently more scattered, bluish-green crown feathers. Thus, its dorsal coloration strongly resembles *A. fimbriata*.

Further hybridizations involving *Amazilia* species have only been confirmed at the intra-generic level (Table 1; cf. Gray 1958). According to our investigations, a Bogotá specimen known as *Thaumatias caeruleiceps* Gould 1860 cannot be considered an *Amazilia versicolor milleri* x *Chrysoronia oenone* (Simon 1910) hybrid. The same applies to the *Cyanomyia* (= *Amazilia*) *salvini* Brewster 1893 type specimen. This bird was obtained in N Mexico (Sonora) and was later identified by Griscom (1934) as an *Amazilia violiceps conjuncta* x *Cyanthus latirostris* hybrid, an opinion with which Phillips (1965) concurred. However, our examination of the type specimen yielded no intermediate character combination of those species. In fact, its morphologi-

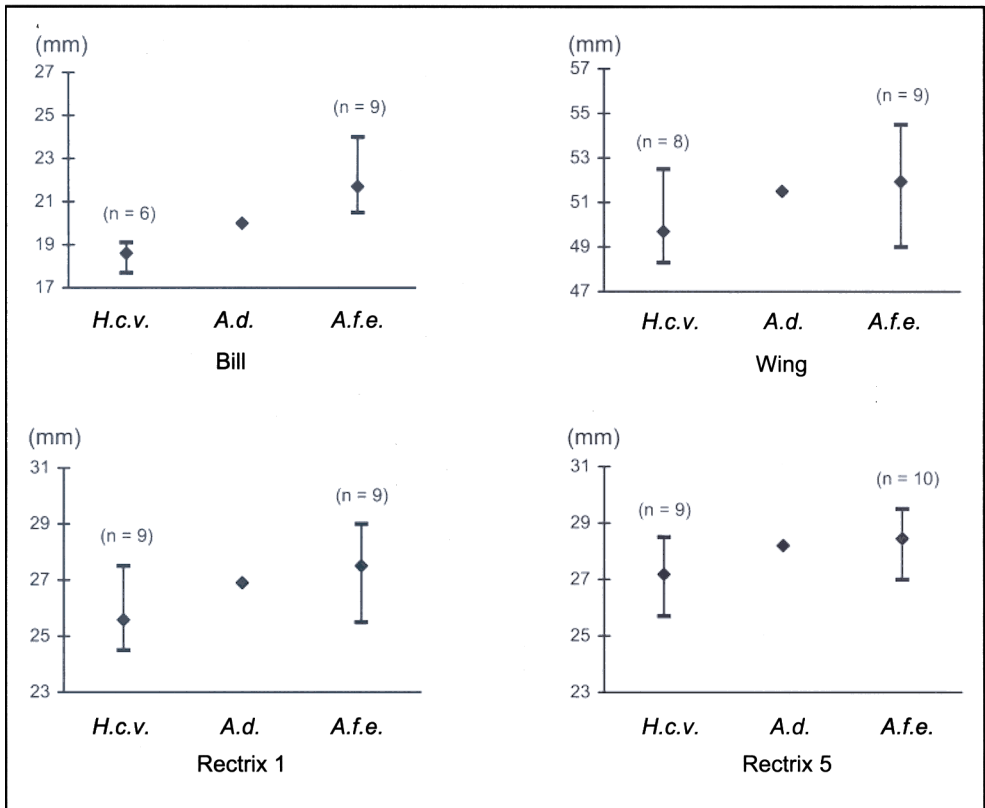


FIG. 2. Morphometric ranges and means for male *Hylocharis cyanus viridiventris*, male *Amazilia distans*, and female *Amazilia fimbriata elegantissima*. Measurements of the bill include the operculum. For statistical reasons, *Hylocharis* and *Amazilia* specimens from populations outside Táchira were included in the analysis; localities are given in the Appendix.

TABLE 1. Presumed intrageneric and intergeneric hybrids involving *Amazilia* species.

Taxon	Parental species	Source
<i>Amazilius Ocai</i> Gould 1859		Berlioz (1932)
<i>Amazilia bangsi</i> Ridgway 1910		Bangs (1930) Berlioz (1929)
<i>Amazilia distans</i> Wetmore & Phelps 1956		this study Butler (1932) Berlioz (1937) Dickey & van Rossem (1938)

cal and morphometric characteristics indicate that it is an aberrant individual of *A. violiceps ellioti* (Weller, in prep.), an observation supported by evidence of the relatively frequent occurrence of phenotypical mutants throughout the range of this race (Friedmann *et al.* 1950).

Only one further intergeneric hybrid involving *Hylocharis* is mentioned in the literature; intrageneric hybrids have apparently not yet been demonstrated. A series of three specimens of *Eucephala* (= *Hylocharis*) *pyropygia* Salvin & Godman 1881 was identified by Berlioz (1938) as consisting of *Chlorostilbon aureoventris pucherani* x *Hylocharis cyanus* hybrids. The potential ability of the latter species to hybridize with various genera can possibly be accounted for by its wide range in South America and by unspecified biological (bioacoustic?) characteristics.

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APPENDIX

Localities of specimens of *Hylocharis cyanus viridiventris* and of *Amazilia fimbriata elegantissima* examined in the study (from N to S; coordinates after Paynter 1982, Paynter & Traylor 1981).

Hylocharis cyanus viridiventris. Colombia: Carraipía, La Guajira (11° 16'N, 72° 22'W); El Bosque, La Guajira (c. 11° 09'N, 72° 20'W); Petrólea, Norte de Santander (08° 30'N, 72° 35'W); Villa Felisa, Norte de Santander (c. 07° 45'N, 72° 33'W); Venezuela: Cerro Yapacana, Amazonas (c. 03° 42'N, 66° 45'W); Tamatama, Amazonas (03° 09'N, 65° 50'W).

Amazilia fimbriata elegantissima. Venezuela: Boca Tocuyo, Falcón (11° 03'N, 68° 21'W); Caracas, Distrito Federal (10° 30'N, 66° 55'W); San Esteban, Carabobo (10° 26'N, 68° 01'W); Maracay, Aragua (10° 15'N, 67° 36'W); Ocumare del Tuy, Miranda (10° 07'N, 66° 46'W); Guanta, Anzoátegui (10° 14'N, 64° 36'W); Maturín, Monagas (09° 45'N, 63° 11'W); Hato Flores Moradas, Guárico (c. 08° 25'N, 67° 30'W).