

## A NEW HUMMINGBIRD SUBSPECIES FROM SOUTHERN BOLÍVAR, VENEZUELA, WITH NOTES ON BIOGEOGRAPHY AND TAXONOMY OF THE SAUCEROTTIA VIRIDIGASTER-CUPREICAUDA SPECIES GROUP

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*Abstract.* This study reviews the distribution and geographical variation of the Green-bellied Hummingbird, *Amazilia viridigaster*, recently renamed as *Saucerottia viridigaster*. Based on coloration patterns, there is evidence for the existence of two subspecifically distinct Andean populations of *S. viridigaster*. The evaluation of morphology and biogeography suggests the separation of *S. viridigaster* and *S. cupreicauda* as allospecies. Moreover, a new race of the latter, *Saucerottia cupreicauda pacaraimae*, from Sierra de Pacaraima, southern Bolívar, Venezuela, is described. Accepted 6 September 1999.

*Resumen.* Este estudio analiza la distribución y la variación geográfica del colibrí *Amazilia Colimorada*, *Amazilia viridigaster*, denominado ahora *Saucerottia viridigaster*. Basado en los patrones de coloración, hay evidencias de la existencia de dos poblaciones andinas de *S. viridigaster*, distintas a nivel subspecífico. La revisión de la morfología y la biogeografía indican la separación de *S. viridigaster* y *S. cupreicauda* como haloespecies. Además se describe una nueva raza de esta última, *Saucerottia cupreicauda pacaraimae*, de la Sierra de Pacaraima, al sur del estado Bolívar, Venezuela.

*Key words:* *Amazilia*, *Saucerottia viridigaster*, *Saucerottia viridigaster iodura*, *Saucerottia cupreicauda*, *Saucerottia cupreicauda pacaraimae*, *Trochilidae*, *Colombia*, *Venezuela*, *Sierra de Pacaraima*, *geographical variation*.

### INTRODUCTION

*Amazilia viridigaster* (Bourcier 1843) is a resident of the tropical to subtropical zone in Colombia and Venezuela where it inhabits submontane to montane, chiefly semi-open habitats. According to recent authors (Meyer de Schauensee 1964, Meyer de Schauensee & Phelps 1978, Hilty & Brown 1986), the western range of this trochilid extends along the eastern Andes from Mérida and Táchira in the north to Meta, with the southern limits in adjacent Sierra Macarena (see Fig. 1); the eastern subpopulations are found in the highlands

of southeastern Venezuela, western Guyana, and extreme northern Brazil, known as the Pantepui region (Mayr & Phelps 1967). Currently, four allopatrically distributed subspecies are recognized, *A. v. viridigaster* (Bourcier 1843), *A. v. cupreicauda* (Salvin & Godman 1884), *A. v. duidae* (Chapman 1929), and *A. v. laireti* (Phelps & Avelledo Hostos 1988). Due to taxonomic uncertainties concerning subspecific morphology and distribution (e.g., Chapman 1929, Peters 1945), I intend to summarize the current status and distributional data of the taxa of the *S. viridigaster* group.



Recent taxonomic and biogeographical studies revealed that the currently construed genus *Amazilia* is probably polyphyletic, suggesting the separation of four independently evolved species groups as genera (Weller 1998). As a taxonomic consequence, *A. viridigaster* becomes *Saucerottia viridigaster*. This paper addresses whether the name *viridigaster* should only refer to the Andean population of the species.

## MATERIAL AND METHODS

The study involved 163 specimens of *S. viridigaster* that either were examined in the bird collections of various institutions (see Acknowledgements, Appendix 1), or obtained on loan at the Alexander Koenig Zoological Research Institute and Museum of Zoology (ZFMK), Bonn. Descriptions of color of plumage characters are given in general terms derived from subjective impressions while studying skin specimens under natural light conditions or by means of an illuminated magnifying glass ( $\times 10$ ). Measurements of external morphological traits (bill, wing, tail length) were taken to determine the amount of morphometric variation, with the bill length measured from the tip to the proximal end of the operculum. Specimens from adjacent localities were grouped in pools (cf. Vuilleumier 1968, Bleiweiss 1985), thus enabling statistical comparison of morphometric characters in geographically separated subpopulations. Coordinates of collecting localities of specimens were taken from Paynter (1982), Paynter & Traylor (1981), and Stephens & Traylor (1985).

## RESULTS AND DISCUSSION

*Biogeography and taxonomy in the Andean S. viridigaster group.* The races of *Saucerottia viridigaster* show a continuous distribution along the eastern Andes of Colombia and western

Venezuela, but a more patchy one in southern Venezuela, Guyana, and northernmost Brazil (Fig. 1). Currently, the Andean population is considered to represent only one race, *S. v. viridigaster*.

Previously, another Andean taxon, *S. iodura*, was taxonomically separated from *S. viridigaster* based on differing tail characters. The earliest proof for a specimen named *Trochilus iodurus* by Saucerotte comes from the collection of Museum Heineanum (Cabanis & Heine 1860, Gould 1861, Salvin 1892). Unfortunately, the original manuscript has been lost (B. Nicolai, Halberstadt, pers. comm.). Thus, the description of *Hemithylaca iodura* by Cabanis & Heine (1860) appears to be the first valid one for this taxon.

Concerning the generic nomenclature, first Reichenbach (1854) listed the taxon as "*Chlorestes* & *Saucerottia iodura*" (although he labeled the type as "*Trochilus iodurus*, Saucerotte 1843"). Due to the priority rule, *Saucerottia* (Bonaparte, 1850) must be regarded the appropriate generic name, with the designated type species *Saucerottia saucerrottei* while *Chlorestes* refers to another genus (monotypic representative: *C. notatus*). Thus, later changes by Cabanis & Heine (1860, *Hemithylaca iodura*) and Heine (1863, *Eratina iodura*) represent only synonyms predated by the name *Saucerottia*. In the beginning of this century, the name *Saucerottia* was still maintained (e.g., Hartert 1900, Simon 1921, Berlioz 1933). However, several genera including *Saucerottia* were included by Peters (1945) in the currently valid genus *Amazilia*.

For reasons of supposed geographical variation in *S. viridigaster* and the formerly unknown range of *iodura* the latter has been an object of taxonomic controversies. For example, the type locality given with "Colombia" (probably from "Bogotá collections" like that of *S. v. viridigaster*; cf. Berlioz & Jouanin 1944) may have supported the uncertain sta-

tus of this taxon. Several taxonomists maintained its species status within *Amazilia* (Elliot 1878) or *Saucerottia* (Berlioz 1933), most likely due to presumed sympatry with *S. viridigaster*. Simon (1921), Nicéforo (1940), and Todd (1942) recognized it only subspecifically. In contrary, other reviewers either doubted the (sub-)specific distinctness of *iodura* (Hartert 1900, Peters 1945, Meyer de Schauensee 1949) or neglected the taxon completely (Meyer de Schauensee & Phelps 1978, Hilty & Brown 1986).

*Geographical variation in the Andean populations.* The coloration patterns in *S. viridigaster* suggest that two morphs are diagnosable and geographically separate in the Andes. The subpopulation northeast of the Táchira depression shows in both sexes purplish rectrices with bronze lateral webs. Specimens with this character have been traditionally referred to *iodura*. A certain variability of color portions – the inner rectrices are often bicolored – may be due to age- or sex-related differences as juvenile of both sexes can possess dull feather parts. Other diagnostic characters of the northern subpopulation are the uppertail coverts that reflect purplish to bronze (especially in females). The undertail coverts are usually paler and less glittering than the uppertail coverts, greyish green or bronze-green to purplish colored, exhibiting apically broad rufous margins that may extend even to the base of feathers (i.e., ZFMK # 7281).

In contrast to this, males of the subpopulation south of the Táchira depression are characterized by violet blue rectrices and purplish margins. In females, the rectrices may be laterally or apically brownish to bronze colored. The uppertail coverts of both sexes are dark purplish to violet blue whereas sexual differences are more obvious than in the northern form. Males show strongly purplish centres with rufous covering almost the distal

third, and pale greyish fringes reduced to the base. In contrast, females mostly exhibit dark greyish central parts with conspicuous whitish margins.

Morphometrically, there is no indication of differences in bill length or plumage characters between the northern and the southern subpopulation (Table 1). However, the geographically distinct coloration in tail and tail coverts indicates that both populations must be considered as distinct subspecies, with *S. n. iodura* in the northern and *S. n. viridigaster* in the southern part of range.

Based on the present distributional data, *S. n. iodura* ranges from the southern Andes of Venezuela to the extreme east of Norte de Santander (Colombia), whereas *S. n. viridigaster* occurs along the eastern Andes of Colombia (Fig. 1). In view of the apparent restriction of the nominotypical race to the eastern slope of eastern Andes (Hilty & Brown 1986) the type locality Fusagasugá (04°21' N, 74°22' W), representing the only record from the western slope, has been questioned by several previous authors (Chapman 1917, Meyer de Schauensee 1949). However, as there is neither indication that the collecting site was wrongly given by Bourcier (1843) nor that since the time of collecting the habitat has significantly changed (not indicated by Paynter & Traylor 1981), I suggest that the type locality should be regarded as correct.

The northern limits of *S. n. viridigaster* are probably in Norte de Santander where Hilty saw the species at 1800 m (Pamplona, 07°23' N, 72°39' W, Hilty & Brown 1986). Sánchez Osés (1995) gives distributional records based on specimens from *S. n. viridigaster* in Venezuela both from the northern and southern Andean slope surrounding the Táchira depression. Most likely, only specimens collected southwest of it belong to the nominotypical race whereas birds collected northeast of are referable to *S. n. iodura*. The range of the latter extends eastward to south-

TABLE 1. Mensural data of morphometric characters of all subspecies of *Saucerotilla viridigaster* and *S. cupreicauda* (means, standard deviations, ranges; in brackets: sample sizes); asterisk indicates subsp. nov.

Taxon	Sex	Bill (mm)	Wing (mm)	Rectrix 1 (mm)	Rectrix 5 (mm)
<b><i>S. viridigaster</i></b>					
<i>iodura</i>	Male	18.8 ± 0.7 (25) 17.5–20.0	52.2 ± 1.1 (22) 50.5–54.5	26.4 ± 0.7 (25) 25.0–28.5	30.8 ± 0.8 (25) 29.5–33.0
	Female	19.2 ± 0.5 (6) 18.5–20.0	51.0 ± 0.7 (6) 50.0–52.0	27.2 ± 1.2 (6) 25.5–29.0	29.8 ± 0.7 (6) 28.5–30.5
<i>viridigaster</i>	Male	19.7 ± 0.9 (28) 18.0–21.0	53.1 ± 1.8 (26) 48.5–56.5	26.8 ± 1.0 (28) 24.5–28.5	31.1 ± 1.6 (26) 26.0–33.5
	Female	17.7 ± 1.1 (25) 17.0–21.0	52.2 ± 1.7 (19) 49.0–54.5	26.3 ± 1.3 (22) 23.0–28.5	29.8 ± 1.4 (24) 27.5–32.5
<b><i>S. cupreicauda</i></b>					
<i>cupreicauda</i>	Male	17.7 ± 0.5 (25) 17.0–19.0	50.4 ± 1.1 (25) 48.5–52.5	25.7 ± 0.7 (25) 24.5–27.0	28.6 ± 0.9 (25) 27.0–30.5
	Female	18.2 ± 0.8 (23) 16.5–19.5	49.3 ± 0.8 (23) 47.5–51.5	25.7 ± 0.8 (23) 24.5–27.5	27.2 ± 0.7 (23) 26.0–28.5
<i>pacaraimae*</i>	Male	17.5 (2) 17.0–18.0	50.75 (2) 50.5–51.0	25.5 (1)	30.0 (1)
	Female	17.8 ± 0.2 (3) 17.5–18.0	50.5 (1)	27.5 (2) 27.0–28.0	28.75 (2) 27.5–30.0
<i>duidae</i>	Male	17.9 ± 0.4 (5) 17.5–18.5	50.8 ± 1.6 (6) 48.5–53.0	26.2 ± 0.7 (6) 25.5–27.5	28.7 ± 0.8 (6) 27.5–29.5
	Female	18.4 ± 0.3 (8) 18.0–19.0	49.8 ± 1.2 (7) 48.0–52.0	26.8 ± 0.9 (8) 25.5–28.0	27.1 ± 0.8 (8) 25.5–28.0
<i>laireti</i>	Male	18.5 (1)	52.0 (1)	26.5 (1)	30.0 (1)
	Female	19.5 (2) 19.0–20.0	50.25 (2) 50.0–50.5	27.0 (2) 27.0–27.0	28.0 (2) 27.5–28.5

western Barinas (see Fig. 1). However, the clustering of localities within the border region of Venezuela and Colombia (see Sánchez Osés 1995) implies parapatry of both races. Intergradation is indicated by a few specimens with an intermediate tail coloration (e.g., NMNH # 401.426, Palo Gordo).

*Geographical variation in Pantepui taxa.* The currently known races of *S. viridigaster* inhabiting the Pantepui region – *cupreicauda*, *duidae*, and *laireti* – share some coloration patterns and morphometric characters different from those of the Andean taxa. Dorsally, these taxa are more strongly contrasted in the back and rump with bronze to coppery instead of the

golden green coloration in *S. v. viridigaster* and *S. v. iodura*. The uppertail coverts and rectrices are lighter colored in general but remarkably variable (see details in the following). The tail is less bifurcated; on average, the outermost rectrices are 1.5–2.0 mm shorter than in the Andean subpopulations (for details, see Table 1). In the underparts, the dark grey portions of the lower belly, characteristic for the western subpopulations of *S. viridigaster*, are less extended or reduced to the abdomen. Moreover, the undertail coverts in the eastern subpopulations are almost entirely rufous, thus strikingly different from the more bicolored ones in the Andean taxa where rufous is mainly restricted to the margins of the rectrices.

The members of the Pantepui group were previously regarded by some taxonomists (Chubb 1916, Chapman 1931) as a separate species, *S. cupreicauda* (Salvin & Godman, 1884). The different plumage patterns and the complete geographical isolation of these races from the distant Andean populations of *S. viridigaster* (Fig. 1), suggest *S. cupreicauda* to be distinct at the specific level as morphospecies and allospecies, respectively. According to former nomenclature (e.g., Cory 1918), I reintroduce the name Copper-tailed Hummingbird as an appropriate vernacular name for this taxon.

In the course of biogeographical studies on the genus *Saucerottia* (Weller 1998), I examined the geographical variation in *S. cupreicauda*. The known range of the population I recognize as *S. c. cupreicauda* appears discontinuous and comprises in Venezuela the upper Rio Cuyuni Valley, the highlands and tepuis adjoining the Gran Sabana including Mt. Auyán-tepui and Mt. Roraima, and the headwaters of Rio Caroni along the border to Guyana (Meyer de Schauensee & Phelps 1978). The southern distributional limits are in Roraima in the extreme north of Brazil (Ruschi 1986, Grantsau 1988, Sick 1993) in

the Sierra de Pacaraima. For Guyana, besides the Roraima region, this taxon has been recorded from the Merume Mountains and the Kanuku Mountains (Chubb 1916, Snow & Snow 1974; see Fig. 1).

Comparison of specimens in the AMNH collection from Cerro Urutani, southwestern part of Sierra de Pacaraima, with nominate birds and the other subspecies indicated that this population represents a hitherto undescribed race of the species. I name it as follows:

***Saucerottia cupreicauda pacaraimae*,  
subsp. nov.**

*Holotype.* AMNH # 812.873; adult male; collected in Bolívar, Sierra de Pacaraima, Cerro Urutani, 1280 m, on March 30, 1977, leg. R. W. Dickerman.

*Diagnosis.* Differs from nominate *cupreicauda* in generally being darker green, with more copperish in the back; rump with purplish reflections; uppertail coverts shining purplish, lacking rufous traces at base; tail relatively uniformly purplish to copper red colored. Compared with races *duidae* and *laireti*, it is generally darker green in basic plumage; the tail lacks the variable coloration with bronze green parts of *duidae* and the chrome bronze tinge of *laireti*; the undertail coverts are darker rufous.

*Description of holotype.* Bill almost straight, 17.0 mm, upper mandible blackish, lower mandible pale horn-colored except for dark distal third; head, neck bronze green; back and rump bronze green to copperish, the latter with purplish reflections; uppertail coverts purplish, fringed with rufous (probably due to molt); chin feathers with inconspicuous whitish base; underparts, flanks glittering golden green; undertail coverts light rufous; rectrices centrally purplish, partially at base and later-

ally bronze to copperish.

*Description of female.* AMNH # 812.875, adult female. Similar to male, with the following exceptions: whitish base of central chin and throat feathers more prominent; back and rump less copperish; inner rectrices laterally with extended bronzish portions.

*Distribution.* SE Venezuela, S Bolívar, in southern Sierra de Pacaraima.

*Etymology.* The name of the new subspecies refers to the mountain range where the type locality is situated.

*Measurements.* Due to small sample size ( $n = 6$ ) and the fact that some individuals of the type series are in molt, thus lacking prominent morphometric characters, firm comparative conclusions can hardly be drawn. However, the available mensural data (Table 1) fall within the range of the other subspecies that show no significant differences either in bill length or plumage characters. This result suggests that morphometric variation as a mean for subspecific differentiation can be neglected in *S. cupreicauda*.

*Geographical variation in other races of S. cupreicauda.* Not surprisingly, the new taxon morphologically connects the population of *S. c. cupreicauda* with the southern races, especially *S. c. duidae*. In *S. c. cupreicauda*, the lower back and rump have less copperish tinge than in the races *duidae* and *pacaraimae*. The uppertail coverts and tail feathers of the nominate form are much more rufous than in all other races. Due to darker terminal parts, the inner rectrices are often bicolored showing a mixture of rufous and bronzish or bronze green, but rarely with purplish (AMNH # 236.576) and chrome bronze (ZFMK # 7261), respectively.

The southern races *S. c. duidae* and *S. c.*

*laireti* both have a fairly restricted distribution, with *duidae* inhabiting central Bolívar and Amazonas where it is known from only three localities (Cerro Duida, Salto Pará, mountains west of Suapure; see Fig. 1). Additionally, one female specimen from Insétos, Paruna River (USP # 54.761), located in Sierra de Parima, seems to represent this subspecies, and this would extend the known range approximately 170 km southeastward. Compared with the nominotypical form, *S. c. duidae* is more strongly contrasted on the hindneck, back, and tail, characterized by bronzish coloration and lustrous copper to purple coloration towards the rump and uppertail coverts, especially in males. Similarly, contrast in the rectrices varies from bronze reddish to purple red, with bronze green to dark purplish tips. Females are less intensively colored in these characters, having more bronze green in the tail. Generally, color transitions in the tail are more variable in *S. c. duidae* and not as abrupt as in nominate birds.

In contrast, *S. c. laireti* exhibits a more uniform coloration pattern. The taxon lacks the coppery back feathers, and the rectrices have a chrome bronze instead of purplish tinge. *S. c. laireti* is confined to the southernmost parts of Amazonas where the only collecting sites are located in Serranía de Tapirapecó (type locality: Cerro Tucusito; Phelps & Avelado Hostos 1988) and Cerro de la Neblina.

*Habitat and biology.* The species inhabits forest edges, clearings, and shrubs from foothills to highlands, slopes and plains of tepuis, mainly within the subtropical zone. *S. c. cupreicauda* has the largest altitudinal range extending from 85 m (Kanuku Mts.; Snow & Snow 1974) to 1700 m (Mt. Auyán-tepui; Barrowclough *et al.* 1997). *S. c. duidae* mostly occurs in montane, subtropical primary forests up to 1400 m, but has been occasionally observed in the tropical zone (e.g., Salto Pará, 220 m).

*S. c. laireti* ranges from 750 m (Co. de la Neblina) to 1850 m (Co. Tucusito) where the taxon inhabits semi-open habitats that are dominated in part by terrestrial Bromeliaceae and Orchidaceae (Phelps & Avelledo Hostos 1988). The only records of *S. c. pacaraimae* are close to 1300 m, but a similar altitudinal distribution as in the other races is likely.

Although the species can be considered common in appropriate habitats (Phelps & Avelledo Hostos 1988, Willard *et al.* 1991), nesting and breeding are almost unknown and have been reported only once. A nest was discovered in February near Moco Moco creek in Kanuku Mountains, Guyana, containing two nestlings (Snow & Snow 1974). This date is just outside the range for *S. viridigaster* which breeds approximately from October to January (based on gonad activity, Hilty & Brown 1986), thus possibly representing the end of the breeding season for *S. cupreicauda*.

*Speciation model in Saucerottia.* Based on the evaluation of morphological characters, the northwestern part of South America, chiefly the premontane zone of the Andes, is supposed to be the evolutionary centre of *Saucerottia* (Weller 1998). This region is inhabited by five species comprising *S. saucerrottei*, *S. cyanifrons*, *S. tobaci*, and the *S. viridigaster-cupreicauda* group. According to the progression rule (Hennig 1950), plesiomorphic morphological features found in most taxa are the almost entirely green body plumage with greenish to greyish belly, and the bluish to purple colored, slightly forked tail. With respect to the contrasted back and modified tail morphology (lighter coloration; less pronounced bifurcation, Table 1) in *S. cupreicauda* on the one hand but morphological similarities (rectrices partly bicolored) with *S. viridigaster* on the other hand, the first taxon appears derived from the Andean populations. Mayr & Phelps (1967) ascribed the recently observed avifaunistic diversity of the

southeastern Venezuelan highlands and tepuis chiefly to long-distance immigration from major zoogeographical centres, e.g., the Andes and the Amazon basin. There are other cases in trochilids indicating that Pantepui taxa derived from eastern Andean representatives, for example in *Phaethornis angusti* (ssp. *incanescens*), *Doryfera johannae* (ssp. *guianensis*), *Heliodoxa xanthogonys*, and *Lophornis pavovina* (Chapman 1931, Mayr & Phelps 1967, Hinkelmann 1988, Gerwin & Zink 1989).

In view of the biogeographical and morphological patterns found in the South American taxa of *Saucerottia*, it is likely that the ancestors of the present Central and western Andean populations (*S. saucerrottei*, *S. cyanifrons*) and the populations east of the Andes (*S. viridigaster-cupreicauda* group, *S. tobaci*) were initially separated by the orogenetic uplift (see Chapman 1927) terminated in early Pleistocene (Simpson 1979). Evidence from ecological adaptations and distributional data of the eastern species suggest that first proto-*viridigaster* and proto-*tobaci* evolved in the submontane zone of the Andes (*viridigaster*) and coastal Cordillere of Venezuela (*tobaci*), respectively (Weller 1998). Subsequently, both taxa may have colonized the Pantepui region of southern Venezuela by dispersal. In *S. tobaci*, one race, *S. t. caurensis*, is found exclusively south of the Orinoco (Sánchez Osés 1995) which may indicate some "river effect" on its subspecific differentiation (for review of "river theory", see Haffer 1992).

For the *S. viridigaster-cupreicauda* group, I hypothesize that a precursor with bluish-purple rectrices evolved prior to the Pleistocene in submontane forests along the eastern Andean slope. As both species are forest-edge inhabitants, subspecific differentiation was probably caused by vegetational fluctuations and establishment of local refuges due to climatic changes that were significantly increased during Pleistocene (e.g., Haffer

1967, 1969, 1970). In case of *S. viridigaster*, the geographical separation of two subpopulations (proto-*iodura*, proto-*viridigaster*) could have been triggered by an isolation effect of the Táchira depression during an arid inter- or postglacial phase. Occasional intergradation in individuals from extreme northeastern Colombia suggests that both taxa may have come in secondary contact along a small zone of parapatry more recently.

Prior to the differentiation of *S. cupreicauda*, populations may have evolved from *S. viridigaster* colonizing the Pantepui area by long-distance immigration which might be counted to a certain dispersal ability of this species (Mayr & Phelps 1967). It seems possible that forest belts along Rio Meta or Rio Guaviare drainage and the upper Orinoco basin served as invading pathways ("stepping-stones") for diverse Andean forest species of Amaziline trochilids including *S. viridigaster* (Weller 1998). Similar dispersal events have been suggested for other Andean hummingbird genera like *Metallura* (Heindl & Schuchmann 1998). Finally, differentiation and subspeciation, respectively, of *S. cupreicauda* may result from establishment of local forest refuges throughout the Pantepui region (e.g. Mt. Roraima, Co. Tucuito, Co. Duida).

The morphological distinctness of *S. cupreicauda* as against *S. viridigaster* justifies its status as allospecies. Nevertheless, it is a biogeographical and ecological correlate of the latter. Considered by Chapman (1931) as mutual representatives, both are part of a superspecies that, on morphological and biogeographical grounds, should include the morphologically similar but allopatrically distributed Venezuelan taxon *S. tobaci*.

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APPENDIX 1. Localities of specimens examined (listed for countries, from N to S; coordinates from Paynter 1982, Paynter & Traylor 1981, Stephens & Traylor 1985).

*Saucerottia viridigaster iodura*. Venezuela, Táchira: La Raya, Sierra Nevada, 2000 m, 08°33' N, 71°03' W; San Juan de Colón, 800 m, 08°02' N, 72°16' W; San Cristóbal, 1700 m, 07°46' N, 72°14' W; Colombia, Norte de Santander: 16 km N of Cúcuta, 215 m, 07°54' N, 72°31' W; Juan Frío, 500 m, 07°48' N, 72°28' W; Villa Felisa, 420 m, 07°45' N, 72°33' W; Palo Gordo, 1400 m, 07°40' N, 72°31' W.

*Saucerottia v. viridigaster*. Colombia: Fátima, Boyacá, 700 m, ca. 07°00' N, 72°10' W; Santa Fé de Bogotá, páramos de Bogotá, Cundinamarca, not located (see Paynter 1982); Choachí, Cundinamarca, 2000 m, 04°32' N, 73°56' W; Quetame, Cundinamarca, 1700 m, 04°20' N, 73°51' W; Llanos of Rio Meta, 250–500 m, = Medina (see Meyer de Schauensee 1949, not given in Paynter 1982), Cundinamarca, 04°30' N, 73°21' W; Buenavista, Meta, 1600 m, 04°10' N, 73°41' W; Villavicencio, Meta, 500 m, 04°09' N, 73°37' W; Pico Renjifo, Sierra Macarena, Meta, 1500 m, ca. 03°06' N, 73°55' W; additional distributional records in Meyer de Schauensee (1949): Palmar, Casanare, 500 m, 06°10' N, 72°01' W; La Colorada, Arauca, 600 m, 06°04' N, 72°08' W; Rio Casanare, not located (close to preceding localities); Mámbita, Cundinamarca, 1000 m, 04°46' N, 73°19' W; Caquéza, Cundinamarca, 1570 m, 04°25' N, 73°25' W.

*Saucerottia c. cupreicauda*. Venezuela, Bolívar: Carabobo, La Planada, 240 m, 06°18' N, 61°26' W; Monte Roraima, 900–1200 m, 05°12' N, 60°44' W; Philipp Camp, 1800 m, ca. 05°09' N, 60°47' W; Paulo, 1200 m, 05°08' N, 60°49' W; Arabopó, 1300 m, 05°06' N, 60°44' W; Guyana: Merume Mountains, 610 m, 05°48' N, 60°06' W; Quonga, 600 m, ca. 04°10' N, 59°20' W; Annai, 100 m, 03°57' N, 59°06' W.

*Saucerottia cupreicauda pacaraimae*, subsp. nov. Venezuela, Bolívar: Sierra de Pacaraima, Cerro Urutaní, 1280 m, 03°46' N, 63°03' W.

WELLER

*Saucerotia cupreicauda duidae*. Venezuela: Mountains west of Suapure, Bolívar, no altitude given in Paynter (1982), ca. 07°14' N, 65°10' W; Cerro Duida, Amazonas, 1300–1600 m, 03°25' N, 65°40' W; Insétos, Paruna River, Amazonas, no altitude and coordinates given in Paynter (1982).

*Saucerotia cupreicauda laireti*. Venezuela, Amazonas: Cerro de la Neblina, Camp IV, 750 m, Camp XI, 1850 m, 00°50' N, 66°00' W.