Phytotaxa 694 (3): 271–280
https://www.mapress.com/pt/

Article

ISSN 1179-3155 (print edition)
PHYTOTAXA
ISSN 1179-3163 (online edition)

https://doi.org/10.11646/phytotaxa.694.3.6

Telipogon cruentilabrum (Orchidaceae: Oncidiinae): a new species from mid-western Ecuador, long misidentified as *T. dendriticus*

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Abstract

Telipogon cruentilabrum, from the cloud montane forest of mid-western Ecuador, is proposed as a new species. Plants of *T. cruentilabrum* are characterized by the yellow flowers with dark yellow longitudinal veins and tortuous, occasionally branched transversal lines; petals and lip with heavily undulate blades and irregularly reflexed margins; petals with a dark red-brown, swollen base; lip with a conspicuous radial, red-purple basal stain; a large, dark purple-red, elevated callus; anther profusely surrounded by three tufts of red-purple setae; and the stigma wide, sub-trapezoid, dark purple. This species has long been misidentified as *T. dendriticus*. Although in the holotype no callus is observed on the lip, and in its description and subsequent citations a callus is never mentioned. We provide here a detailed description, figures, distributional map and comparison with its morphological most similar species, *T. tamboensis*, and also include arguments to discriminate it from *T. dendriticus*.

Key words: Endangered species, New Species, *Telipogon* Alliance

Introduction

Telipogon Kunth in Humboldt *et al*. (1816: 335) is a neotropical orchid genus representative of the montane and submontane forests from Southern Mexico to the Andes of Bolivia, including the Antilles (Dodson 2004, Martel & Nauray 2013, Iturralde *et al*. 2021, Baquero *et al.* 2022). The genus, which now includes species formerly classified under *Stellilabium* (Williams *et al*. 2005, Chase 2009, Neubig *et al*. 2012), comprises approximately 250 species (Bogarín *et al.* 2024, POWO 2025) and encompasses both stemless and stemmed representatives. A defining feature of *Telipogon* is the absence of conspicuous pseudobulbs, with the exception of *T. pseudobulbosus* (Bennet & Christenson 1998: 86) Williams & Dressler (2005: 171) and *T. selbyanus* N.H. Williams & Dressler (2005: 171). Additionally, species in the genus are characterized by flowers with a short and straight column, an apical stigma, a dorsal anther containing four unequal pollinia, and an uncinate viscidium (Dodson 2004, Martel *et al*. 2017).

Telipogon has been a taxonomically difficult genus. The low representation of *Telipogon* specimens in herbaria and the unsuccessful ex-situ cultivation have contributed to the limited knowledge of the genus (Dodson 2004). Vegetative parts of *Telipogon* plants have no special characteristics that can help discrimination among species. Moreover, many

Accepted by Edlley M. Pessoa: 25 Feb. 2025; published: 24 Mar. 2025

species share a similar floral architecture and shape (i.e. mostly rounded and sub-actinomorphic yellowish perianth, with a setose and dark red colouration in the central area). Therefore, a detailed analysis of the flower, together with that of the vegetative parts, is necessary to correctly discriminate among *Telipogon* species.

During the revision of Ecuadorian material identified as *Telipogon dendriticus* Reichenbach (1878: 6), including its holotype (*C. Lehmann 94*, W), the original protologue as well as later taxonomical accounts, we noticed that individuals identified as *T. dendriticus* by C. Dodson since 1988 actually belong to a non-yet described taxon, which we propose as a new *Telipogon* species. Here, we provide a detailed description, illustrations, and photographs, and discuss the differences between the new species and morphologically similar species such as *T. tamboensis* Dodson & Hirtz in Dodson (2004), including characters to discriminate it from *T. dendriticus*.

Materials and methods

As part of ongoing research on orchids in Ecuador, exploration trips have been carried out since 2022 to high Andean habitats, covering the western and eastern slopes of the Andes, where *Telipogon* species are distributed. Plant material was collected under collection permit No. MAATE-DBI-CM-2021-0187 issued by the Ecuadorian Ministry of Environment, Water and Ecological Transition (MAATE). Some collected plants were cultivated ex-situ to obtain further blooms, while others were used as voucher specimens. For the vouchers, vegetative parts were dried, and flowers were preserved in Copenhagen solution (70% ethanol, 29% water and 1% glycerol). Voucher specimens were deposited in the Ecuadorian Museum of Natural Sciences of the National Institute of Biodiversity (QCNE). Photographs of floral and vegetative structures were taken using a Nikon D5100 (AF-S Micro Nikkor 60mm f/2 lens), and a Canon EOS T6 camera (Canon EF-S 35/28 Macro lens). Plant material and pictures of the new entity were compared to those of morphologically similar species, including material deposited at QCA, QCNE (physical examination), HA, K, MO, and W (online examination). Specialized literature was consulted (Kraenzlin 1919, Braas 1982, Dodson & Dodson 1989, Dodson 2002, 2004). We also revised the holotype of *Telipogon dendriticus* (C. Lehmann 94, W) and the original description by Reichenbach (1878). Figures and a composite digital line drawing were prepared using Adobe Photoshop® 2019. The extent of occurrence (EOO) and area of occupancy (AOO) for the new entity were assessed using the GeoCAT tool, serving as a basis for an informal evaluation of the conservation status following IUCN geographic range criteria (B) to evaluate if a taxon belongs in a threatened category (Bachman *et al*., 2011; IUCN, 2024). A distribution map illustrating the EOO and AOO of the new taxon was created using ArcGIS 10.8 software and national environmental data.

Taxonomy

Telipogon cruentilabrum Iturralde, M.M. Jiménez & Baquero, *sp. nov.* (Figures 1–3).

Type:—ECUADOR. Bolívar: Salinas de Bolívar, road to Tres Marías–Muldiaguán, 2792 m, 29 May 2023, *G.A. Iturralde GI-2305-0475* (holotype: QCNE!).

Telipogon cruentilabrum is morphologically most similar to *T. tamboensis*, both presenting yellow flowers with longitudinal yellow veins, conspicuous transverse reddish-brown veins, and a dark red callus on the lip. It is distinguished from *T. tamboensis* by the petals and lip which are undulate towards the margins (*vs*. flat margins) with tortuous, occasionally branched-incomplete, transversal vein-lines (*vs.* the complete and straight transverse vein-lines), the orbicular-rhomboid petals with a prominent dark red-brown swelling at the base (vs. elliptic-ovate petals with an orange-brown, slightly swollen base), the transversely ovate lip with a red-purple radial stain at the basal third (*vs*. broadly elliptic lip without a basal stain at the base) and a thicker, wider than longer (5.5–6.5 × 6.5–7.0 cm), cordiform callus (*vs*. thinner, longer than wider, ca. 6.1 × 5.5 cm, narrowly cordiform callus).

Description:—Plant epiphytic, caespitose, up to 30 cm in length, including inflorescence. Roots 1.8–2.9 mm in diameter, thick, cylindrical. Stem abbreviated, up to 3 cm long, laterally compressed, covered by up to 5 distichous, imbricating sheaths. Leaves 2–7, 3.4–8.0 cm long, coriaceous, distichous, articulated to the sheaths, the blade 3.5–7.0 × 1.5–3.0 cm, elliptic to broadly elliptic, acute, conduplicate, carinate abaxially, the basal leaves smaller than the upper leaves. Inflorescence apical or lateral, erect, racemose, 2–8 flowered, opening in succession, up to 3–4 opened simultaneously; peduncle 5–13 cm long, ancipitous at the base and gradually widening upwards, forming 3

longitudinal, conspicuous carinae, and up to 4 carinae in larger inflorescences; rachis ancipitous to 3-carinate, up to 6 cm long, floral bracts light-green, 10.2–17.0 × 3–8 mm, conduplicate, triangular, boat-shaped, ovate when extended, acute, carinate abaxially. Ovary 24–28 mm long, triquetrous, shortly pedicellate, 1–2 mm long. Flowers 27–28 × 38 mm, non-resupinate; sepals, petals and lip yellowish with dark yellow veins and conspicuous, dark red-brown, tortuous-irregular, longitudinal and transversal lines, the petals irregularly stained dark red-brown at their bases, the lip with a red-purple stain which radially extends and fades towards the middle and a dark purple-red callus, the column dark purple, the anther red-brown suffused with yellow at the margins. Sepals 15–16 × 6–7 mm, ovate, acute, concave, carinate abaxially, 3-veined, margins involute in mature flowers; *lateral sepals* oblique. Petals 17–20 × 17–21 mm, orbicular-rhomboid, obtuse, minutely apiculate, convex to reflexed towards the apical half, undulate along the margins, 9–11-veined; glabrous, with a dark red-brown, attenuate, minutely papillose and ciliate bump at the petal base. Lip 18–20 × 22–26 mm, transversely ovate, obtuse, minutely cuspidate, the margins undulate and irregularly reflexed, minutely papillose at its basal third; 17–21-veined; callus 5.5–6.5 ×6.5–7.0 mm, adnate to the base of the lip, cordiform, papillose and hirsute, the midportion longitudinally swollen to form a broad ridge-like structure, the apex slightly recurved, mostly free from the blade beyond 2 mm. Column 10–11 × 8–9 mm, broad, sessile, ventrally dark purple and velvety, with a concave dorsal projection, flat at the edges, forming a wider than high anther cavity, and with two unprominent lateral swellings; with three tufts of setae, one profuse tuft on the dorsal projection and two sparse tufts on the lateral swellings; setae of uniform size up to 3.8 mm long, acicular, simple, purple-red with pale yellow tips. Stigma ca. 4.0 mm wide, quadrate to trapezoid, dark purple, with thickened and sinuate-undulate margins, the ventral margin protruding 1.5 mm. Anther cap ca. 3.4 mm wide, dorsal, cordiform, papillose. Pollinarium ca. 4.0 mm long, with two pairs of unequal pollinia attached to an uncinate viscidium. Fruit triquetrous capsule.

Distribution and ecology:—We have recorded a single population of *Telipogon cruentilabrum* so far. However, deposited herbarium material suggests there are at least two other populations at 50 and 100 km to the north of the type locality: one near Pilaló and another near Sigchos, in Cotopaxi Province (Figure 4). We have not found the species, neither in situ nor in herbaria, to the north or south of these localities (Figure 4). The ecosystem where *T. cruentilabrum* develops corresponds to the montane evergreen forest of the Western Andes, code BsMn03 (Ministerio del Ambiente del Ecuador 2013). Young and mature plants have been observed growing as epiphytes, between 1.5 m and 3 m from the ground, on branches of scattered small trees within a pastureland, mainly on *Baccharis latifolia* (Ruiz & Pavon 1978: 208) Persoon (1807: 424) (Asteraceae), with branches almost completely covered with mosses and liverworts. The new species is growing in sympatry with *Telipogon polyrrhizus* Reichenbach (1878: 6) and a *Telipogon* sp. (former *Stellillabium*), *Cyrtochilum macranthum* (Lindley 1833: 205) Kraenzlin (1917: 95), *and Epidendrum suavis* (Rchb. f. & Warsz. in Reichenbach 1854; 112) Løjtnant (1977: 327). In data available from herbarium specimens the species has been recorded with flowers from July to November. In the type locality, *Telipogon cruentilabrum* has been recorded flowering between June and November, with the peak of bloom in August.

Etymology:—In allusion to the red-purple, radial stain at the base of the lip which helps identifying the species.

Conservation status:—The known distribution of *Telipogon cruentilabrum* is located in the western Andes Mountain range of Ecuador where three localities have been recorded for this species, two in the province of Cotopaxi and one in the province of Bolivar. The calculated extent of occurrence (EOO) is 280.12 km2, while its area of occupation (AOO) is = 12 km2. The western Andes Mountain range of Ecuador has undergone considerable changes in land use, changing the natural vegetation cover for areas designated for agriculture and livestock (Kleemann *et al*. 2022). Of the calculated area of occurrence for *T. cruentilabrum*, only 44% has natural vegetation, while of the calculated area of occupation, 33% has natural vegetation. Furthermore, large mining projects have been established compromising the remnants of native forest that remain in this region. Considering these factors and following the IUCN criteria we recommend categorizing *T. cruentilabrum* as Endangered, according to criteria B1ab(i)(iii) + B2ab(ii)(iii).

Discussion:—Calaway Dodson, who intensively studied *Telipogon* in Ecuador between 1980 and 2010, misidentified the species described here as *T. dendriticus*. Dodson collected and identified some specimens near Pilaló, west central Ecuador, as belonging to *T. dendriticus* (*C.H Dodson, T Dodson & A. Embree 7203* (SEL-ex RPCS); *C.H Dodson, P. Morgan & M. Fallen 8560* (SEL); *C.H. & P.M Dodson 14299* (MO-ex RPCS) (Figure 5); *C.H. & P.M Dodson 15384* (MO-ex RPCS). Nevertheless, these specimens present a thick, well-developed callus on the lip, which is not present in *T. dendriticus*. Effectively, the type specimen of *T. dendriticus*, Lehmann 94 (W), in concordance with the original description by Reichenbach (1878), lacks a callus on the lip (Figure 5). Moreover, Kranzlin (1919) provides further details by expanding the description and recording the species as presenting an ecallose lip ("*labellum ecallosum*"; Kranzlin 1919:12). More recently, Brass (1982: 91) pointed out *T. dendriticus* lacks a callus on the lip and illustrates a plant of the species accordingly. Based on all this, we concluded that the specimens collected by Dodson from Pilaló do not belong to *T. dendriticus* but, together with plants found in the Bolivar Province, to a previously

undescribed taxon. Despite intensive searching, we have not yet been able to find specimens that fit the description of *T. dendriticus*, either on our field trips or in photographs such as those on iNaturalist.org or Flickr, making it difficult to make an in-depth comparison with that species.

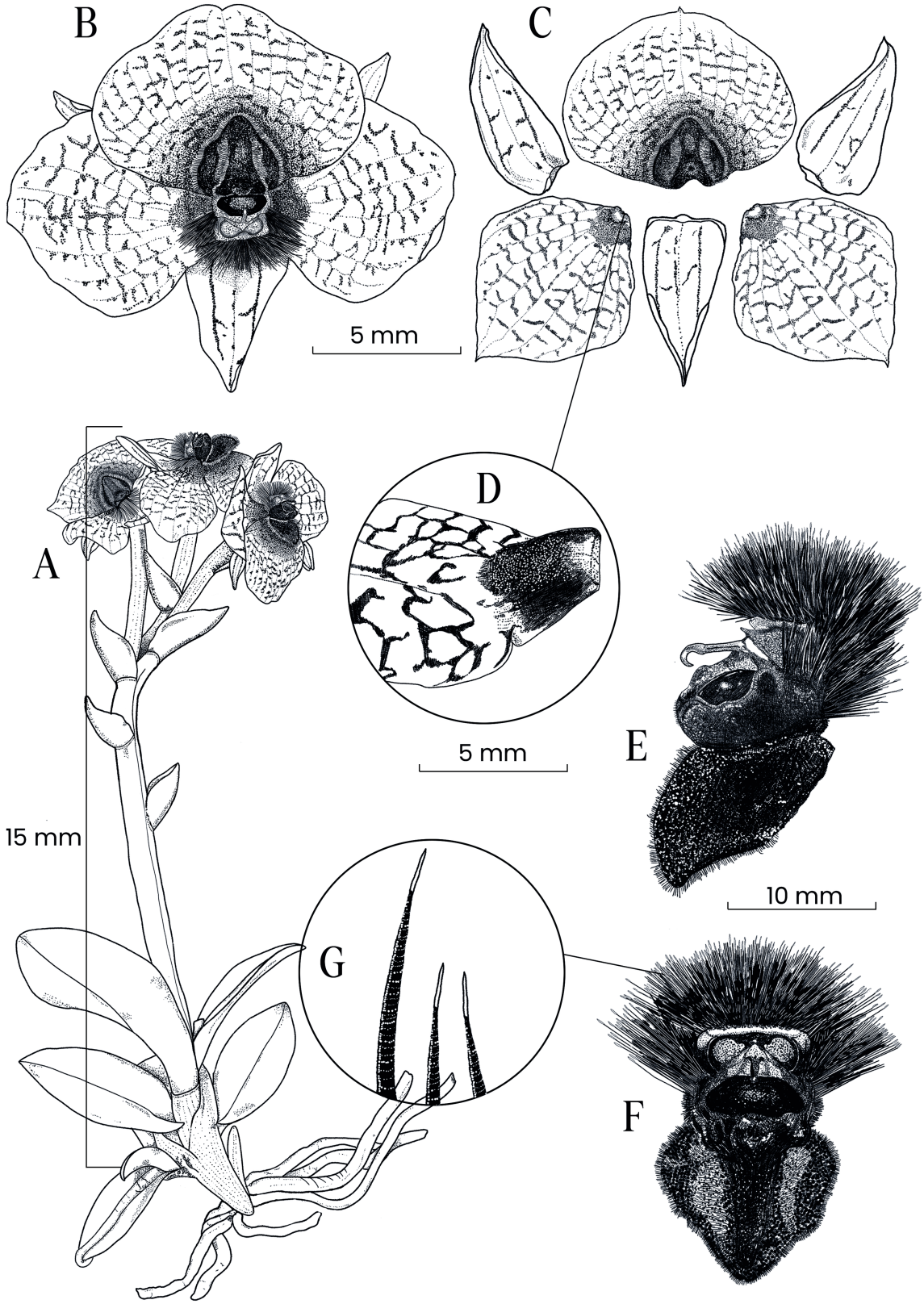

FIGURE 1. Illustration of *Telipogon cruentilabrum* Iturralde, M.M. Jimenez & Baquero. **A.** Habit; **B.** Flower, frontal view; **C.** Dissected flower; **D.** Bump at the petal base; **E.** Callus and column, ¾ view; **F.** Callus and column, frontal view, **G.** Closeup of setae of the column. Drawn by Melany Sosa from the plant that served as the type (*Gabriel A. Iturralde*, *GI-2305-0475*).

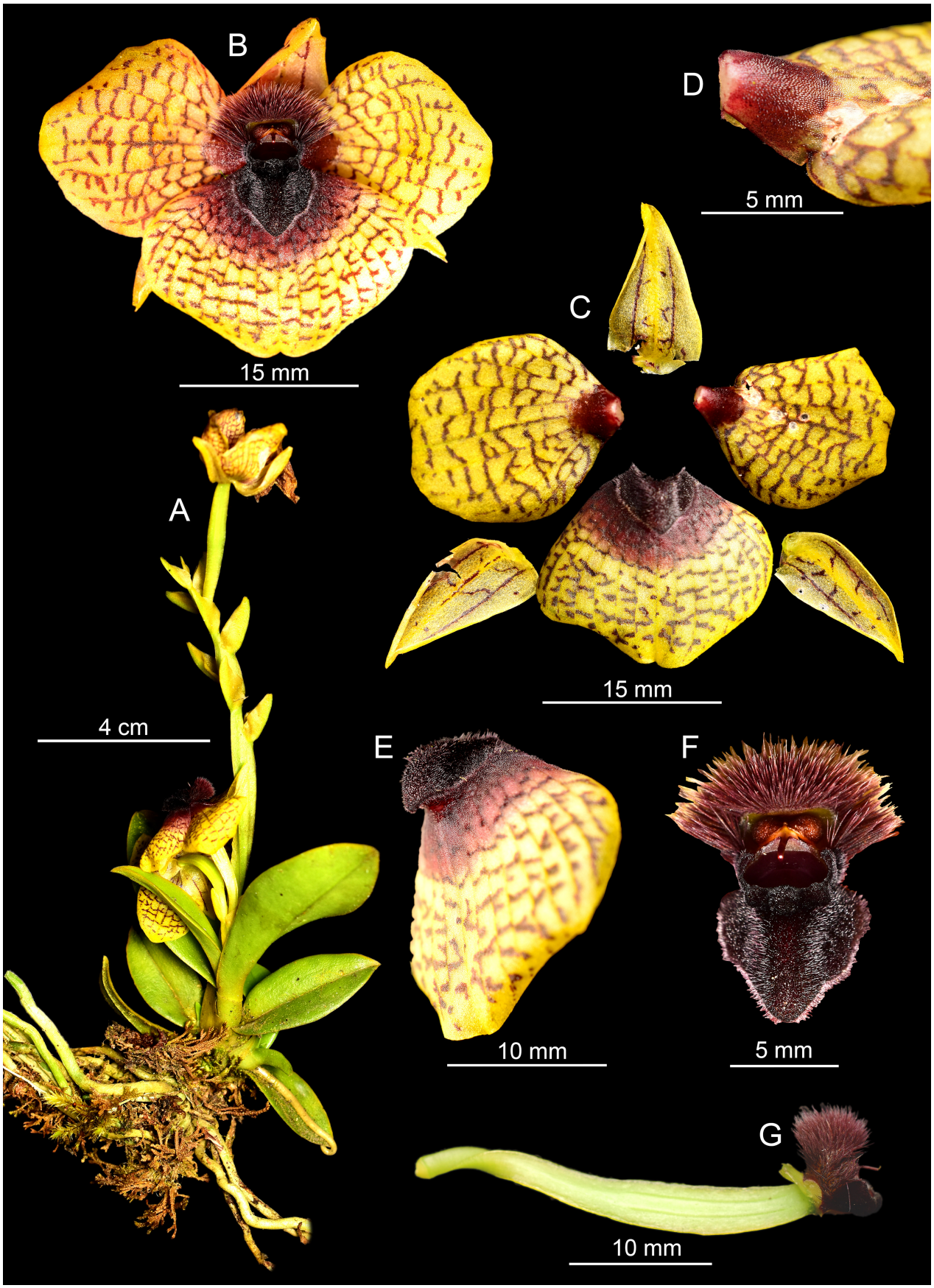

FIGURE 2. Composite plate of *Telipogon cruentilabrum* Iturralde, M.M. Jimenez & Baquero. **A.** Habit; **B.** Flower, frontal view; **C.** Dissected flower; **D.** Bump at the petal base, **E.** Lip, lateral view; **F.** Column and callus; **G.** Side view of the ovary and column. Photographs by G. Iturralde.

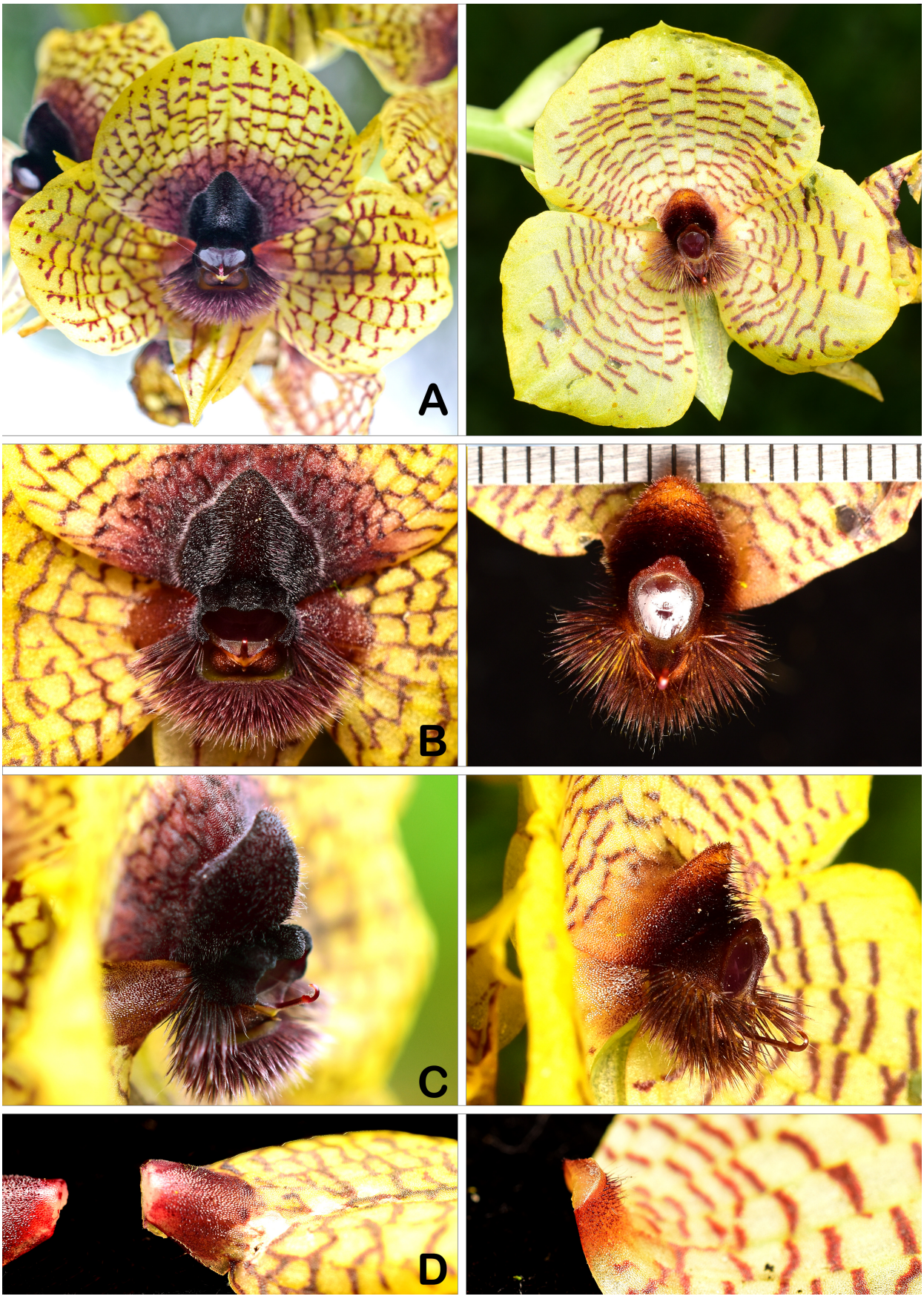

FIGURE 3. Comparison between *Telipogon cruentilabrum* Iturralde, M.M. Jimenez & Baquero (left) and *Telipogon tamboensis* Dodson & Hirtz (right). **A.** Flowers, frontal view; **B.** Column and callus; **C.** Column and callus, lateral view; **D.** Closeup of the petal base. Photos by Gabriel Iturralde.

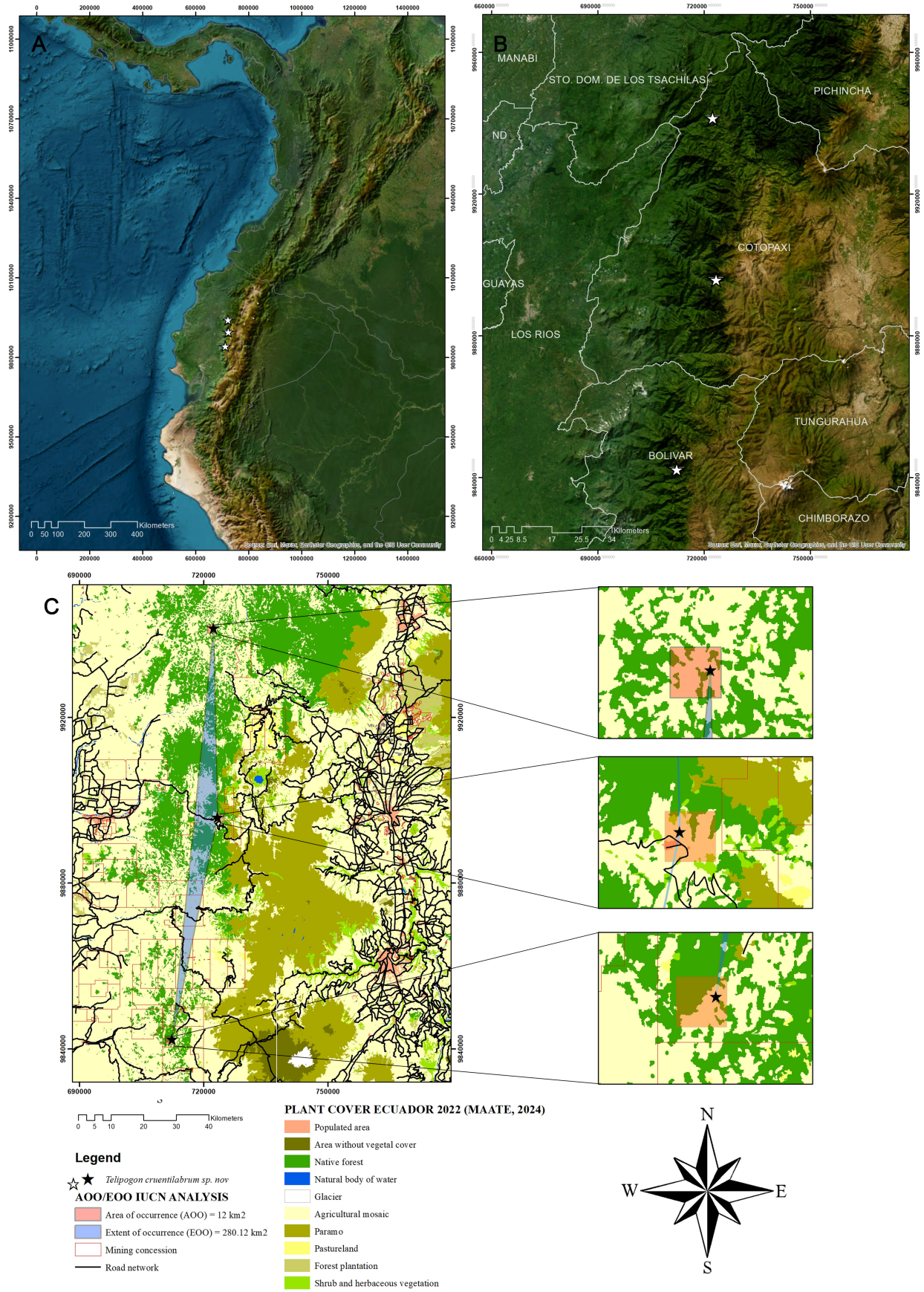

FIGURE 4. Distribution Map of *Telipogon cruentilabrum* Iturralde, M.M. Jimenez & Baquero and *T. tamboensis* Dodson. **A–B.** General view; **C.** Vegetation cover and land use, Area of occupancy (AOO) and Extend of Occurrence. Map created by M. F. Monteros.

FIGURE 5. Comparison between herbarium specimens of *Telipogon dendriticus* Rchb. f. and *T. cruentilabrum* Iturralde, M.M. Jimenez & Baquero. **A.** Holotype of *T. dendriticus* Rchb. f (C. Lehmann 94-W). **B.** Closeup of three flowers from Lehmann 94 specimen. **C.** Specimen of *T. cruentilabrum* (C.H. & P.M Dodson 14299-MO, ex RPSC). **D.** Closeup of three flowers from C.H. & P.M Dodson 14299 specimen. Photos of herbaria reproduced with the kind permission of Naturhistorisches Museum Wien and Missouri Botanical Garden.

Telipogon cruentilabrum can be identified by the combination of the following characters: the pale-yellow flowers with yellow longitudinal veins, vaguely and irregularly stained with dark red-brown; the tortuous, occasionally branched-incomplete, conspicuous, transversal vein-lines, reminiscent of tiny thunderbolts; the petals and lip with heavily undulate blades with irregularly reflexed margins; the notorious, dark red-brown swollen base of the petals; the conspicuous radial, purple stain at the base of the lip which dilutes towards the middle; the large (approx. 1/3 of the length of the lip), dark purple-red, longitudinally elevated callus; the anther profusely surrounded by three tufts of red-purple with pale yellow tipped, evenly sized setae; the anther cavity wider than high, with straight margins, and the wide, sub-trapezoid, dark purple stigma (Figures 1–2).

Telipogon cruentilabrum is morphologically most similar to *T. tamboensis*. Both species present flowers with transverse vein-lines and a callus on the lip. Nevertheless, *T. cruentilabrum* is easily distinguished by having the lip with a conspicuous, wider than larger, cordiform callus (vs. larger than wider, narrowly cordiform callus in *T. tamboensis*), which also separates it from *T. dendriticus* (lacks a callus). When compared with other species with reticulated flowers and a callus on the lip, *T. cruentilabrum* is distinguished by having flowers with strongly undulate, reflexed petals and lip, with a large, nose-shaped callus that occupies approximately 1/3 of the length of the lip, and a dark stain at the base of the lip, extending radially towards the middle.

Additional specimens examined:—ECUADOR. Bolívar: Salinas de Bolívar, road to Tres Marías–Muldiaguán, 21 Aug 2022, LB3144 (QCNE!). Cotopaxi: Pilaló 2200 m, 22 Aug 1978, *C.H. Dodson, T. Dodson & A. Embree 7203* (SEL-ex RPCS, photo!); 4 Km east of Macuchi (Pilaló), 1800 m, 26 July 1979, *C.H. Dodson, P. Morgan & M. Fallen 8560* (SEL, photo!); Pilaló 2400 m, 15 July 1984, *C.H. & P.M. Dodson 14299* (MO-ex RPCS, photo!); Pilaló, 2400 m, 3 Nov 1984, *C.H. & P.M. Dodson 15384* (MO-ex RPCS, photo!); Costa Azul 29 km north from Sigchos, 2442 m, 11 Aug 2003, *J. Ramos, J. Contreras, I. Ramos & F. Biteri 7215* (QCNE!).

Telipogon dendriticus ECUADOR. Chuchi (Chunchi): Andes from Guayaquil to Quito, 9000 feet, June 1876, *C. Lehmann 94.* (W-HOLOTYPE, photo!)**.**

Acknowledgments

We thank Melany Sosa for creating the illustration of the new species. Special thanks to Michael Burghardt and Wilson Raura for their assistance during fieldwork. GI, MJ and LB research was funded by Universidad de Las Américas UDLA under grant number 527.A.XV.24. CM research was supported by a research grant from the Programa nacional de Investigación científica y estudios avanzados—PROCIENCIA (Convenio N° 126-2020-FONDECYT) and The Max Planck Partner Group. We also thank to the Ministerio del Ambiente, Agua y Transición Ecológica (MAATE) of Ecuador for granting the research permit No. MAATE-DBI-CM-2021-0187

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