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# *Telipogon nigropurpureus* (Orchidaceae: Oncidiinae): new insights on its morphology and distribution in Colombia and Ecuador

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## Abstract

Over the past 20 years, *Telipogon nigropurpureus* had been known from only one specimen from the type locality near Arcabuco, Boyacá, in central Colombia. During botanical explorations in Colombia and Ecuador we have encountered more populations which are reported here. The new records found in Ecuador extend the known geographic range of *T. nigropurpureus* by 950 km south from the type locality. We provide an updated description, illustration, and photographs of the species, together with information on its ecology and distribution.

**Key words:** Andean montane forests, New record, *Stellilabium atropurpureum*, *Telipogon ortizii*

## Introduction

*Telipogon* Kunth in Humboldt *et al*. (1816: 335) is an orchid genus distributed throughout tropical America from Mexico and Central America (including the Caribbean islands) to Bolivia in South America (Chase 2009, Martel & Nauray 2013) with approximately 248 species (POWO 2024). Most *Telipogon* species are found in the montane forests of the tropical Andes, being especially diverse in Ecuador where it reaches its highest richness (Baquero *et al*. 2022). In Ecuador, a better understanding of the *Telipogon* taxonomy was possible through the outstanding work of Calaway Dodson. In 2004, Dodson recognized 65 species of *Telipogon* (54 species) and *Stellilabium* Schlechter (1915: 530) (11 species), now also included in *Telipogon* (Williams *et al*. 2005) (Dodson 2004). Over the last two decades, another nine *Telipogon* species were described from Ecuador (Szlachetko *et al.* 2009, Baquero & Fortunato 2012, Zambrano *et al.* 2018, Medina *et al.* 2019, Iturralde *et al*. 2021, Baquero *et al.* 2022, Iturralde *et al*. 2023, Jiménez *et al.* 2024).

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Morphologically, *Telipogon* species are characterized by having plants with abbreviated or elongated stems, conduplicate leaves, and racemose or paniculate inflorescences. Flowers of *Telipogon* species are renowned for being colourful and showy (Dodson 2004, Martel *et al.* 2017); nevertheless, some species of the so called "miniature *Telipogon*" prove otherwise as they develop as small plants, usually less than 10 cm long, and their flowers are dull in colouration and less than 1 cm in diameter (Martel *et al.* 2017). Due to their size, species of this group are usually overlooked, and few collections are available in herbaria.

*Telipogon nigropurpureus* Ortiz (2008: 126) is a species of miniature *Telipogon* that had been known only from the type specimen in a montane forest the eastern Andes in Colombia (Ortiz 2002, Ortiz 2004, Ortiz 2016). Nevertheless, recent field work in the eastern and northwestern regions of Ecuador revealed the occurrence of *T. nigropurpureus* in that country. Here we present the first records of this species for Ecuador. Additionally, twenty years after its description, we document a new population close to the type locality in Colombia. The species is illustrated, and we provide an expanded description with photographs and information on its distribution, ecology, and taxonomical remarks.

## Taxonomy

*Telipogon nigropurpureus* P. Ortiz, Orquideología 25(2): 126. 2008 (Figures 1–4).

**Type**:—COLOMBIA. Boyacá: Arcabuco, cañón del río Pómeca, 2300 m, 9 July 2001, *C. Barrera* sub *P. Ortiz 1133* (holotype: HPUJ!).
*Stellilabium atropurpureurn* P. Ortiz (2002: 127, replaced synonym); non *T. atropurpureus* D.W. Bennet & R. Fernandez (1992: 9).
*Telipogon ortizii* N.H. Williams & Dressler (2005: 169), *nom. illeg*.; non *T. ortizii* Dodson & R. Escobar (1993: 242).

**Description:—***Plant* up to 12.0 mm long (including inflorescence), epiphytic, caespitose. *Roots* 1.0–1.3 mm in diameter, cylindrical, basal. *Stem* inconspicuous. *Leaves* 12.0–45.0 mm long, up to 6 per stem, distichous, subcoriaceous, articulated to the stem or to a decurrent, conduplicate leaf sheath; *blade* 1.3–2.4 × 0.5–1.0 cm, conduplicate, narrowly elliptic to elliptic, apiculate. *Inflorescence* raceme, 1.5–10.0 cm long, lateral or terminal, producing several flowers apically, spirally arranged, in succession; *peduncle* green, terete at the base and progressively widening and slightly flattening towards the rachis, simple or branched up to 4 times; *inflorescence bract* at the first branching node, 3 mm long; *floral bract* 2.5–3.0 mm long, green, triangular, concave, membranous. *Ovary* 5.0–7.0 mm long, terete, pedicellate; *pedicel* 1.0–3.0 mm long, terete. *Flowers* non-resupinate, 12.0–14.0 mm in diameter; *sepals* greenish-yellow, abaxially smooth with purple-red colouration at the base, adaxially minutely verrucose, occasionally with purple-red stains; *dorsal sepal* 4.0–6.2 × 2.3–3.0 mm, ovate, acute, base truncate, concave, obscurely 3-veined; *lateral sepals* 4.0–6.5 × 2.0–2.5 mm, narrowly ovate, acute, base truncate, slightly concave, oblique, inconspicuously veined. *Petals* 5.2–8.1 × 0.8–1.6 mm, slightly falcate, longitudinally convex, slightly curved forward, narrowly elliptic-oblong, acute, base rounded-truncate, greenish-yellow, light brown or purple, occasionally dark-purple along the margins and veins, adaxial surface shaggy, margins ciliolate, glabrous abaxially, 1-veined. *Lip* 5.7–7.9 × 3.3–3.8 mm, oblong, cream coloured, dark yellow to purple-brown, dark purple at the basal third to half, 5–6-veined, brown or dark purple along the veins, apex apiculate to obtuse-cuspidate, base auriculate and convex, progressively flattening towards the apex, adaxial surface shaggy, abaxial surface glabrous, margins ciliolate; *Column* 1.0–1.7 mm lomg × 2.1 mm in diameter, subterete, sessile, dark purple, minutely pubescent to tomentose, with a ventral longitudinal ridge protruding 0.5–0.7 mm towards the margin of the stigma, dorsally with 3 tufts of setae, two oblique-lateral and one dorsal on the apex of a shallow, thin anther cavity; *setae* 0.5–1.5 mm long, dark purple, acicular, stellate at the apex, with white tip, around 30 setae in lateral tufts and around 20 in dorsal tuft, *stigma* apical, elliptic, purple, covered by a translucent, sticky substance; *anther cap* 1.0–1.1 × 0.7–0.9 mm, cordate, dorsal, purple; *pollinarium* 1.0–1.8 × 1.1–1.8 mm, 4-pollinia; *pollinium* obovoid, complanate, 2 unequal pairs; *stipe* up to 0.8 mm long, *viscidium* uncinate. *Fruit* 9.0 mm long, terete capsule (seen only in herborized type specimen).

**Distribution and ecology**:—Plants of *T. nigropurpureus* are found in evergreen Andean montane forests of north central Colombia and on both the east and west slopes of the north central Ecuadorian Andes, between 2000 to 2300 m in elevation. However, records on iNaturalist.org suggest that, at least in Ecuador, the altitudinal distribution may range between 2000 and 2800 m. (east: https://ecuador.inaturalist.org/observations/13193062, 2770 m, west: https://ecuador.inaturalist.org/observations/53610257, 2700 m).

In Colombia, this species is known from a single locality, near the municipality of Arcabuco in the eastern Andes

(Figure 5). This locality suffers a moderate level of anthropic intervention and is very close to trails. Around 13 individuals were found at heights of 1.5–1.7 meters, and another 6 individuals were found much higher on trees covered in thick moss near the riverbank of Río Pomeca (Figure 4-A). Other orchid species found nearby included *Masdevallia picturata* Reichenbach (1878: 16), *Cyrtochilum divaricatum* (Lindley1846: 17) Dalström (2001: 63), and 3 different *Andinia* (Luer) (1991: 124) Luer (2000: 5) species.

In Ecuador, the species is known from five locations. On the eastern slope of the Andes, a small population of 7–10 plants of *Telipogon nigropurpureus* was found near Cosanga, Napo province (Figure 4-B, F), growing as epiphytes at heights of 1.5–2 m on branches of *Andesanthus lepidotus* (Humboldt & Bonpland 1808: 38) Guimarães & Michelangeli (2019: 948) (Figure 3 A–B), alongside *Telipogon alticola* (Dodson & R. Escobar 1998:48) N.H. Williams & Dressler in Williams *et al.* (2005: 168). A single individual was also found by Fundacion EcoMinga rangers in their Cerro Candelaria Reserve, near Baños, Tungurahua province (Figures 4-D, E); and an additional specimen has been reported by an iNaturalist observer near Baeza, Napo province. On the western slope of the Andes, a single plant growing on a fallen branch was found on the edge of the Calacalí–Nanegalito highway, near El Pahuma Reserve, Pichincha province. Finally, the iNaturalist.org record from the Siempre Verde Reserve, Imbabura province, shows *T. nigropurpureus* (Figure 4-C) growing on branches and inflorescences of *Thibaudia inflata* Luteyn (1996: 299) (https://ecuador.inaturalist.org/observations/53610257; https://www.flickr.com/photos/andreaskay/9834564886). Observed specimens were not exposed to much direct sunlight; on the contrary, they grew in shaded areas (Figure 5).

In Colombia, fertile specimens have been observed in January, June, July and September suggesting that the same inflorescence could generate flowers successively for several months. During field observations in September, we found most of the plants in fruits. In Ecuador, we have recorded flowering between August and October.

**Conservation status**:—Although the new localities expand the range of distribution of *Telipogon nigropurpureus* and three of the localities registered in Ecuador are under a conservation model (Cerro Candelaria, Siempre Verde, and Pahuma reserve) the areas where they have been registered present potential threats such as deforestation for the expansion of areas of livestock and crops, as well as the illegal extraction of species (Meisel & Woodward 2005, Noh *et al.* 2022). Using the six localities recorded we calculated an area of occupancy (AOO) of 24 $km^2$ and an extent of occurrence (EOO) of 61000 $km^2$ (Figure 5) with GeoCat (Bachman *et al.* 2011). It is important to note that the EOO calculated in this analysis, following the IUCN (2022) guidelines, includes habitats where the presence of this species is unlikely, therefore it is inferred that its real extent is even smaller. Considering the potential threats in the AOO and the calculated EOO, we suggest considering *T. nigropurpureus* as Vulnerable according to criterion B2ab(i,ii); D2.

**Specimens examined:**—COLOMBIA. Boyacá:Arcabuco, area of influence of the Pómeca river, near the road Moniquirá-Arcabuco, 2343 m, 22 Jan 2024, *E.Restrepo & A.Rodríguez G 132* (JBB!). ECUADOR. Napo: Cosanga, road to Las Caucheras, -00.5839194°, -077.8752417°, 2094 m, 28 Sep 2023, *G. Iturralde GI-2309-2136* (QCNE!). Pichincha: Calacalí–Nanegalito road, 3 km. before El Pahuma Reserve, 00.0299750°, -078.6213222°, 2006 m, 20 Oct 2023, *G. Iturralde GI-2310-2901* (QCNE!). Tungurahua: Baños, Reserva Cerro Candelaria, -01.4244444°, -078.3033333°, 2077 m, 25 Oct 2022, *Lou Jost LJ11517* (QCNE—flower in alcohol!).

**Taxonomic discussion:**—*Telipogon nigropurpureus* was originally described as *Stellilabium atropurpureum* P. Ortiz (2002: 127). When Williams *et al.* (2005) merged *Stellilabium* within *Telipogon*, the epithet "atropurpureum" was not used because that name already existed but, inadvertently, they used *T. ortizii* N.H. Williams & Dressler (2005: 169), another name that also existed as *T. ortizii* Dodson & R. Escobar (1993: 242). Eventually, Ortiz (2008) corrected this by changing it to its current epithet.

This species was known only from the type locality near Arcabuco, Boyacá Department, north central Colombia. In recent fieldwork carried out nearby, we found more specimens, but its distribution apparently does not extend significatively in that country. Nevertheless, the new records found in Ecuador extend its known geographic range by 950 km south from the type locality (Figure 5). Orchids are exceptionally likely to have large range disjunctions because their seeds, the lightest seeds of any wind-dispersed Angiosperms, can travel exceptionally long distances. For example, most of the orchid species on the Galapagos Islands are also found on mainland Ecuador, suggesting gene flow via seed dispersal over 800 Km of open ocean. Another example of a similarly large disjunction is *Quechua glabrescens* (1000 Km from east-central Ecuador to Peru (Salazar & Jost 2012). Nevertheless, for orchids as inconspicuous as the present *Telipogon*, it is likely that there are connecting populations between the known ones, since many seemingly suitable but unexplored or poorly sampled forests still exist in the intervening mountains.

*Telipogon nigropurpureus* is a miniature *Telipogon* characterized by its dark flowers which are large compared to most miniature *Telipogon* species. The flowers present petals with ciliolate margins which are slightly falcate and curved forward, a shaggy, dark yellow to purple-brown lip, a subterete, dark purple, minutely pubescent to tomentose column, and three tufts of stellate setae on their column (Figures 1–3).

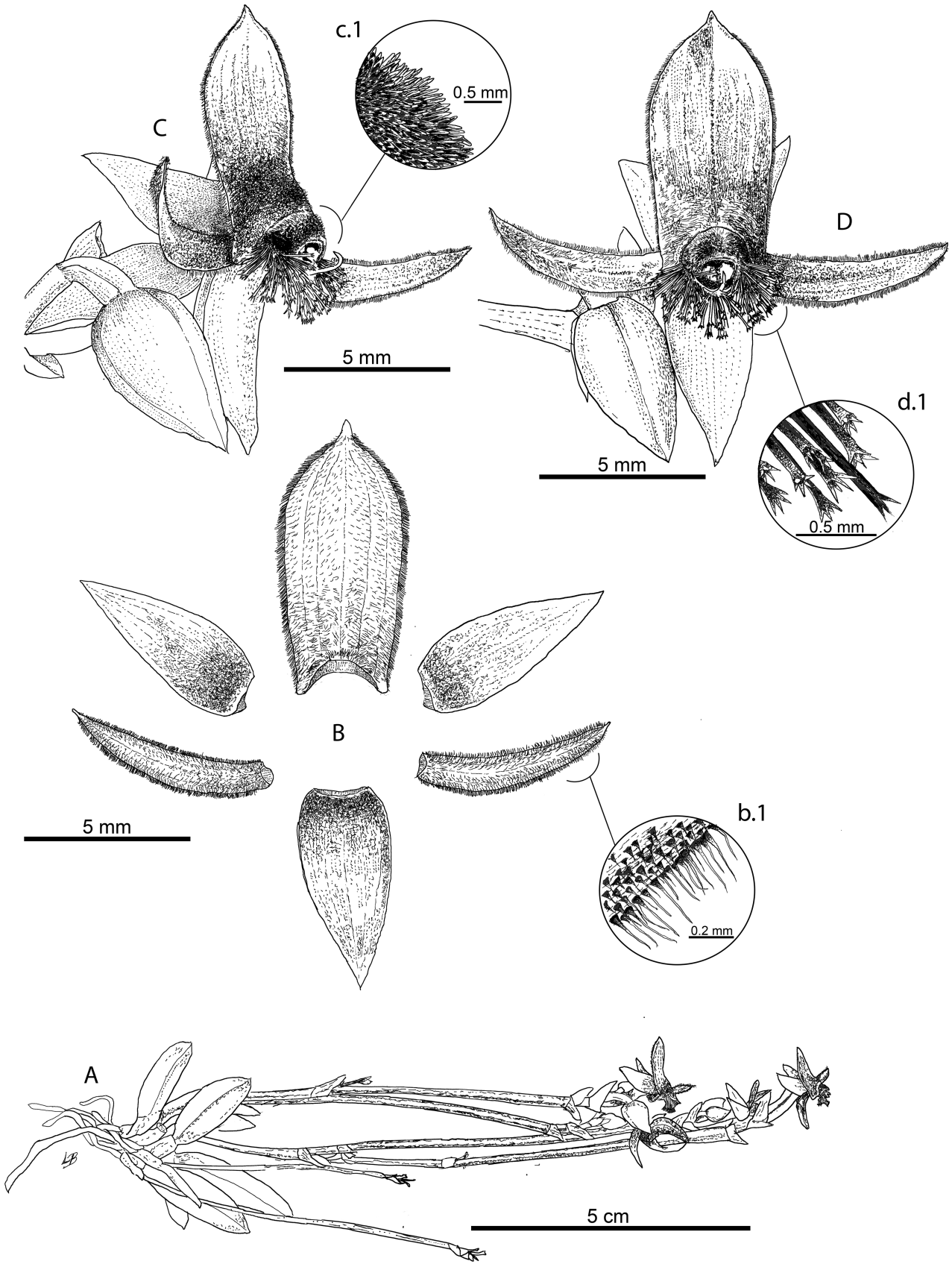


**FIGURE 1**. Illustration of *Telipogon nigropurpureus* P. Ortiz. **A.** Habit**. B.** Dissected perianth. B1. Close-up of ciliolate margins of petals. **C.** ¾ view of flower. C1. Close-up of column. **D.** Frontal view of flower. D1. Close-up of stellate setae. Drawn by L.Baquero from Ecuadorian specimen GI-2309-2136 (QCNE).

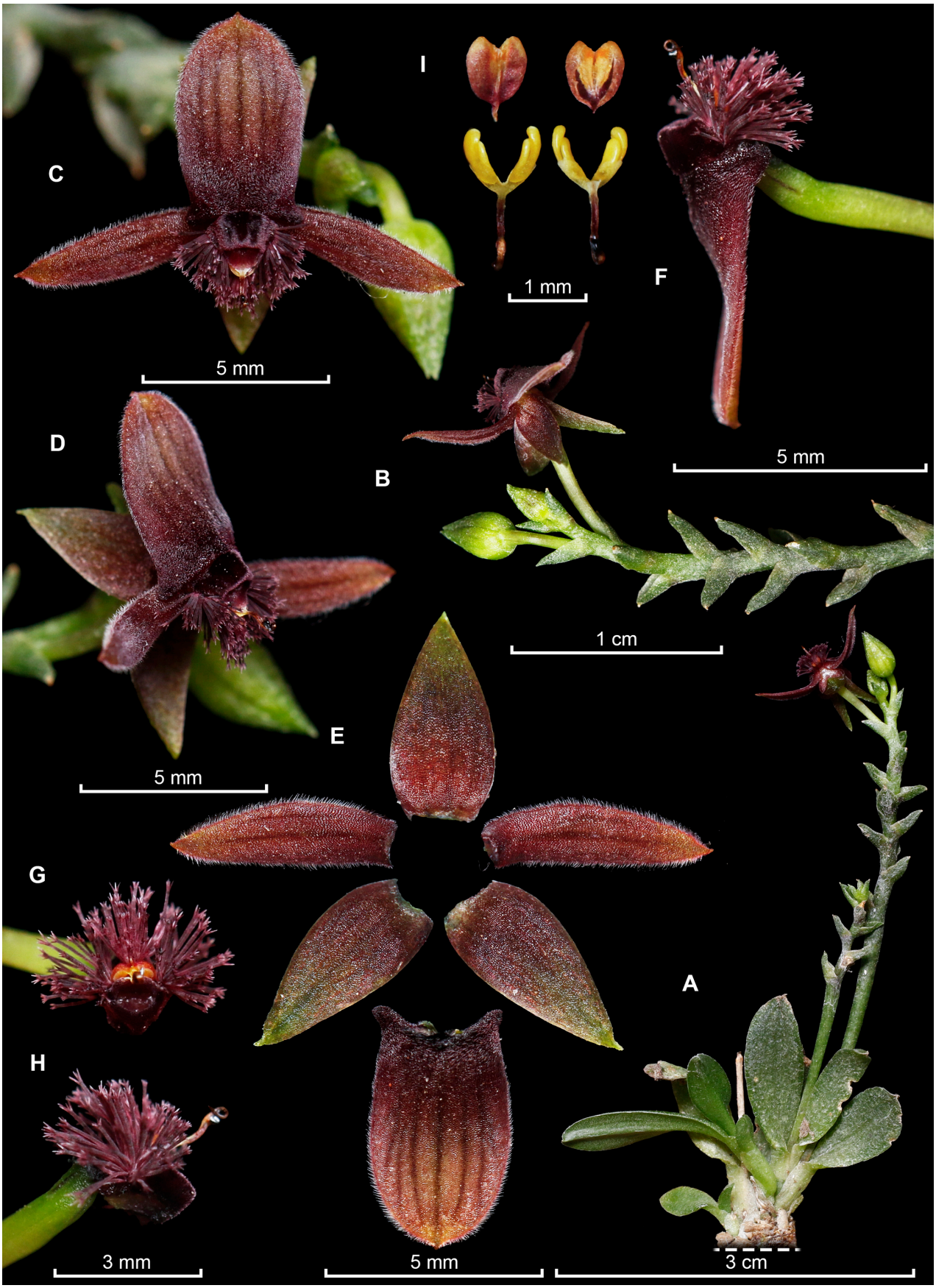


**FIGURE 2**. Composite plate of *Telipogon nigropurpureus* P. Ortiz from Colombia. **A.** Plant view from top. **B.** Apical portion of inflorescence with flower. **C.** frontal view of flower. **D.** ¾ view of flower. **E.** Dissected perianth. **F.** Lateral view of column and lip. **G.** Frontal view of dissected column. **H.** Lateral view of dissected column. **I.** Anther cap and pollinarium. Prepared by E. Restrepo from Colombian specimen E.Restrepo & A.Rodríguez G 132 (JBB)

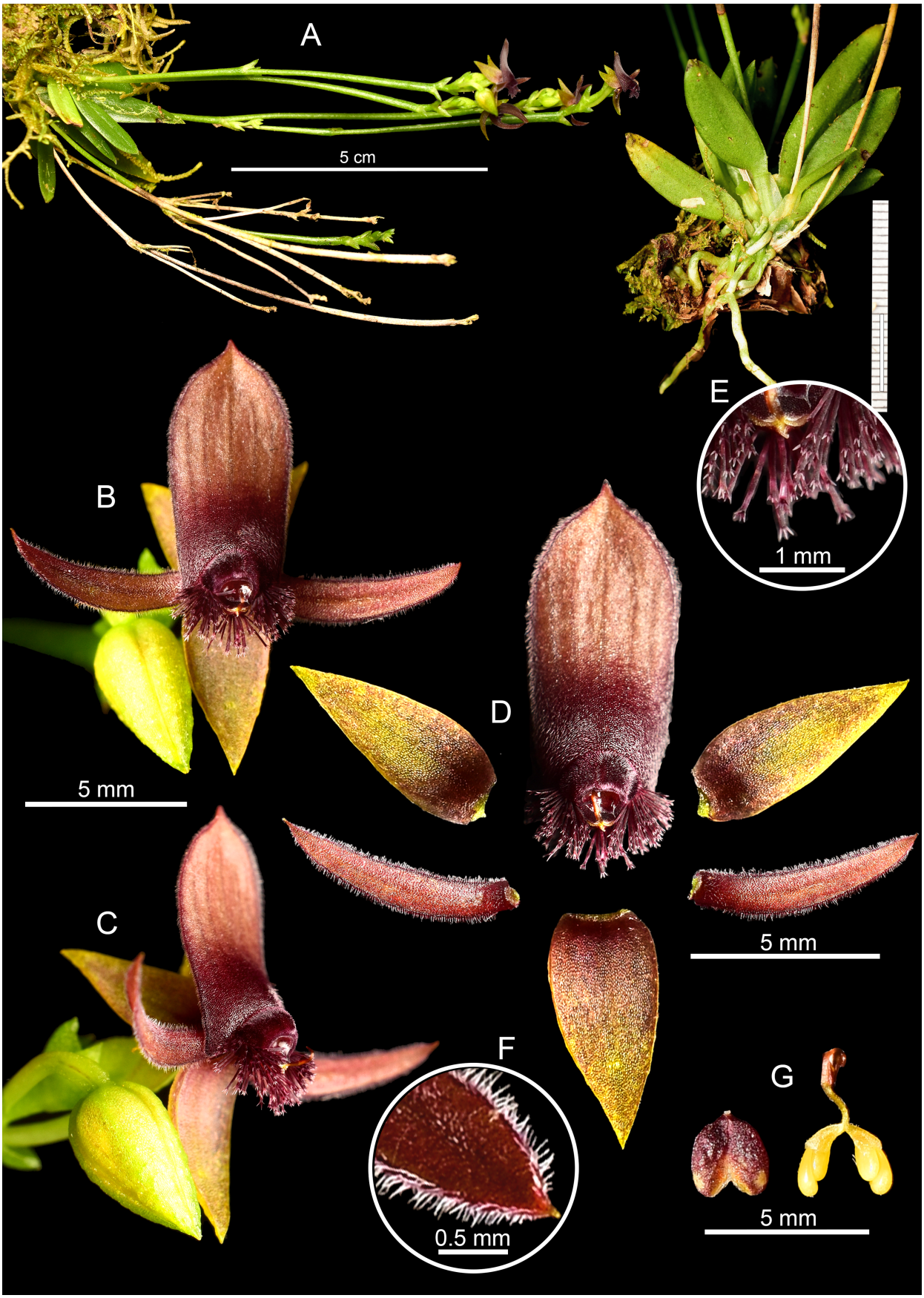


**FIGURE 3**. Composite plate of *Telipogon nigropurpureus* P. Ortiz from Ecuador. **A.** Plant. **B.** Frontal view of flower. **C.** ¾ view of flower. **D.** Dissected perianth. **E.** Close-up of column setae. **F.** Close up of petal apex. **G.** Anther cap and pollinarium. Prepared by G Iturralde from Ecuadorian specimen GI-2309-2136 (QCNE)


**FIGURE 4**. *Telipogon nigropurpureus* P. Ortiz. **A–B**. Mature specimen in-situ from Cosanga in north-eastern Ecuador. **C.** Frontal view of flower from specimen from Reserva Siempreverde in north-western Ecuador. **D.** ¾ view of flower from individual in Candelaria Reserve in central-eastern Ecuador. **E.** Close-up of column and part of the petal. **F.** Young specimen and its first inflorescence. Photos by G. Iturralde (A–B, F), Andreas Kay (C), Lou Jost (D–E).

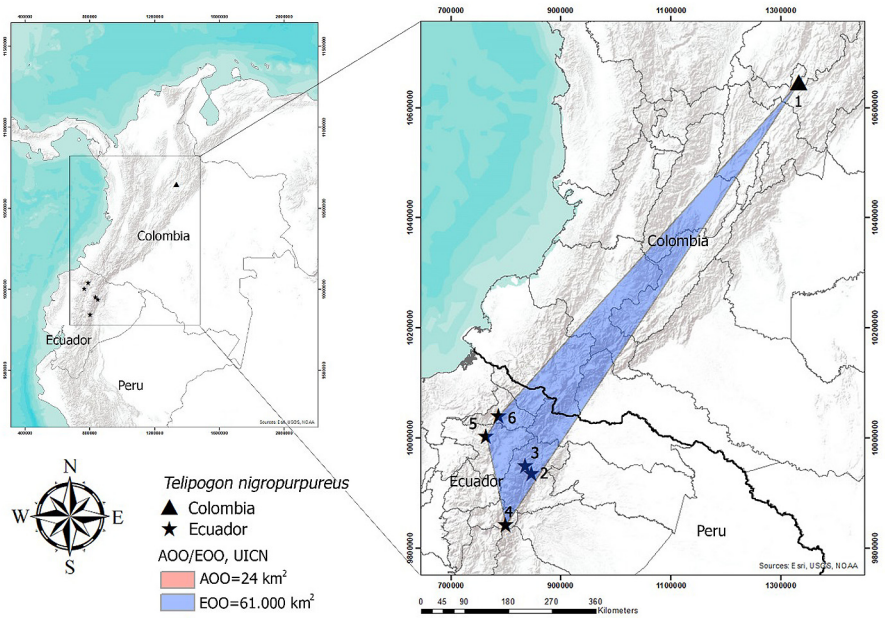


**FIGURE 5**. Distribution Map of *Telipogon nigropurpureus* P. Ortiz in Colombia and Ecuador showing calculated area of occupancy (AOO) and extend of occurrence (EOO). Number 1 belongs to the type locality and new record found in Colombia. Numbers 2–4 correspond to localities in eastern Ecuador (2 Cosanga, 3 Cerro Candelaria Resere, 4 Baeza); and numbers 5–6 correspond to localities in western Ecuador (5 Pahuma Reserve, 6 Siempre Verde Reserve). Map created by M.F.Monteros.

Young specimens usually produce very short inflorescences (Figure 3 F) while older ones produce several long inflorescences (approx. 10 cm long) (Figures 3 A, B). In the protologue, Ortiz (2002) described that the petals measure 3.0 × 1.2 mm, however, upon reviewing the visible petal of the type specimen, it was found that the length of the petal is approximately 7.0 mm, which is consistent with the specimens found in Ecuador. A subtle difference is observed in the specimens from western Ecuador, which have lighter yellow petals and lip (Figure 3 C) compared to the brown or purple perianth in specimens from Colombia and eastern Ecuador.

*Telipogon nigropurpureus* is morphologically similar to *T. kukwae* (Szlach. & Mytnik) (2010: 8) C. Martel (2016: 36), as also mentioned by Martel (2016). However, *T. nigropurpureus* can be discriminated from *T. kukwae* by the longer inflorescences (up to 10 cm long *vs.* 2 cm long in *T. kukwae*), the slightly falcate and narrowly elliptic-oblong petals (*vs.* linear and narrowly lanceolate petals in *T. kukwae*), the somewhat thicker setae with stellate apex (*vs.* thinner with bifurcated apex in *T. kukwae*).

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