

Telipogon huancavelicanus sp. nov. (Orchidaceae) from Peru, and an updated description of *T. deuterocuscoensis*

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Here we report the new species *Telipogon huancavelicanus* and provide updates to the description of *T. deuterocuscoensis*. *Telipogon huancavelicanus* is similar to *T. bennettii* but differs by the oblanceolate petals, a basally subpandurate labelum with two divergent auriculae, and column with three dense tufts of subtubular setae with ramified apices. Illustrations, habitat information and distribution are provided for both miniature *Telipogon* species. Additional comments on other miniature *Telipogon* species are also provided.

The genus *Telipogon* Kunth includes species formerly recognized as *Stellilabium* Schltr. *Stellilabium* was created to segregate one *Telipogon* species (i.e. *Telipogon astroglossus* Rchb. f.) that did not match with the flower size and labellum and petal morphology of the so far described *Telipogon* (Schlechter 1914). Thus, Schlechter (1914) established the genus with *Stellilabium astroglossum* (Rchb. f.) Schltr. as type species. Since then, the taxonomic status of *Stellilabium* (Orchidaceae) has been the subject of controversy, especially during the past three decades (Braas and Lückel 1982, Garay and Romero 1998, Dressler 1999). For instance, several of its species have been treated within other genera such as *Cordanthera* L.O. Williams, *Darwiniera* Brass & Lückel, *Dipterosteles* Schltr. and *Sodirolella* Schltr., and later transferred to *Stellilabium* (Dressler 1999). The basis for this uncertainty is that some former *Stellilabium* species show vegetative (e.g. development of pseudo-bulbs) and floral (e.g. lobed labelum, lobed column) structures not shared by all species of the genus as circumscribed by Schlechter. Furthermore, some species were originally described as *Trichoceros* Kunth, but later transferred to *Stellilabium*, e.g. *S. bennettii* (Dodson & R. Escobar) Christenson [= *Trichoceros bennettii* Dodson & R. Escobar] (Bennett and Christenson 2001) and *S. bergoldii* (Garay & Dunst.) Carnevali & G.A. Romero [= *Trichoceros bergoldii* Garay & Dunst.] (Romero and Carnevali 2000). Both members of *Trichoceros* and the former *Stellilabium* may present a somewhat thickened stem (concealed by the leaf bases), trichomes on the column and an oblong-obovate trilobed labellum.

Stellilabium was merged with *Telipogon* Kunth after a molecular analyses that showed that all *Stellilabium* taxa are embedded within *Telipogon* (Williams et al. 2005) and all

known *Stellilabium* species were transferred to *Telipogon*. This was later supported by further molecular studies by Pridgeon et al. (2009) and Neubig et al. (2012). Morphologically, one may argue that, in fact, *Stellilabium* species are smaller or miniature versions of *Telipogon*. The former *Stellilabium* species have relatively small plants (no more than 10 cm tall) and small flowers (less than 2 cm diameter) compared to *Telipogon* s.s. species. Both develop the same gynostemium morphology, and a column that is short and straight, basally papillose to pilose and presents a dorsal anther. Furthermore, they usually bear setae on their columns and present an uncinete viscidium. Although the setae on the column are also present in the sister genus *Trichoceros*, the uncinete viscidium is only present in *Telipogon* s.s. and the former *Stellilabium*. Thus, the uncinete viscidium is the only character universally shared by *Telipogon* and *Stellilabium* (Martel unpubl.). To avoid future confusion with the *Telipogon* s.s. species, hereafter we propose to refer to all the former *Stellilabium* species as ‘miniature *Telipogon*’. The term was recently used by Martel (2016a, 2016b).

Miniature *Telipogon* are usually overlooked due to their small size. Although they may present broader distributional ranges than *Telipogon* s.s. species (e.g. *T. alticola* (Dodson & R. Escobar) N.H. Williams & Dressler, *T. astroglossus*, *T. pogonostalix* Rchb. f., *T. williamsii* P. Ortiz), representation in herbaria is scarce. In Peru, there are six miniature *Telipogon* species currently recognized: *T. astroglossus*, *T. bennettii*, *T. deuterocuscoensis* J.M.H. Shaw, *T. pogonostalix*, *T. pseudobulbosus* (D.E. Benn. & Christenson) N.H. Williams & Dressler, and *T. selbyanus* N.H. Williams & Dressler (Christenson and Repasky 2008). However, this

number will surely be increased with further explorations and study of extant herbarium material.

During research on miniature *Telipogon* gathered at several Peruvian herbaria and new material originating from recent orchid expeditions, an undescribed species was found and is here presented as new. Plants of this species were previously identified as *Telipogon bergoldii* in Bennett and Christenson (2001). Furthermore, an updated description of a Peruvian endemic miniature *Telipogon*, *T. deuterocuscoensis* is provided.

Material and methods

Orchid specimens were collected during field work in the cloud forests of Cusco and Huancavelica Dept, Peru, during 2016. Collected material was preserved in spirit. The line

drawings and figures were prepared using a Leica® Wild M8 stereomicroscope, Canon® A-1 camera with a Canon FD 50 mm F3.5 lens, and HP® Deskjet 2050 scanner for preserved specimens. Herbarium specimens were deposited at USM. Herbarium vouchers from CUZ, USM and MOL, and digital vouchers from BRIT were also examined. The distribution map was prepared using the software DIVA-GIS (ver. 7.5).

***Telipogon deuterocuscoensis* J.M.H. Shaw (2014, p. 78). (Fig. 1–2)**

Type: Peru. Cusco. Prov. Paucartambo, Dist. Paucartambo, Wayqechas Cloud Forest Research Station, Kosñipata Valley, between Paucartambo and Pilcopata, 2900 m a.s.l., 2 Dec 2005, R. E. Repasky et al. 162 (holotype: BRIT, photo!).

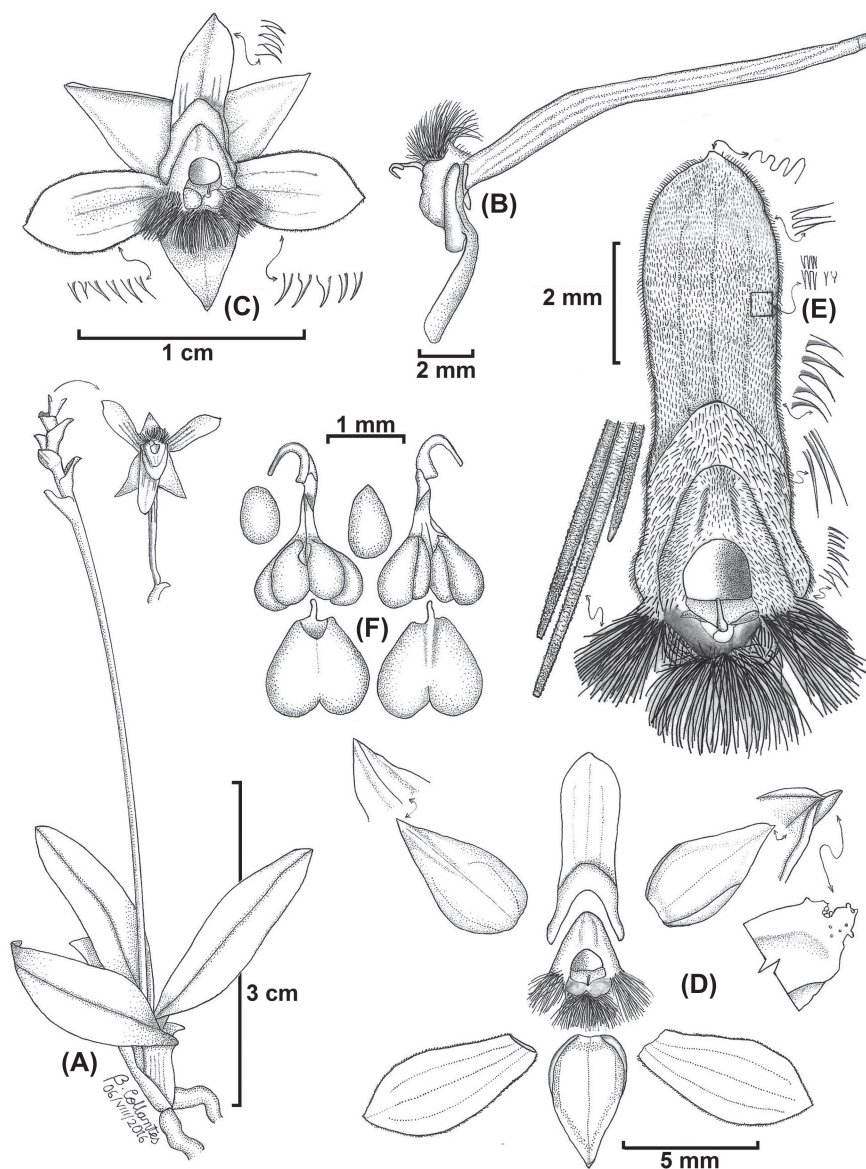


Figure 1. *Telipogon deuterocuscoensis*. (A) habit, (B) flower and peduncle, lateral view, (C) flower, ventral view with details of petal margins, (D) dissected flower, with details of sepal margins, (E) labellum and column, ventral view with details of column setae, labellum setulae and labellum margins, (F) pollinarium and anther cap, ventral and dorsal view with details of each pollinium. Drawing by Benjamín Collantes, based on Martel 71 (USM!).

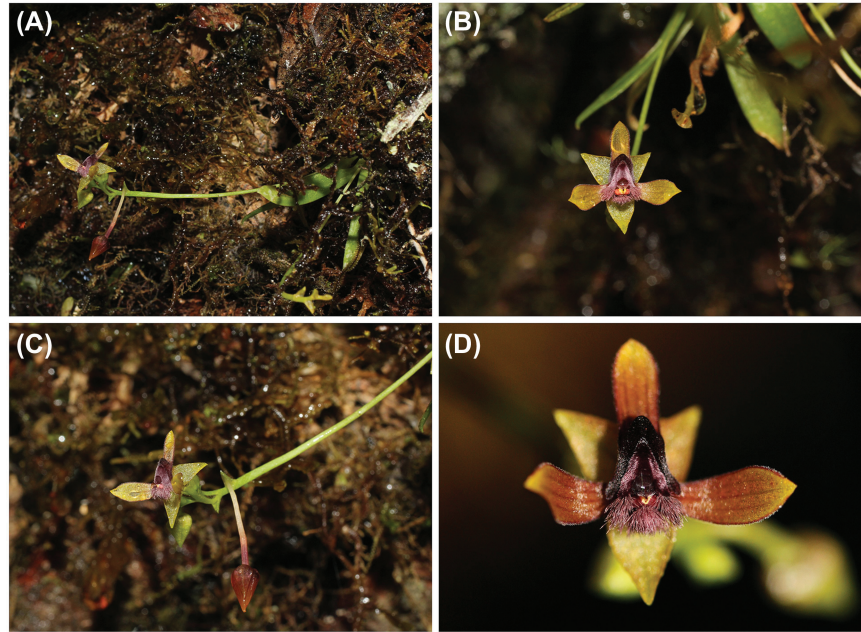


Figure 2. *Telipogon deuterocuscoensis*. (A) habit, epiphytic plant growing associated with mosses, (B) flower, ventral view, (C) flower, lateral view, (D) flower close-up with details of callus and column, ventral view. Photographs by Carlos Martel.

Based on the same type: *Stellilabium cuscoense* Christenson & Repasky (2008, p. 170). Non *Telipogon cuscoensis* Nauray & Christenson (2003, p. 696).

Description

Plant epiphytic, sympodial, acaulescent, to 10 cm tall (including the inflorescence). Roots 0.8–1.5 mm in diameter, basal. Leaves 11–21 × 2.3–5.1 mm, 3–11, petiolate, conduplicate, amplexicaul, subcoriaceous, lanceolate-oblong to narrowly subelliptic, acute at apex, with entire margin; the margins papillate toward apex with papillae dactyliform toward apex. Inflorescence an apical raceme, up to 9 cm long, 1–2, successively 2–10-flowered; scape 5.5–8.5 × 0.5–0.6 cm, terete, basally with an amplexicaul triangular bract. Floral bracts 3.5 × 3.2 mm (progressively decreasing in size in the following bracts), widely ovate, acute, mucronate, carinate toward apex. Pedicel 11 mm long, terete, ribbed. Ovary terete, non-winged, 5.0 × 1.2 mm, pedicelate. Flowers 12.0 × 13.1 mm, non-resupinate. Sepals greenish yellow with three inconspicuous longitudinal lines, 3-veined, with entire margin, ovate, acute, 3-veined, 1-carinate dorsally; dorsal sepal 4.7–5.1 × 2.8–3.1 mm, deeply concave; lateral sepals 5.5–6.0 × 2.7–3.6 mm, concave to the base. Petals 6.0–7.0 × 2.5–3.0 mm, greenish yellow to yellowish orange, brownish at the base with three longitudinal brownish lines, obovate, subacute, 3-veined, with entire margins; the margins with minute retrorse setulae; retrorse setulae at the upper side of the base. Labellum 5.5–7.0 × 1.8–2.1 mm, greenish yellow to yellowish orange with five longitudinal brownish purple lines, oblong-ligulate, entire, 3-veined, its margins brownish purple to the apex, and densely retrorse-setulose; apex oblique, rounded, subconical, with conical papillae; callose. Callus 3.4 × 3.0 mm, brownish purple, V-shaped, with a rounded apex, densely retrorse-setulose from brownish purple setulae. Column 3.0 × 2.6 mm, brownish

purple, cordiform, solid, densely retrorse-setulose, with 3 tufts of setae on the inner surface; setae 2 mm long, brownish purple, tubular, irregularly ornamented, narrowing to a subtruncate to acute apex. Stigma 1 × 1 mm, suborbicular. Rostellum erect. Anther cap 1.5 × 1.3 mm, cordiform, with a caudicle in its inferior apex. Pollinarium 2.3 × 1.3 mm; pollinia 4, in 2 unequal pairs, the outer pair larger, obovoid, convex-concave, the inner pair smaller, obovoid-subellipsoid; caudicles hyaline; viscidium ancistrous.

Distribution, habitat and ecology

Telipogon deuterocuscoensis was only known from Wayqecha Biological Station and Manu Biosphere Reserve in the cloud forest of the Kosñipata basin (Christenson and Repasky 2008), southern Peru (Fig. 3). However, some individuals were recently recorded from the Machu Picchu Historical Sanctuary (Collantes pers. obs.). It grows as an epiphyte in remnant forest between 2700–3000 m a.s.l. Plants of *T. deuterocuscoensis* grow on trunks and branches of diverse shrubs and trees.

Phenology

This species has been recorded in bloom from January to April and July to August.

Conservation status

Telipogon deuterocuscoensis is presently only known from two localities. Although only a few individuals were reported from the Machu Picchu Historical Sanctuary, it is locally abundant at the Wayqecha Biological Station and the Manu Biosphere Reserve (Martel pers. obs.) and the population can be estimated to between 600–1000 individuals. According to the IUCN Red List (IUCN 2014), it should be listed as ‘Endangered’ (EN, criterion B2/area of occupancy

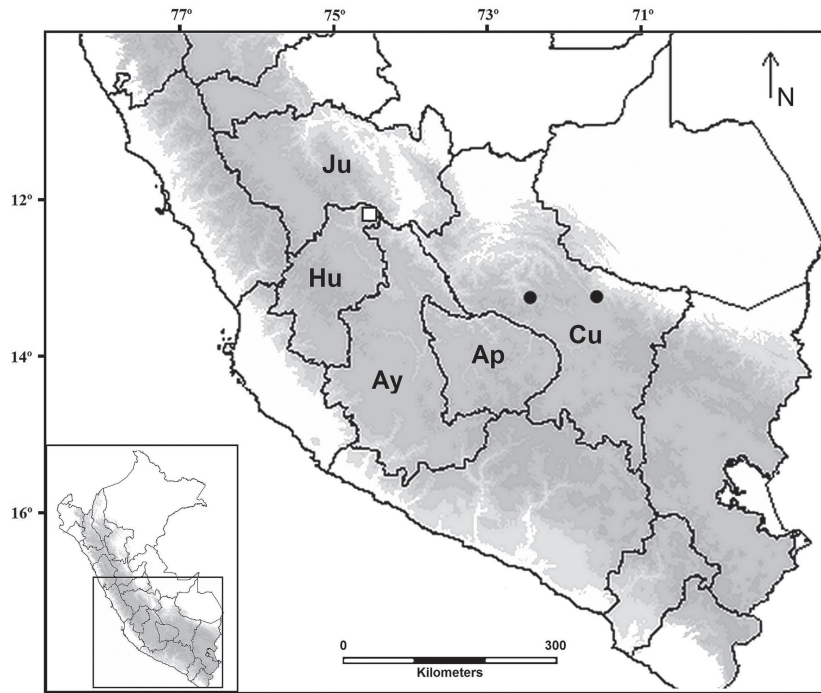


Figure 3. Geographical locations of *Telipogon deuterocoscoensis* (black dot) and *T. huancavelicanus* (white square) in Peru. Grayscale indicates elevation (white [0 m] to dark grey [6500 m]). Abbreviations refer to Department's names (Ap = Apurímac, Ay = Ayacucho, Cu = Cusco, Hu = Huancavelica, Ju = Junín). Prepared by Carlos Martel.

and number of locations, and D/very small and restricted population).

Similar species

Telipogon deuterocoscoensis is the only species of the Andean miniature *Telipogon* presenting an entire, oblong-ligulate labellum with a V-shaped callus and a column with tubular ornamented setae narrowing at the apex (Fig. 1–2). It is similar to *T. pogonostalix*, sharing a column with setae and the shape of the labellum. However, *T. deuterocoscoensis* is clearly different by an entire labellum with a V-shaped callus. Although Christenson and Repasky (2008) pointed out that the labellum and callus are tri-lobed and rounded respectively, *T. deuterocoscoensis* presents an entire labellum and a V-shaped callus. Christenson and Repasky (2008) also placed this taxon within *Stellilabium* and it seems as if they overlooked Williams et al. (2005) publication, probably considering the necessity of further studies supporting the inclusion of *Stellilabium* within *Telipogon*. However, Williams et al. (2005) and further studies (i.e. Pridgeon et al. 2009, Neubig et al. 2012) clearly showed that *Stellilabium* is biphyletic and embedded in *Telipogon*. Images of the species are also shown in Zelenko and Bermúdez (2009 p. 351) as *Telipogon* sp.

Additional specimens examined

Peru. Cusco. Prov. Paucartambo: Dist. Paucartambo, Wayqecha Cloud Forest Research Station, Kosñipata Valley, between Paucartambo and Pilcopata, 2800–2950 m a.s.l., 28 Feb 2004, J. P. Janovec et al. 2763 (BRIT, photo!); same locality, 2968 m a.s.l., 6 Nov 2005, R. E. Repasky et al. 92 (BRIT, photo!); Paucartambo, Trocha Unión. P. N. Manu,

3000 m a.s.l., 19 Feb 2007, M. Mamani 871 (CUZI); Paucartambo, Esperanza, R. B. Manu, 2889 m a.s.l., 27 Apr 2007, W. Nauray and M. Mamani 3772 (CUZI); Wayqecha Biological Station, sides of Zorro trail, 13.174196°S, 71.586696°W, 2890 m a.s.l., 17 Feb 2016, C. Martel 71 (USM!).

Telipogon huancavelicanus Collantes & C. Martel sp. nov. (Fig. 4–5)

Similar to *Telipogon bennettii* (Dodson & R. Escobar) N.H. Williams & Dressler, but differing by the absence of a pseudobulb, flowers with the petals oblanceolate, labellum subpandurate with two divergent auriculae basally, and column with three dense tufts of subtubular ornamented setae with ramified apices.

Type: Peru. Huancavelica. Prov. Tayacaja, Dist. Tintay Puncu, Sector de bosque Micoy Orcco, 3000 m a.s.l., 7 Apr 2016, L. Egoavil 47 (holotype: USM!).

Etymology

Telipogon huancavelicanus was named after Huancavelica, the Political Dept where the type locality is found.

Description

Epiphytic, sympodial, acaulescent, herb to 7 cm tall (including the inflorescence). Roots 0.7–0.9 mm in diameter, basal. Leaves 15–27 × 2.5–4.5 mm, 2–5, subcoriaceous, distichous, at base conduplicate and suboblanceolate, at apex obtuse with minute verrucose protuberances, with margins towards apex with minute subclaviform papillae. Inflorescence an apical raceme, successively 4–5-flowered,

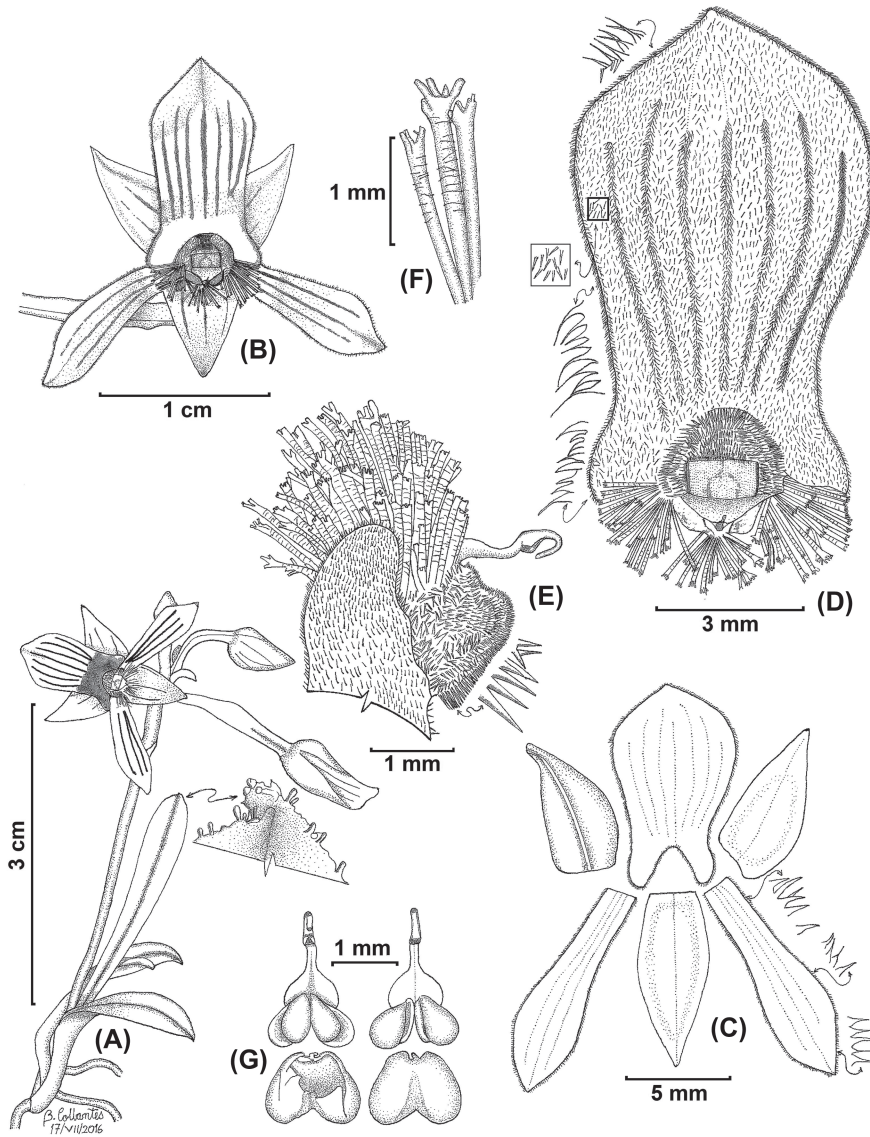


Figure 4. *Telipogon huancavelicanus* sp. nov. (A) habit, with details of the leaf apex, (B) flower, (C) dissected flower, with details of petal margins, (D) labellum and column, ventral view with details of the margins and upper side, (E) column, lateral view with details of the setulae, (F) setae (G) pollinarium and anther cap, ventral and dorsal view. Drawing by Benjamín Collantes, based on Egoavil 47 (USM!).

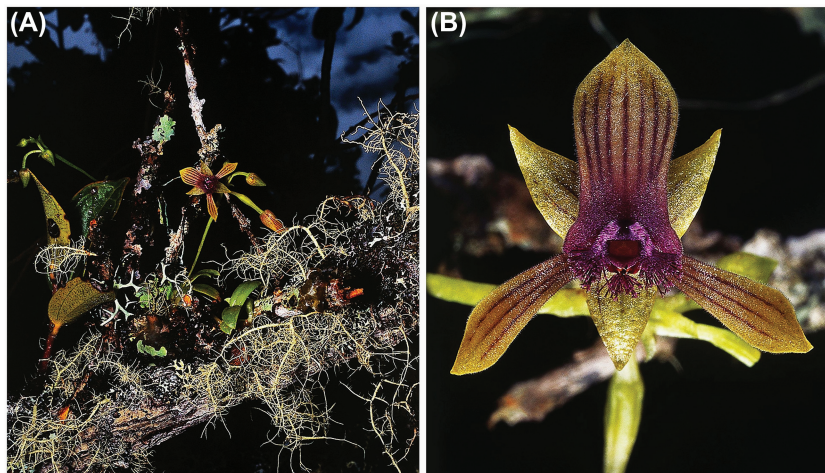


Figure 5. *Telipogon huancavelicanus* sp. nov. (A) habit, epiphytic plant, (B) flower, frontal view. Photographs by Benjamín Collantes.

up to 6 cm long, pedunculate; peduncle terete, 40–50 × 1 mm; with 1–2 basal semiamplexicaul bracts that are oblong and obtuse. Floral bracts 3–6 mm long, ovate to oblong, acute. Ovary triquetrous, winged, 15 × 8 mm, pedicelate, nearly 8 mm. Flowers non-resupinate, 17.4 × 19.9 mm. Sepals 8 × 3 mm, semitranslucent greenish yellow with three dark maroon lines, ovate, basally concave, acute, curved in natural position, with entire margin, 3-veined, 1-carinate dorsally. Petals 11 × 3 mm, greenish yellow, incurved in natural position, slightly reflexed, oblanceolate, subacute at apex, 3-veined with veins dark maroon; margins densely setulose from dark maroon setulae, the 1/3 basal and distal sections with perpendicular setulae, 1/3 middle with antrorse setulae; upper side 2/3 basal densely minutely setulose, 1/3 distal glabrous. Labellum 10 × 6 mm, greenish yellow distally, entire, subpandurate, 7-veined, ecallose, basally 2-auriculate; auricle subovate, obtuse, divergent; margins with densely retrorse setulae that are purple basally and greenish yellow distally; upper side dark maroon at the base, densely setulose, more densely setulose above the veins; setulae retrorse, dark maroon at the base. Column 2 × 2 mm, stout, purple, densely setulose, anterior border of the stigma thickened and lobed, with 3 tufts of setae; setae dark maroon to purple, subtubular, rugged-ornamented, up to 2.5 mm long, branched at the apex with 2–5 cylindrical segments. Stigma 2 × 1 mm, rectangular. Rostellum erect. Anther cap 1.5 × 1.2 mm, transversally cordiform, bi-locular. Pollinarium 2.5 × 1.5 mm; pollinia 4, obovoid, complanate, convex-concave, in 2 unequal pairs, the outer pair larger, the inner pair smaller; caudicles hyaline; viscidium anclous.

Distribution, habitat and ecology

Telipogon huancavelicanus is known exclusively from the cloud forests of Amaru and Micoy Orcco, Tayacaja Province, Dept of Huancavelica, in the Peruvian Andes (Fig. 3). It grows as an epiphyte in remnant forest between 2700–3000 m a.s.l. It has been found growing on plants of *Chusquea* sp. and *Clusia* sp.

Phenology

This species was recorded to bloom from January to April (Bennett and Christenson 2001, Collantes 2015).

Conservation status

Telipogon huancavelicanus is presently only known from two forests and less than 40 individuals have been recorded. Those are highly endangered due to indiscriminate deforestation and forest fires. Thus according to the IUCN red list (IUCN 2014), the species should be listed as 'Critically Endangered' (CE, criterion B1/extent of occurrence, B2/area of occupancy, and D1/very small or restricted population).

Similar species

Telipogon huancavelicanus is the only species of the miniature *Telipogon* with an entire labellum with two auricles basally and a column with three tufts of subtubular ornamented setae branching at the apex (Fig. 4–5). It is similar to *T. bennettii* (Dodson & R. Escobar) N.H. Williams & Dressler,

sharing a column with tufts of ornamented setae and the same general shape of the labellum. However, *T. huancavelicanus* is clearly different by the setae with a branched apex, and absence of a pseudobulb. The species was previously identified as *T. bergoldii* (as *Stellilabium bergoldii* (Garay & Dusnterv.) Carnevali & Romero) and *T. bennettii* (as *Stellilabium bennetti* Dodson & R. Escobar) by Bennett and Christenson (2001) and Christenson and Repasky (2008), respectively. An image of the species was shown in Collantes (2015) as *Telipogon* sp.

Additional specimens examined (paratype)

Peru. Huancavelica. [Prov.] Tayacaja, [Dist. Huachocolpa,] Inquilpata, 2700 m a.s.l., 16 Feb 1999, M. León et al. 3004 (MOL-spirit).

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