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Ten new species of *Telipogon* (Orchidaceae, Oncidiinae) from southern Peru

by

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Abstract

Nauray Huari, W. & Galán de Mera, A. 2008. Ten new species of *Telipogon* (Orchidaceae, Oncidiinae) from southern Peru. *Anales Jard. Bot. Madrid* 65(1): 73-95.

Ten new species of *Telipogon*, *T. antisuyuensis, T. austroperuvianus*, *T. casadevalliae, T. farfanii, T. javiercastroviejoi, T. kosnipatensis, T. marleneae, T. mesotropicalis, T. santiagocastroviejoi,* and *T. tupayachii* are described and illustrated. These are terrestrial or epiphytes of the montane humid forests from Andean valleys of southern Peru. Diagnostic morphological characters are discussed for each species. A key is provided for the species of the genus found in southern Peru. The number of *Telipogon* species currently recognized for the Peruvian flora is 46.

Keywords: Andean Mountains, Orchidaceae, Peru, Taxonomy, Telipogon.

Resumen

Nauray Huari, W. & Galán de Mera, A. 2008. Diez especies nuevas de Telipogon (Orchidaceae, Oncidiinae) del sur del Perú. *Anales Jard. Bot. Madrid* 65(1): 73-95 (en inglés).

Se describen e ilustran diez especies nuevas de *Telipogon –T. antisuyuensis, T. austroperuvianus*, *T. casadevalliae, T. farfanii, T. javiercastroviejoi, T. kosnipatensis, T. marleneae, T. mesotropicalis, T. santiagocastroviejoi* y *T. tupayachii*. Éstas son plantas terrestres o epífitas de los bosques húmedos montanos de los valles andinos del sur de Perú. Se discuten sus caracteres morfológicos diagnósticos y se propone una clave dicotómica para diferenciar las especies que crecen en el sur del país. El número de especies de *Telipogon* actualmente reconocidas para la flora peruana es de 46.

Palabras clave: Cordillera Andina, Orchidaceae, Perú, Taxonomía, *Telipogon*.

Introduction

Telipogon Kunth is an orchid genus in subtribe Oncidiinae (Williams & al., 2005) with flowers with four pollinia (vs. two in most other members of Oncidiinae), column normally with trichomes and bristles (rarely glabrescent) and an uncinate viscidium (Schweinfurth, 1960; Dodson, 2004) that grow as terrestrial or epiphytes in montane rain forests from Central America to Bolivia and Hispaniola in the Caribbean (Foldats, 1970; Dodson & Escobar, 1987; Govaerts, 2008).

In Peru, 37 species of *Telipogon sensu stricto* have been recorded (Schweinfurth, 1960; Brako & Zarucchi, 1993; Bennett & Christenson, 1998, 2001; Nauray & Christenson, 2003; Moretz & Farfán, 2003; Galiano & al., 2003). The genus was based on a later concept of some species, as *T. benedicti* Rchb. f., *T. boissierianus* Rchb. f., *T. papilio* Rchb. f. & Warsz., *T. tessellatus* Lindl., that now have updated distributions, and a high number of microspecies especially described by Braas (1981, 1982, 1985) and Dodson & Bennett (1989). Most of these are endemic to small areas in the country, even a single valley.

The taxonomy of the genus is complicated, especially because of the large extent of this country, the rare populations, and the few species records. For this reason, for the moment we have limited our study to the specimens collected in the Andean valleys of the Department of Cusco in southern Peru.

Material and Methods

Specimens of *Telipogon* species were collected from the montane rain forests of the localities Urubamba, La

Convención, Calca, Paucartambo and Quispicanchis (Fig. 1), from 1500 to 3650 m elevation in the Amazonian slope of the Andes of the Department of Cusco in Peru. For each plant, photographs were taken and the flowers were preserved in alcohol (70%) to be used in the preparation of illustrations. Vouchers were deposited in the herbaria CUZ, HGI, MA, and MOL.

These specimens were compared with material from Colombia, Ecuador, North and Central Peru, and Bolivia from the herbaria AMES, B, CUZ, F, G, K, MA, MO, MOL, P, SEL, TNS, USM, and W. The protologues and other published descriptions of *Telipogon* species from Peru and other adjacent Andean countries were reviewed (Lindley, 1847; Reichenbach, 1854, 1856, 1858, 1877a, 1877b; Kränzlin, 1919; Schlechter, 1920, 1921; Schweinfurth, 1960; Braas 1981, 1982, 1985; Dodson & Escobar, 1987, 1993a, 1993b; Dodson & Dodson, 1989; Dodson & Bennett, 1989; Hashimoto, 1990; Bennett & Christenson, 1998, 2001; Nauray & Christenson, 2003; Moretz & Farfán, 2003; Galiano & al., 2003).

Taxonomic treatment

IDENTIFICATION KEY FOR THE SOUTH-PERUVIAN SPECIES OF *TELIPOGON* (THIS REGION INCLUDES THE DEPARTMENTS OF APURIMAC, AYACUCHO, CUSCO, HUANCAVELICA, MADRE DE DIOS AND PUNO).

1. Stem >10 cm, leafy throughout; sheath not articulated with the leaf blade 2
1. Stem <10 cm, with few leaves at the base; sheath articulated with the leaf blade 10
2. Flowers > 3.5 cm in diameter; lip different from the petals in size and coloration, without callus ..... **T. vargasii**
2. Flowers < 3.5 cm in diameter; lip similar to the petals in size and coloration, with callus 3
3. Apex of the column trilobulate 4
3. Apex of the column simple 5
4. Petals obovate-rhombic; petals and lip with branched veins and transverse lines; column setose ..... **T. tupayachii**
4. Petals broadly elliptic; petals and lip with unbranched veins and tiny dots; column glabrescent ..... **T. phuyupatamarcensis**
5. Leaves pubescent; callus a low lunate ridge ..... **T. tayacajaensis**
5. Leaves glabrescent; callus cordiform, sagittate or Y-shaped 6
6. Petals and lip with longitudinal veins and tiny dots; callus apex dorso-ventrally split ..... **T. javiercastroviejoi**
6. Petals and lip with longitudinal veins and sometimes transverse lines; callus apex entire 7
7. Petals and lip with both longitudinal veins and transverse lines; callus typically cordiform ..... **T. mesotropicalis**
7. Petals and lip with only longitudinal veins, without transverse lines; callus Y-shaped or sagittate 8
8. Petals and lip golden yellow with purple veins; lip broadly ovate; callus convex, keeled in the front ..... **T. casadevalliae**
8. Petals and lip cream yellow with purple to brown reddish veins; lip elliptic; callus flat or with a plateau in the front 9
9. Callus Y-shaped, flat; column short pubescent ..... **T. machupicchuensis**
9. Callus sagittate, with a plateau in the front, column with bristles to 1.5 mm long ..... **T. kosnipatensis**
10. Lip smooth or with the base swollen, but without callus 11
10. Lip with conspicuous callus 15
11. Column glabrous 12
11. Column with bristles 13
12. Flowers ca. 6 cm in diameter, petals with ca. 13 nerves, lip with ca. 29-31 nerves ..... **T. peruvianus**
12. Flowers ca. 4-5 cm in diameter, petals with ca. 9 nerves, lip with ca. 15 nerves ..... **T. alegriae**
13. Petals and lip with conspicuous purple to reddish brown spots, without longitudinal veins ..... **T. suarezii**
13. Petals and lip without spots, with longitudinal broad purplish veins 14
14. Lip with ca. 23 nerves, column with two lateral tufts of bristles ..... **T. collantesii**
14. Lip with ca. 13 nerves, column with three tufts of bristles ..... **T. austroperuvianus**
15. Callus almost completely attached to the lip; petals and lip with broad longitudinal veins, transverse lines, bars, and reticulated veins 16
15. Callus attached to the lip by its base, free in the apical half; petals and lip only with reticulated veins 18
16. Petals and lip with broad longitudinal veins and some transverse basal lines; column bristles with acuminate apex ..... **T. antisuyuensis**
16. Petals and lip with reticulated veins or transverse bars; column bristles capitate to subulate at apex 17
17. Lip similar in size to petals; lip with ca. 11-13 nerves ..... **T. phalaenopsis**
17. Lip 1/3 smaller than petals, lip with ca. 29-31 nerves ..... **T. salinasiae**
18. Callus trilobulate, lip emarginate ..... **T. marleneae**
18. Callus sagittate or sagittate-cordiform, lip obtuse to acuminate 19
19. Flowers ca. 4-5.3 cm in diameter, stigma trilobulate; reticulated veins thinner and colourless toward the margin ..... **T. farfanii**
19. Flowers ca. 3-3.5 cm in diameter, stigma round; reticulated veins thicker and coloured toward the margin ..... **T. santiagocastroviejoi**

Description of new species

Telipogon antisuyuensis Nauray & A. Galán, **sp. nov.**

Type: PERU. **Cusco:** Calca, Valle de Lares, Mant'o, 12º 59' 4.8" S, 72º 03' 45.8" W, 2564 m, 15 Feb. 2007, *W. Nauray, R. Titto & T. Espinoza 3754* (holotype, CUZ; isotypes, HGI, MOL).

Illustrations: Figs. 2 and 3a.

Speciei Telipogon papilio Rchb. fil. Warsz *similis, ab ea vero praesertim differens callo conspicuo atque apice columnae setis acuminatis praedito.*

Plant caespitose, epiphytic, about 15 cm tall. Stem to 4 cm, with few basal leaves. Leaves oblanceolate to obovate-lanceolate, acuminate, margin entire, sheath articulated with the blade, 5-8 × 1.2-2 cm. Inflores-

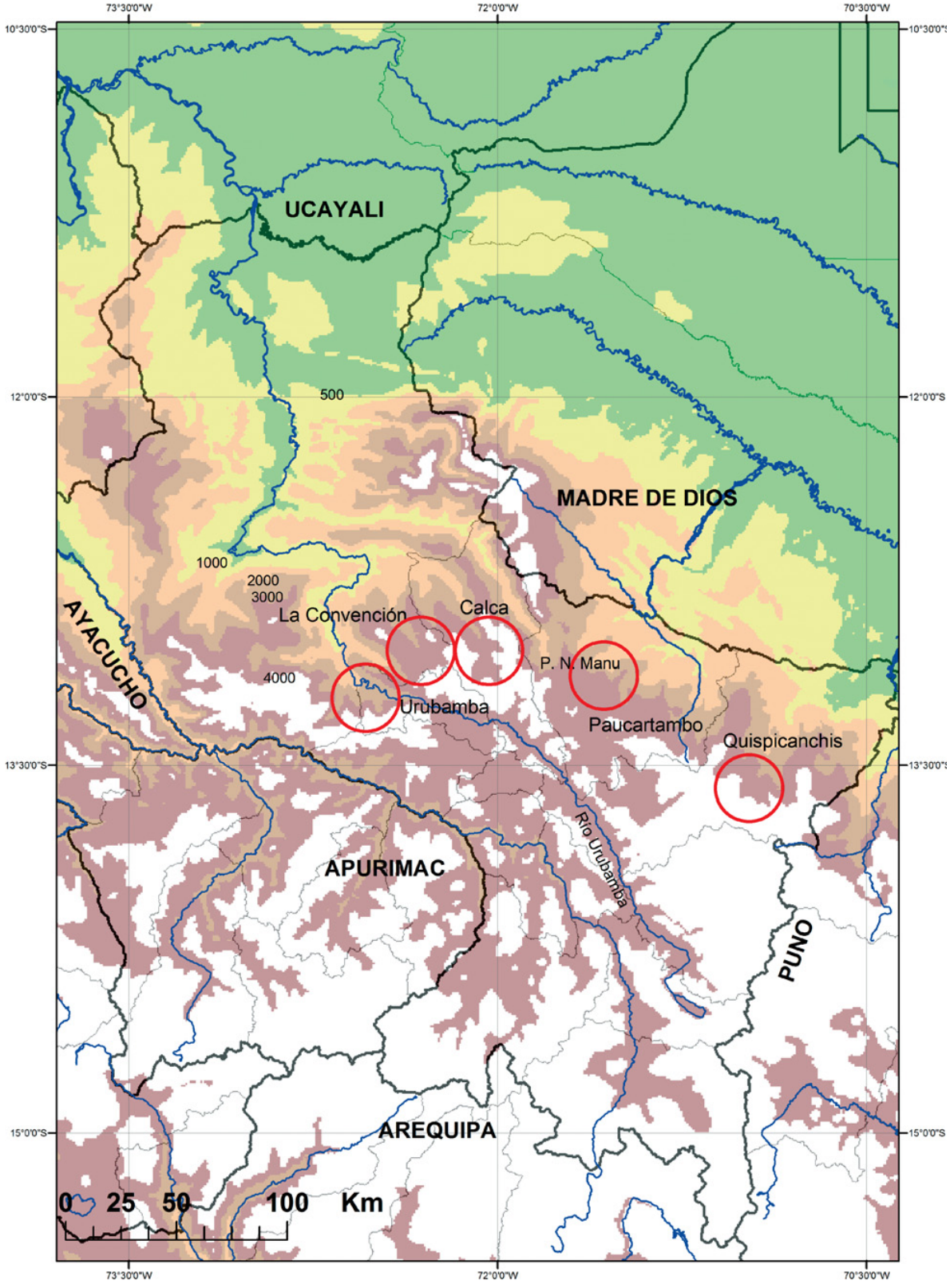

Fig. 1. Map of the oriental valleys of the Department of Cusco. The circles represent the localities where the specimens were collected.

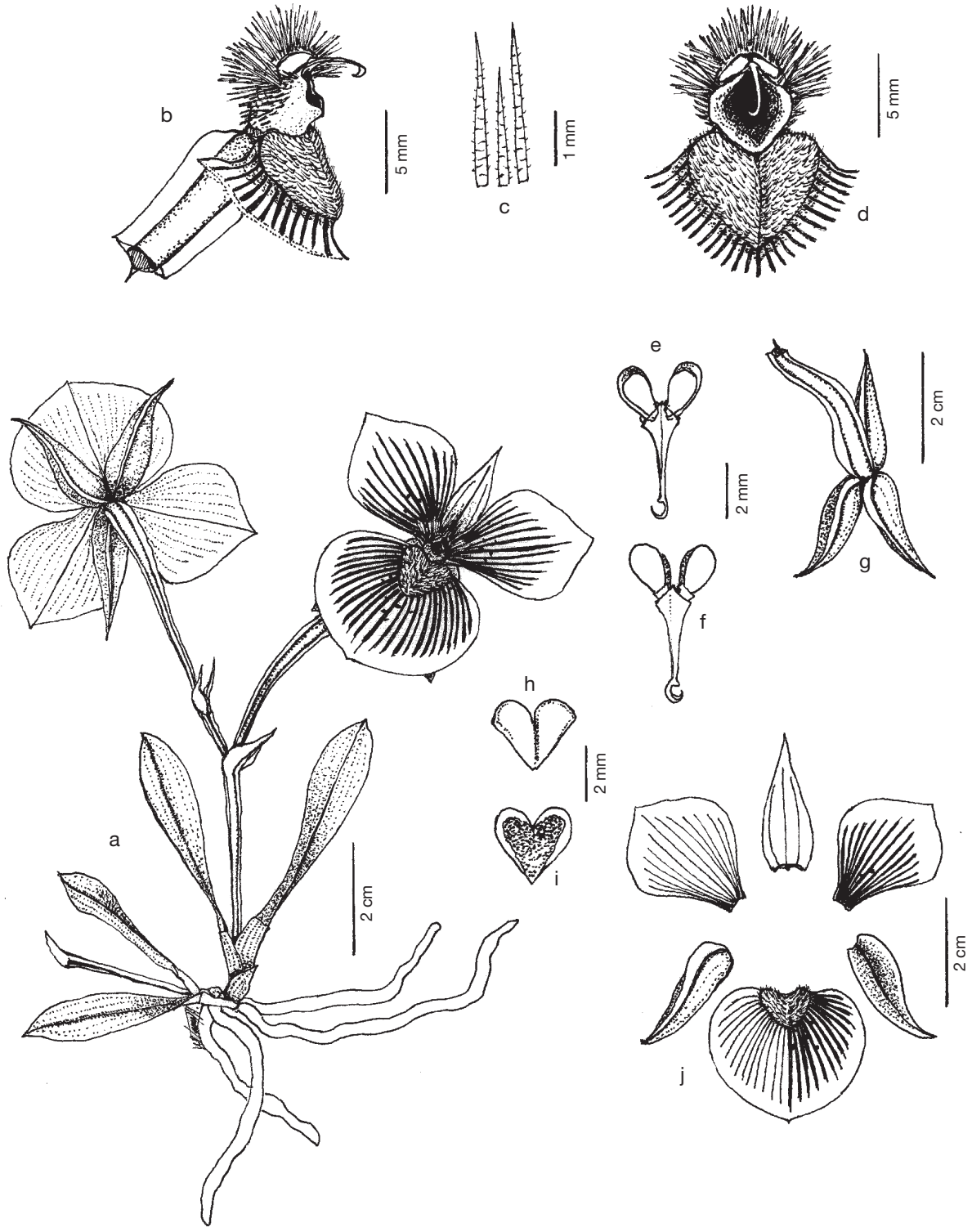

Fig. 2. *Telipogon antisuyuensis:* **a,** habit; **b,** column and callus in lateral view; **c,** column bristles; **d,** column and callus in front view; **e,** pollinarium in dorsal view; **f,** pollinarium in ventral view; **g,** ovary and sepals in dorsal view; **h,** anther in front view; **i,** anther in ventral view; **j,** dissected perianth. All drawn from *Nauray et al. 3754* (HGI).

Fig. 3. Flowers of *Telipogon*: **a,** *T. antisuyuensis*; **b,** *T. austroperuvianus*; **c,** *T. casadevalliae*; **d,** *T. farfanii*; **e,** *T. javiercastroviejoi*; **f,** *T. kosnipatensis*.

cence and peduncle 5-10 cm long; peduncle alate, erect or recurved; raceme with 2-4 flowers, usually 1-2 open at a time; floral bract ovate-triangular, acuminate, dorsally carinate, 1.2 × 1 cm. Flowers large 4.5-5 cm in diameter, normally resupinate; pedicellate ovary to 4 cm long, trialate; sepals 25 × 10 mm, lime green with dark green veins, ovate-lanceolate, acuminate, dorsally alate, 3-nerved; petals 25 × 22 mm, whitish turning lemon yellowish towards the margin with thick longitudinal purple veins and some transversal purple basal veins, broadly obovate-rhombic, obtuse, 13 to15-nerved; lip 25 × 30 mm, similar in colour to petals, transversely elliptic, obtuse, 23-25-nerved; callus conspicuous, 7 × 8 mm, dark purple, cordiform, hirsute, completely attached to the lip base. Column 6 × 6 mm, dark purple, cylindric, with three tufts of bristles surrounding the anther (two lateral and one at the top), the rest of the surface hirsute; bristles to 3.5 mm long, dark purple, rigid, acuminate, margin microscopically ciliolate; stigma circular or broadly hexagonal; anther 3 × 3 mm, hyaline, cordiform; stipe to 4 mm long, hyaline; viscidium 1 mm long, purple, hyaline, uncinate; pollinia 4, bright yellow, in two dissimilar pairs, ovoid, larger pair 2 × 1 mm.

Etymology: Named after Antisuyu, the name in Quechua or Runa Simi for the Eastern Andean region of Peru during the Inca Empire.

Distribution and ecology: *Telipogon antisuyuensis* grows between 2500 and 3400 m elevation in cloud forests, on *Alnus acuminata* Kunth (Betulaceae), *Baccharis* sp. (Asteraceae), *Cyathea pallescens* Domin (Cyatheaceae), *Clusia* sp. (Clusiaceae), *Hedyosmum* sp. (Chloranthaceae), *Miconia* sp. (Melastomataceae), and *Myrsine* sp. (Myrsinaceae). It flowers between February and June.

Additional specimens examined (paratypes)

PERU. **Cusco:** Urubamba, Huiñay Hayna, 2550 m, 9-III-1944, *C. Vargas 4140a* (CUZ). Urubamba, Wiñay Wayna, 30-VI-1990, *P. Núñez, A. Rodríguez & B. Collantes 12390* (CUZ). Urubamba, Machu Picchu, Wiñay Wayna, 13º11'38''S 72º31'17''W, 2810 m, 30-III-2007, *W. Nauray & M. Mamani 3757* (CUZ) ibidem, 13º11'23''S 72º31'10''W, 2654 m, 31-III-2007, *W. Nauray & M. Mamani 3760* (HGI). La Convención, Carrizales, 13º06'13''S 72º22'23''W, 3400 m, 11-IV-2007, *W. Nauray & W. Farfán 3762* (CUZ).

Observations: Specimens of this new species have previously been misindentified as *T. papilio* Rchb. f. & Warsz. (e.g. Vargas 4140a; Núñez 12390). Examination of the holotype of *T. papilio* (W!) shows it to be a distinct species that is not currently known from southern Peru. *Telipogon antisuyuensis* differs from the former in the transverse elliptical lip; the callus conspicuous, cordiform and hirsute, and the column bristles with an acuminate apex. *Telipogon antisuyuensis* is close to *T. vasquezii* Dodson (holotype SEL!) from Bolivia, but differs in the high number of petal nerves, the larger and transverse lip, and the column bristles not bifid at the apex. *Telipogon antisuyuensis* is similar to other species of Peru, Ecuador and Colombia but differs in the size of flowers, the nerve number of the petals and the lip, and the presence of callus. *Telipogon rhombipetalus* C. Schweinf. (holotype F!) has smaller flowers, the petals 15 to16-nerved, and the lip 19-nerved without callus. *Telipogon semipictus* Rchb. f. ex Kraenzl. (holotype W!) has smaller flowers lacking callus but with the swollen base, the petals 11-nerved, and the lip 17-nerved. *Telipogon ortizii* Dodson & R. Escobar also lacks a callus and has smaller flowers, and concolorous purple petals, not whitish turning lemon yellowish towards the margin.

Telipogon austroperuvianus Nauray & A. Galán, **sp. nov.**

Type: PERU. **Cusco:** Calca, Lares, Mant'o, 2600 m, Jul. 2001, *W. Nauray & G. Moretz 527* (holotype, CUZ; isotype, HGI).

Illustrations: Fig. 4 and 3b.

Speciei Telipogon semipictus Rchb. fil. ex Kraenzl. *similis, ab ea vero praesertim differens floribus maioribus atque labello circiter* 13*-nervato.*

Plant caespitose, epiphytic, about 15 cm tall. Stem to 3 cm, with few basal leaves. Leaves 9 × 1.5 cm, oblanceolate, acuminate, margin crenulate, sheath articulated with the blade. Inflorescence and peduncle 12 cm long; peduncle flexuous, alate; raceme with 2-9 flowers, usually 2-3 open at a time; floral bract 1.2 × 0.6 cm, ovate-triangular, acuminate, dorsally carinate. Flowers 3-3.5 cm in diameter, normally resupinate; pedicellate ovary 30-35 mm long, trialate; sepals 18 × 7 mm, yellowish green, ovate, acuminate, dorsally carinate, 3-nerved; petals 22 × 20 mm, whitish turning yellow toward the border with longitudinal purplish red veins and some transverse lines in the inferior half, basal surface purplish red, broadly rhombic, acuminate, basal margin denticulate, 9-nerved, basally hirsute; lip 22 × 26 mm, similar in colour to the petals but longitudinal purplish red veins wider and longer, transversely obovate, acuminate, basal margin denticulate, 13-nerved, hirsute, swollen in the base. Column 4 × 4 mm, dark purple, cylindric, with three tufts of bristles around the anther (two lateral and one on top); bristles to 3 mm long, dark purple, flexuous, acuminate or caudate apically; stigma circular; anther 2 × 2.5 mm, hyaline purple, cordiform; stipe 3 mm long, hyaline purple; viscidium 1 mm long, uncinate; pollinia 4, bright yellow, in two dissimilar pairs, ovoid, larger pair 1.4 × 0.7 mm.

Etymology: The name refers to southern Peru.

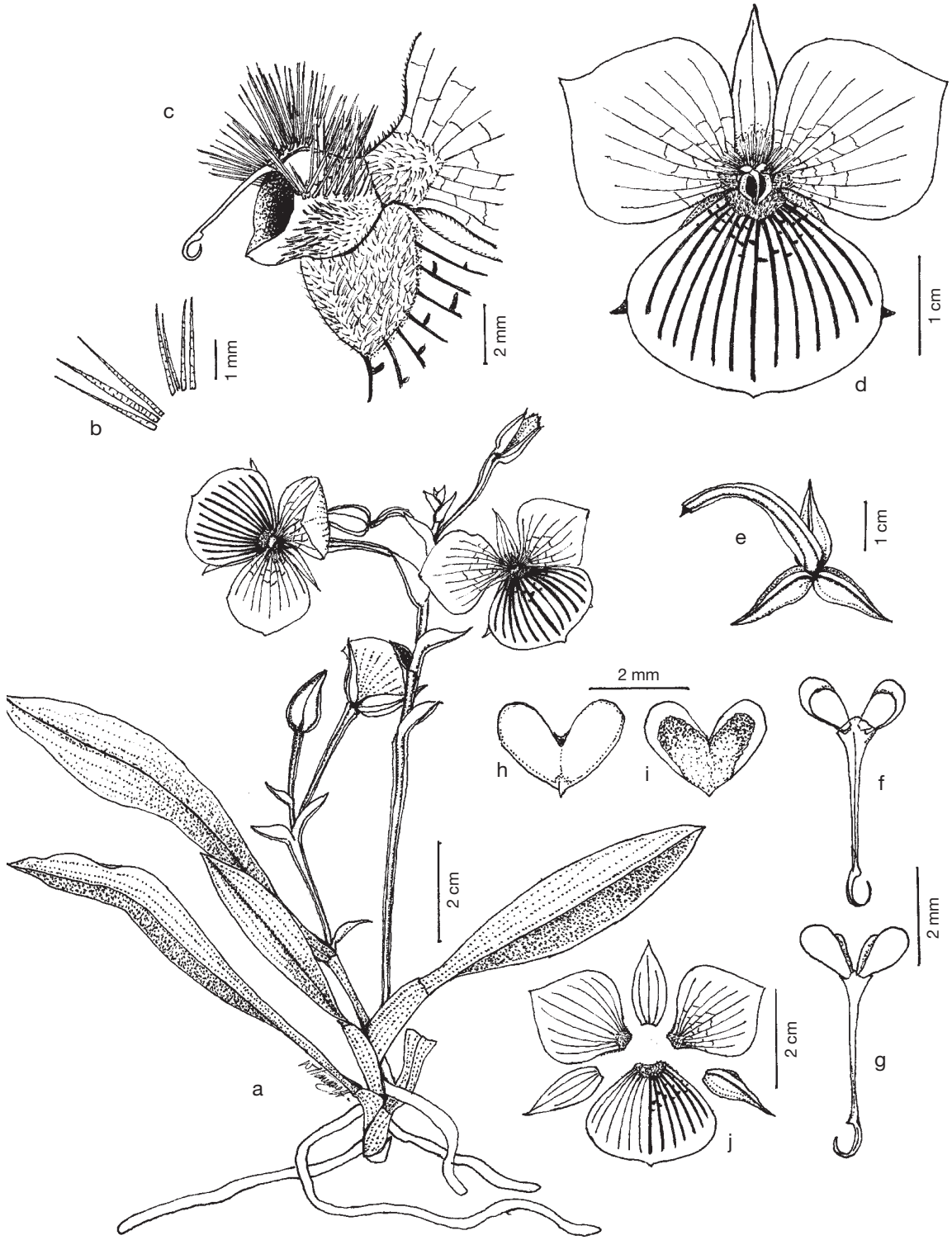

Fig. 4. *Telipogon austroperuvianus:* **a,** habit; **b,** column bristles; **c,** column and base lip in lateral view; **d,** flower in front view; **e,** ovary and sepals in dorsal view; **f,** pollinarium in dorsal view; **g,** pollinarium in ventral view; **h,** anther in front view; **i,** anther in ventral view; **j,** dissected perianth. All drawn from *Nauray 527 & G. Moretz* (HGI).

Distribution and ecology: *Telipogon austroperuvianus* is found in cloud forest at 2600 m; it flowers between March and July.

Additional specimens examined (paratypes)

PERU. **Cusco:** La Convención, Quellomayo-Lucumayo, 2450 m, 26-VII-1944, *Vargas 4540* (CUZ). Calca, Lares, Mant'o, Km 84, 2040 m, 19-VI-1964, *Vargas 15618* (CUZ). Calca, Lares, Valle de Lares, Mant'o, 2100 m, III-2002, *W. Farfán & G. Moretz 277* (CUZ).

Observations: Telipogon austroperuvianus is distinguished by the petals which are broadly rhombic, 9-nerved, and the lip transversely obovate, and 13-nerved. It is similar to some species from northern South America, such as *T. semipictus* from Colombia and *T. andicola* Rchb. f. from Colombia, Ecuador and Venezuela (holotype W!, isotype K!). The specimens cited above have been misidentified as *T. semipictus,* but examination of the holotype (W!) shows it to be a distinct species from which this new species differs in its larger flowers, fewer nerves on the petals and lip, and the lip with longer and thicker red purplish veins. From *T. andicola* it differs in its larger flowers, more nerves on the petals and the lip, and the coloured veins of the petals that do not reach the distal half. *Telipogon austroperuvianus* is also related to the Ecuadorian *T. lehmannii* Schltr. (lectotype K!), but it differs in the size of the flowers and the characters from the petals, and the lip. According to Schlechter (1920) *T. lehmannii* has petals 1.7 × 1.4 cm, 11-nerved, and the lip 1.65 × 1.8 cm, 19-nerved.

Telipogon casadevalliae Nauray, A. Galán & M. Mamani, **sp. nov.**

Type: PERU. **Cusco:** Paucartambo, Kosñipata, Trocha Unión, Parque Nacional del Manu, 13º 06' 29" S, 71º 35' 35" W, 2800 m, 24 Jan. 2007, *M. Mamani 867* (holotype, CUZ; isotypes, HGI, MOL).

Illustrations: Fig. 5 and 3c.

Speciei Telipogon machupicchuensis Nauray & Christenson *similis, ab ea vero praesertim differens labello late ovato, callo convexo, carinato, et columna setis longis atque recurvatis praedita.*

Plant caulescent, terrestrial or epiphytic, about 30 cm tall. Stem 20 cm long, erect, leafy throughout. Leaves 4 × 1 cm, ovate-lanceolate to oblanceolate, acuminate, margin ciliolate, sheath not articulated with the blade. Inflorescence and peduncle to 15 cm long; peduncle angled, flexuous; raceme with 3-6 flowers, usually one open at a time; floral bract ovate-triangular, acuminate, conduplicate, 1.1 × 0.6 cm. Flowers 2-2.5 cm in diameter, normally not resupinate; pedicellate ovary tricarinate, 8-10 mm long; sepals 11 × 5 mm, lime green with dark lime green veins, ovate, apiculate, concave, 3-nerved; petals 15 × 11 mm, golden yellow with longitudinal purple veins, broadly ovate, acute, basal margin ciliolate, 7-nerved; lip 15 × 12 mm, similar in colour to the petals, broadly ovate, obtuse, basal margin ciliolate, 7-nerved; callus 5 × 4 mm, purple, broadly Y- shaped, velutinous, convex, with a narrow Y-shaped ridge, the apical half free from the lip. Column 2.5-3 × 3-4 mm, purple, with two lateral tufts of bristles and hirsute on top; bristles to 2 mm long, pale purple, recurved, acuminate or caudate apically; stigma quadrangular; anther 1.5 × 2 mm, purple hyaline, cordiform; stipe to 1.2 mm long, purple hyaline; viscidium 0.6 mm long, orange hyaline, uncinate; pollinia 4, bright yellow, in two dissimilar pairs, ovoid, larger pair 1.2 × 0.2 mm.

Etymology: Named in honor of Dr. Margarida Casadevall Masso, Professor at the University of Gerona.

Distribution and ecology: *Telipogon casadevalliae* grows between 2700 and 3000 m elevation in cloud forests, on *Prunus sp.* (Rosaceae), *Weinmannia bangii* Rusby and *W. microphylla* Kunth (Cunoniaceae). It flowers between January and March.

Additional specimen examined (paratype)

PERU. **Cusco**: Paucartambo, Pillahuata, Manu Biosphere Reserve, 3000 m, III-2000, *W. Farfán 197* (CUZ).

Observations: Telipogon casadevalliae is close to *T. machupicchuensis* Nauray & Christenson (holotype CUZ!) but differs to the lip broadly ovate, the convex, Y-shaped, keeled callus, and the column with two lateral tufts of recurved bristles.

Telipogon farfanii Nauray & A. Galán, **sp. nov.**

Type: PERU. **Cusco:** Urubamba, Machu Picchu, Mesada, 3450 m, 12 Mar. 2002, *N. Salinas, W. Farfán, K. García & E. Gutiérrez MP-110* (holotype, CUZ).

Illustrations: Fig. 6 and 3d.

Speciei Telipogon tessellatus Lindl. *similis, ab ea vero praesertim differens callo convexo et agittato stigmateque trilobo.*

Plant caespitose, scrambling, epiphytic, about 20 cm tall. Stem to 5 cm, with few basal leaves. Leaves 6-11 × 1.5 cm, oblanceolate to lanceolate, acuminate, sheath articulated with the blade. Inflorescence and peduncle to 10 cm long; the peduncle compressed, alate, erect to recurved; raceme with 1-3 flowers, usually one open at a time; floral bract 1.8 × 0.8 cm, ovate-triangular, acuminate, dorsally carinate. Flowers 4-5.3 cm in diameter, resupinate; pedicellate ovary 5 cm long, trialate; sepals 22 × 10 mm, translucent lime green with dark lime green veins, ovate, acuminate, dorsally keeled, 3-nerved; petals 25 × 20 mm, cream yellow, with pale purple reticulated veins becoming

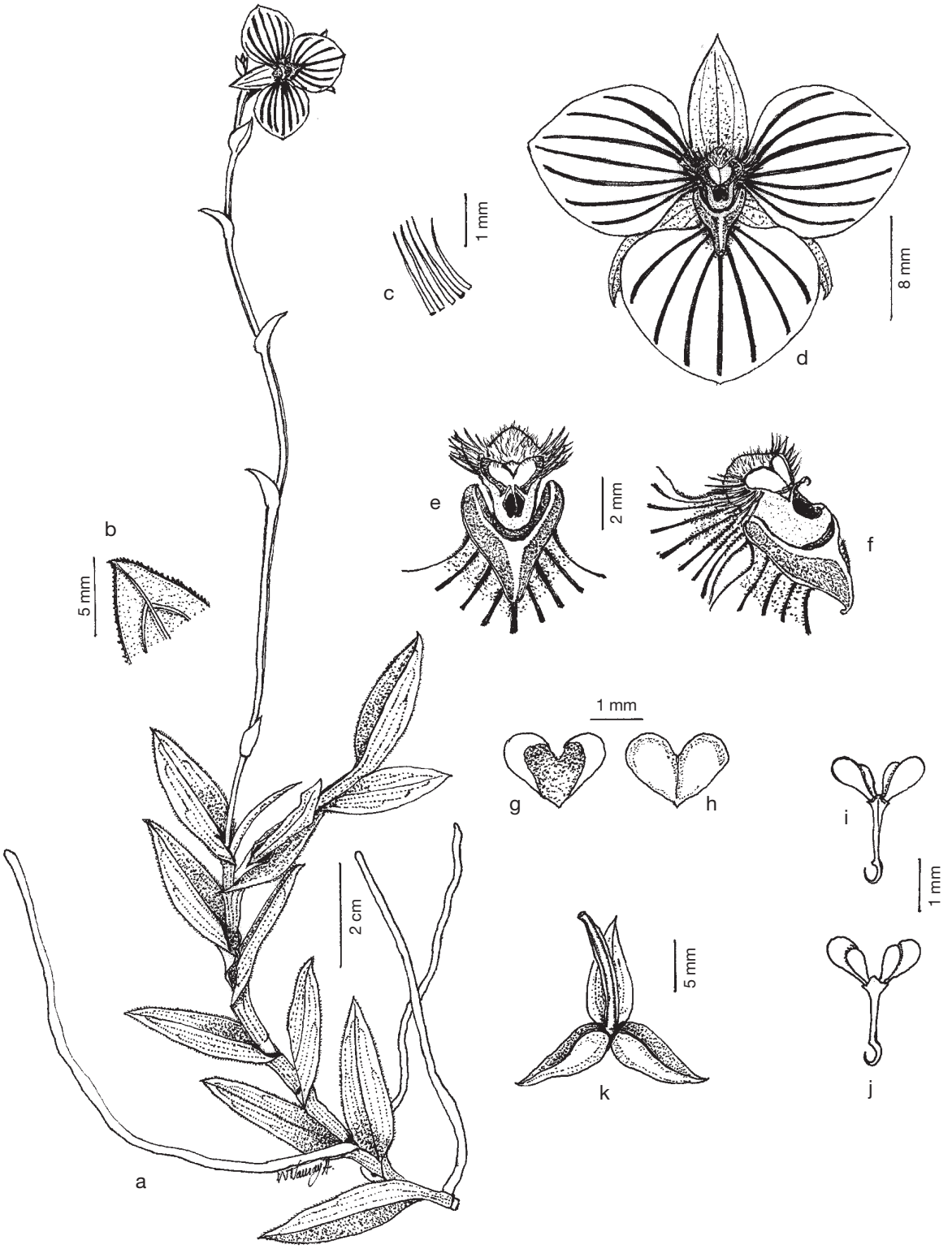

Fig. 5. *Telipogon casadevalliae:* **a,** habit; **b,** leaf apex; **c,** column bristles; **d,** flower in front view; **e,** column and callus in front view; **f,** column and callus in lateral view; **g,** anther in ventral view; **h,** anther in dorsal view; **i,** pollinarium in dorsal view; **j,** pollinarium in ventral view; **k,** ovary and sepals in dorsal view. All drawn from *Mamani 867* (HGI).

Fig. 6. *Telipogon farfanii:* **a,** habit; **b,** leaf apex; **c,** anther in ventral view; **d,** anther in dorsal view; **e,** flower in front view; **f,** ovary and sepals in dorsal view; **g,** pollinarium in dorsal view; **h,** pollinarium in front view; **i,** separate petals and lip; **j,** column bristles; **k,** column and callus in lateral view; **l,** column and callus in front view. All drawn from *Moscoso et al. MP-33* (HGI).

colorless toward the margin, broadly rhombic, acute, basal margin ciliolate, 11 to13-nerved also with cross veins in the basal half; lip 25 × 28 mm, similar in colour to the petals and with an irregular purple spot under the callus, subcircular, obtuse, basal margin ciliolate, 19 to 21-nerved with cross veins in the basal half; callus 8 × 6 mm, dark purple, sagittate, hirsute, convex in the front, the apical half free from the lip. Column 3 × 5 mm, dark purple, with three ill-differentiated groups of bristles; bristles to 3.5 mm long, dark purple, rigid, acuminate or cuadate apically; stigma trilobulate, lateral lobes auriculate and mid lobe circular; anther 2.5 × 3 mm, hyaline purple, cordiform; stipe to 2.5 mm long, hyaline; viscidium 0.8 mm long, uncinate; pollinia 4, bright yellow, in two dissimilar pairs, ovoid, larger pair 2 × 0.9 mm.

Etymology: Named in honor of William Farfán Ríos, biologist of the Universidad San Antonio Abad del Cusco, scientific researcher of Peruvian orchids.

Distribution and ecology: *Telipogon farfanii* grows between 3450 and 3500 m elevation in cloud forests, on *Polylepis pauta* Hieron (Rosaceae) where it flowers between March and July.

Additional specimen examined (paratype)

PERU. **Cusco:** Urubamba, Machu Picchu, Incatambo, 3500 m, VII-2001, *D. Moscoso, N. Salinas, W. Nauray, W. Farfán, C. Uchima & E. Gutiérrez MP-33* (HGI).

Observations: Telipogon farfanii differs from *T. tessellatus* Lindl. (holotype K!) in its larger flowers, and sagittate and convex callus. In *T. tessellatus,* the petals are ca. 1.2 × 1.2 cm, the lip ca.1.2 × 2 cm, and the callus is pad-shaped. *Telipogon farfanii* is similar to the Ecuadorian species *T. jimburensis* Dodson & R. Escobar but is distinguished by the form of the callus and stigma. *Telipogon jimburensis* has a trilobed callus, and unlobed stigma; in addition, the column has an upturned apicule under the stigma. *Telipogon octavioi* Dodson & R. Escobar is similar to *T. farfanii*, but this species from Colombia and Ecuador has smaller flowers, the petals 9-nerved, the lip 11 to 13-nerved, and a tongue-like callus.

Telipogon javiercastroviejoi Nauray & A. Galán, **sp. nov.**

Type: PERU. **Cusco:** Paucartambo, Kosñipata, Acjanaco-Tres Cruces, Manu National Park, 13° 09' 47" S, 71° 32' 00" W, 3491 m, 25 Apr. 2007, *W. Nauray & M. Mamani 3767* (holotype, CUZ; isotypes, HGI, MOL).

Illustrations: Fig. 7 and 3e.

Speciebus Telipogon benedicti Rchb. fil. *atque Telipogon boissierianus* Rchb. fil. *similis, a prima vero praesertim differens columna et setis eius brevioribus, a secunda item differens labello et lateralibus petalis non reticularis.*

Plant caulescent, terrestrial, about 30 cm tall. Stem 20 cm long, erect, leafy throughout. Leaves 2.5 × 0.8 cm, oblong, acute to emarginate, sheath not articulated with the blade. Inflorescence and peduncle 5-15 cm long; peduncle cylindrical to lightly trigonous, erect; raceme with 2-7 flowers, usually 1-2 open at a time; floral bract 0.7 × 0.6 cm, ovate-triangular, acuminate. Flowers 1.5-2 cm in diameter, normally not resupinate; pedicellate ovary 18 mm long, cylindrical to trigonous; sepals 8 × 4 mm, yellowish green with purple veins and purple apical dots, ovate, acuminate, dorsally carinate, 3-nerved; petals 12 × 8 mm, yellow with longitudinal veins and many purple dots, broadly ovate, acuminate, basal margin ciliolate, 7-nerved; lip 12 × 10 mm, similar in colour to the petals, broadly ovate, acuminate, basal margin ciliolate, 9-nerved; callus 3 × 3 mm, purple, sagittate, velutinous, convex in the front, dorso-ventrally split in the apex, the apical half free from the lip. Column 2 × 3 mm, purple, crowned in front by bristles; bristles to 1 mm long, pale purple, recurved, acuminate or caudate apically; stigma quadrangular; anther 0.8 × 1 mm, hyaline purple, cordiform; stipe 0.5 mm long, hyaline purple; viscidium 0.2 mm long, hyaline purple, uncinate; pollinia 4, bright yellow, in two dissimilar pairs, ovoid, larger pair 0.7 × 0.4 mm. Fruits 17 × 7 mm, tricarinate, dehiscent along three longitudinal lines.

Etymology: Named in honor of Dr. Javier Castroviejo Bolibar, from Asociación Amigos del Coto de Doñana, Seville, promoter of the cooperation in biodiversity research between Spain and Latin America.

Distribution and ecology: *T. javiercastroviejoi* grows in the limit between the elfin forests and the humid Puna (3000-3500 m). It flowers between April and July.

Additional specimen examined (paratype)

PERU. **Cusco:** Paucartambo, Kosñipata, Tres Cruces, 3000 m, VII-2002, *W. Farfán 59* (CUZ, MA).

Observations: Telipogon javiercastroviejoi is distinguished by the callus apex dorso-ventrally split, a good morphological feature that is in contrast to other caulescent species. It differs from the Bolivian species *T. benedicti* Rchb. f. (holotype W!) in its shorter column and bristles, and from *T. boissierianus* Rchb. f. (holotype G!) with its larger leaves, the smaller flowers, and the absence of reticulated purple veins from the petals and the lip. *Telipogon javiercastroviejoi* is similar to the Colombian and Ecuadorian *T. venustus* Schltr., from which it mainly differs in the characters of the callus and the column. In *T. venustus,* the

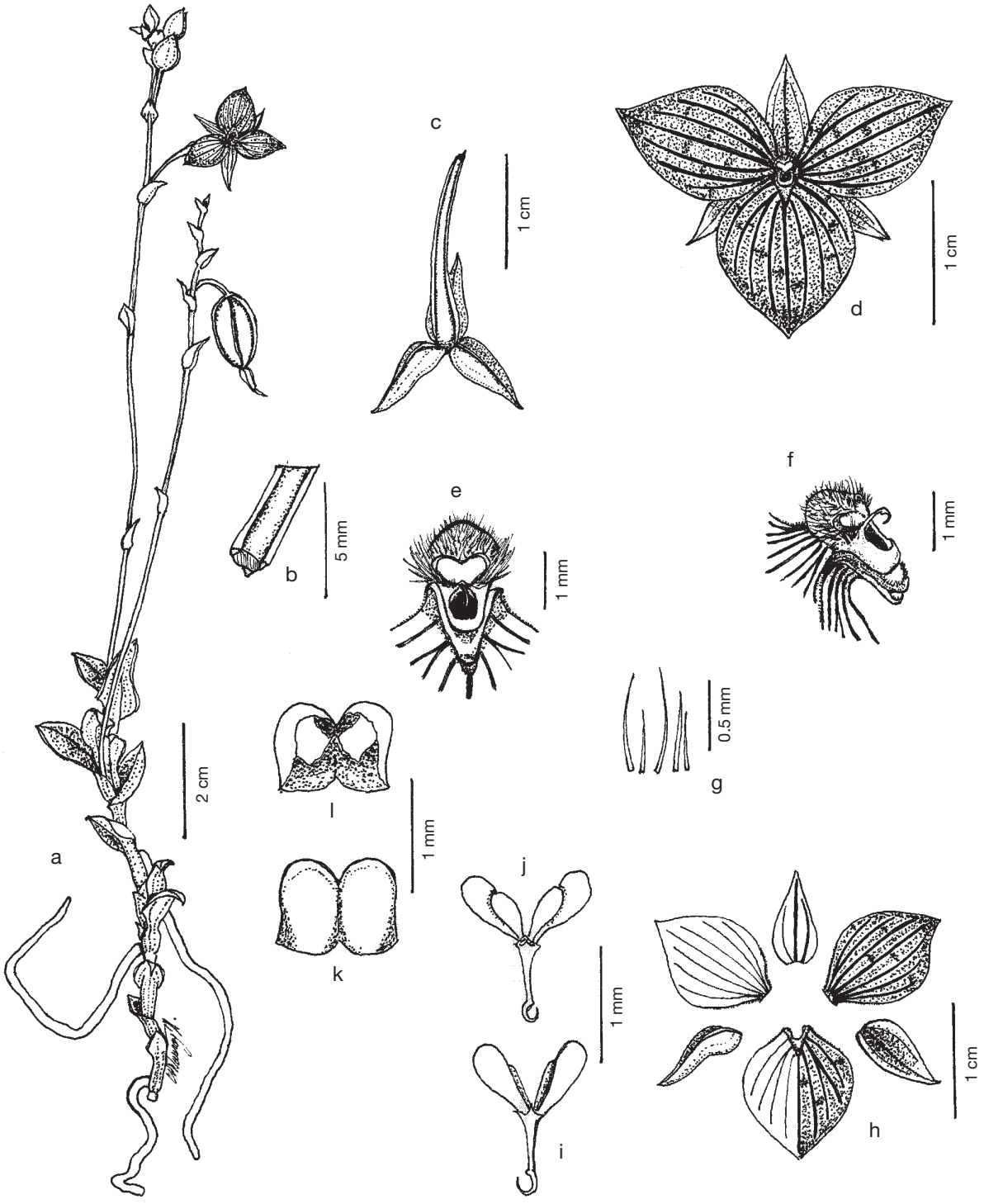

Fig. 7. *Telipogon javiercastroviejoi:* **a,** habit; **b,** section of peduncle; **c,** ovary and sepals in dorsal view; **d,** flower in front view; **e,** column and callus in front view; **f,** column and callus in lateral view; **g,** column bristles; **h,** dissected perianth; **i,** pollinarium in ventral view; **j,** pollinarium in dorsal view; **k,** anther in dorsal view; **l,** anther in ventral view. All drawn from *Nauray & Mamani 3767* (HGI).

callus is glabrous, the column is completely bald, and the lip is obovate (Schlechter, 1920). We were not able to study an additional voucher determined as *T. venustus* from Cusco, collected by Núñez 7710 and deposited at MO; we believe that because of the geographic distance this species is not found in southern Peru, and that this specimen may also be *T. javiercastroviejoi*.

Telipogon kosnipatensis Farfán, Nauray & A. Galán, **sp. nov.**

Type: PERU. **Cusco:** Paucartambo, Kosñipata, Acjanaco-Tres Cruces, Manu National Park, 13º 09' 47" S, 71º 32' 00" W, 3491 m, 25 Apr. 2007, *W. Nauray & M. Mamani 3767* (holotype, CUZ; isotypes, HGI, MOL).

Illustrations: Fig. 8 and 3f.

Speciei Telipogon machupicchuensis Nauray *similis, ab ea vero praesertim differens callo sagittato columnaeque setis longioribus.*

Plant caulescent, epiphytic, about 22 cm tall. Stem 15 cm long, leafy throughout. Leaves 4 × 0.8 cm, oblanceolate, acute to acuminate, margins fimbriate, sheath not articulated with the blade. Inflorescence and peduncle 10 cm long; peduncle sulcate, recurved; raceme with 4-8 flowers, usually two open at a time; floral bract 0.7 × 0.3 cm, ovate-triangular, acuminate, dorsally carinate. Flowers 2.5-2.8 cm in diameter, normally not resupinate; pedicellate ovary 15 mm long, tricarinate; sepals 12 × 5 mm, translucent cream yellow with brown reddish veins, ovate-lanceolate, acuminate, 3-nerved; petals 18 × 10 mm, cream yellow with reddish brown longitudinal veins, elliptic, acuminate, basal margin ciliolate, 7-nerved; lip 18 × 13 mm, similar in colour to the petals, broadly elliptic acuminate, basal margin ciliolate, 7-nerved; callus 6 × 4 mm, purple, sagittate, pubescent, with a sagittate plateau on top, the apical half free from the lip. Column 2 × 2 mm, purple, crowned in front by bristles, the rest of the surface finely pilose; bristles to 1.5 mm long, purple, recurved, acuminate or caudate apically; stigma circular; anther 1.5 × 1.5 mm, hyaline purple, cordiform; stipe to 1.5 mm long, hyaline; viscidium 0.5 mm long, uncinate; pollinia 4, bright yellow, in two dissimilar pairs, ovoid, larger pair 1.2 × 0.6 mm.

Etymology: Named after the type locality, Kosñipata District in Cusco.

Distribution and ecology: *Telipogon kosnipatensis* is found in cloud forest (3000-3500) with *Weinmannia* spp. (Cunoniaceae). It flowers in November.

Additional specimen examined (paratype)

PERU. **Cusco:** Paucartambo, Kosñipata, Trocha Unión, Manu National Park, 3000 m, XI-2006, *M. Mamani s.n.* (photograph, flower in alcohol, HGI).

Observations: Telipogon kosnipatensis is similar to *T. machupicchuensis* Nauray & Christenson (holotype CUZ!). In *T. kosnipatensis*, the callus is sagittate with a sagittate plateau, and the column has longer recurved bristles.

Telipogon marleneae Nauray & A. Galán, **sp. nov.**

Type: PERU. **Cusco:** La Convención, Carrizales, 13º 06' 46" S, 72º 21' 31" W, 3550 m, 11 Apr. 2007, *W. Nauray & W. Farfán 3761* (holotype, CUZ; isotypes, HGI, MA, MOL).

Illustrations: Fig. 9 and 10a.

Speciei Telipogon tessellatus Lindl. *similis, ab ea vero praesertim differens labello emarginato, callo trilobo columnaque setarum tribus fasciculis praedita.*

Plant caespitose, epiphytic, about 23 cm tall. Stem to 4 cm, with few basal leaves. Leaves 9 × 2 cm, oblanceolate to obovate-lanceolate, acute, sheath articulated with the blade. Inflorescence and peduncle to 12 cm long; the peduncle, alate, erect; raceme with 2-5 flowers, usually 2-4 open at a time; floral bract 1.5 × 1.2 cm, ovate-triangular, acuminate, dorsally carinate. Flowers 3.5-4.5 cm in diameter, normally resupinate; pedicellate ovary 35-40 mm long, trialate; sepals 20 × 10 mm, translucent yellowish green with longitudinal purple veins and oblique purple lines, ovate, acuminate, dorsally keeled, 3-nerved; petals 22 × 22 mm, yellow, with purple reticulated veins colourless toward the margin, broadly rhombic, acute, 9-nerved also cross-sectional nerves; lip 22 × 28-30 mm, yellow, similar in colour to the petals, transversely elliptic, emarginate, 17-nerved and with cross nerves; callus 8 × 7 mm, dark purple, trilobulate, lateral lobes quadrangular and mid lobe ovate-triangular, sharply convex, hispid, the apical half free from the lip. Column, 3 × 4 mm, dark purple, with three tufts of bristles (two lateral and one at the top) and the rest of the surface pubescent; bristles to 3.5 mm long, dark purple, rigid, acuminate or caudate apically; stigma trapezoidal; anther 1.5 × 2 mm, translucent purple, cordiform; stipe 1.5 mm long, hyaline; viscidium 0.7 mm long, purple hyaline, uncinate; pollinia 4, bright yellow, in two dissimilar pairs, ovoid, larger pair 1.5 × 0.7 mm.

Etymology: Named in honor of Marlene Mamani Solorzano, botanist of the Universidad Nacional San Antonio Abad del Cusco, scientific researcher of the Peruvian flora and vegetation.

Distribution and ecology: *Telipogon marleneae* is found in cloud forest (3550 m) on *Polylepis pauta* Hieron. (Rosaceae). It flowers in April.

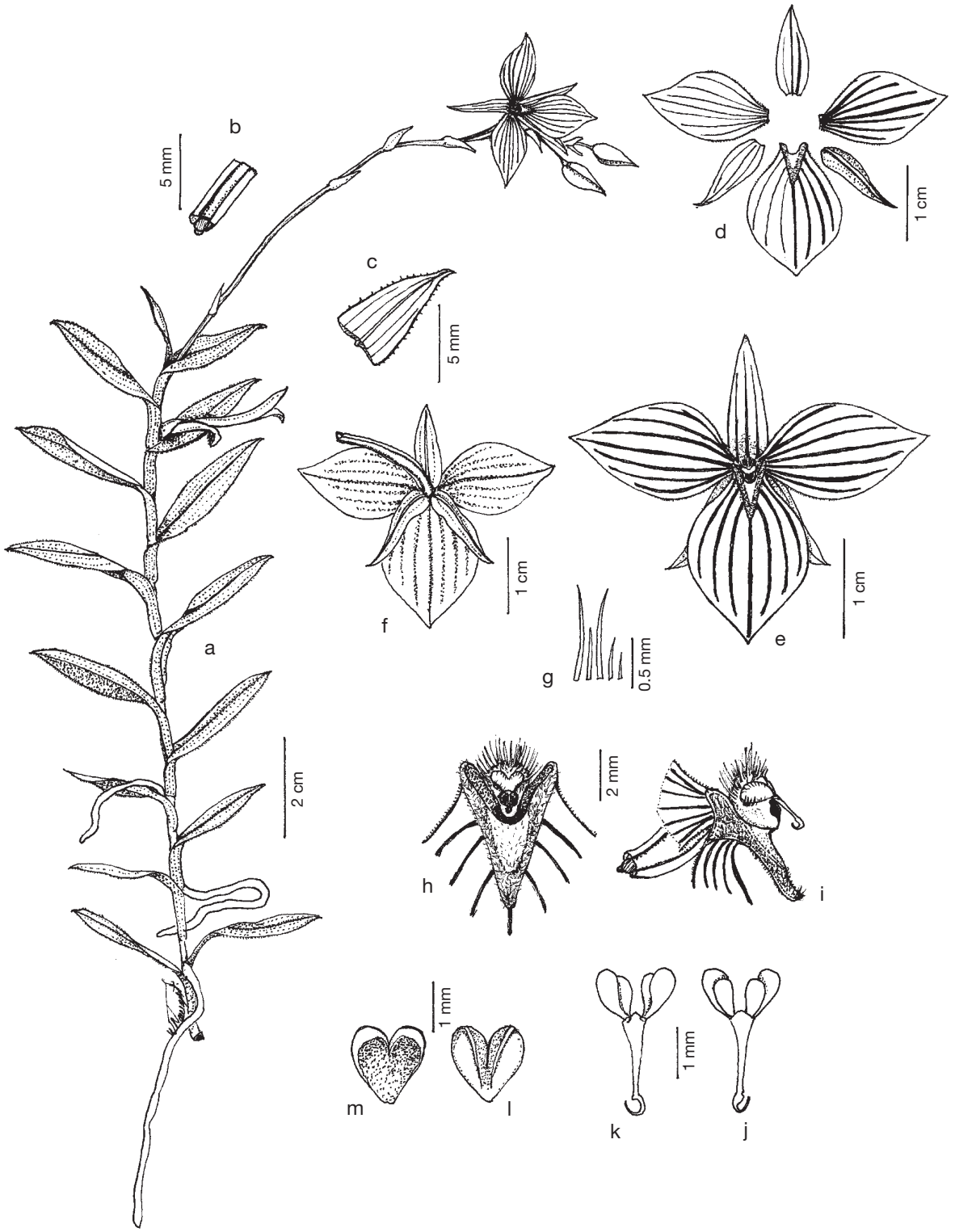

Fig. 8. *Telipogon kosnipatensis:* **a,** habit; **b,** section of peduncle; **c,** leaf apex; **d,** dissected perianth; **e,** flower in front view; **f,** flower in dorsal view; **g,** column bristles; **h,** column and callus in front view; **i,** column and callus in lateral view; **j,** pollinarium in dorsal view; **k,** pollinarium in front view; **l,** anther in front view; **m,** anther in ventral view. All drawn from *Farfán TU-09* (HGI).

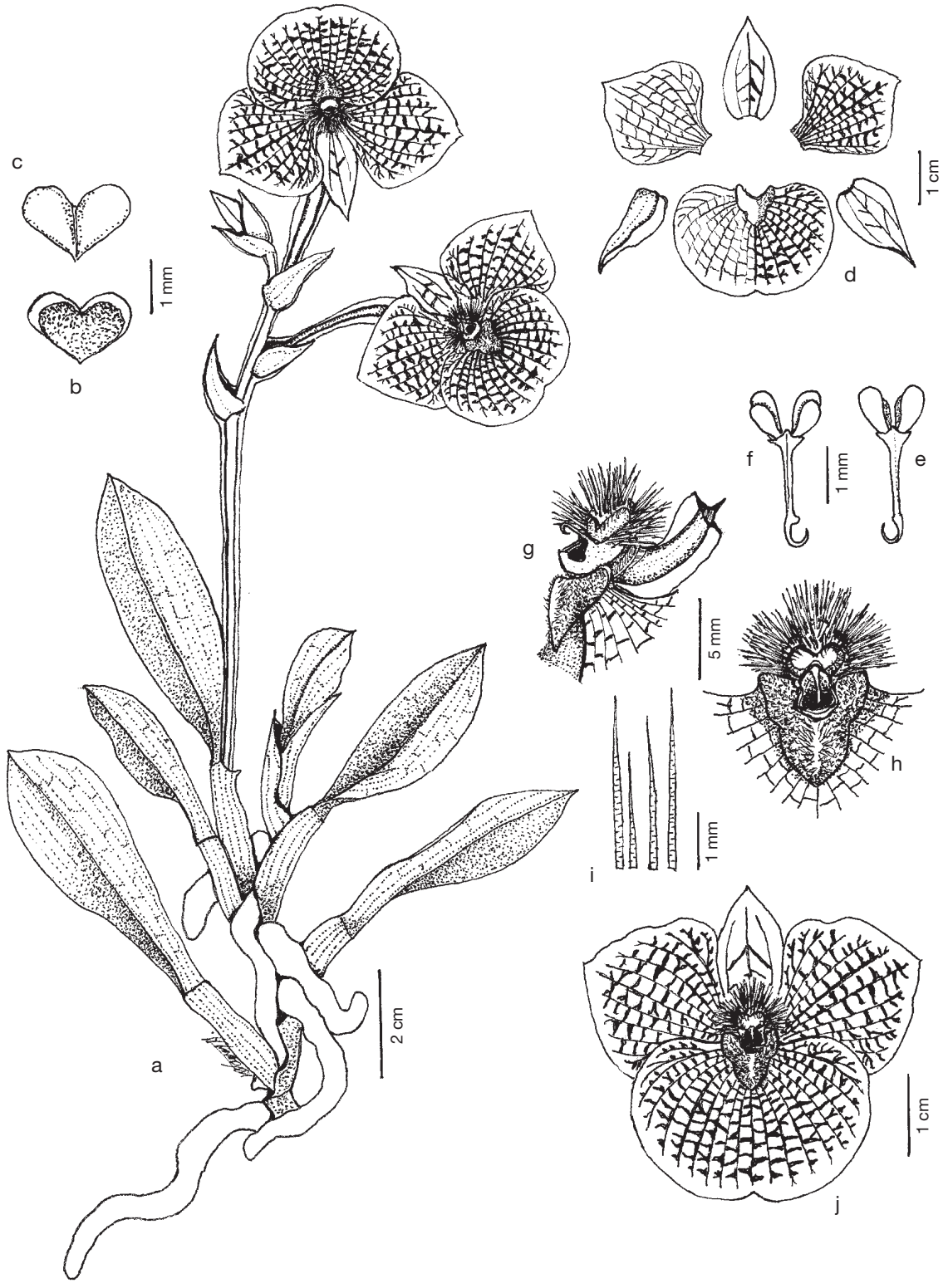

Fig. 9. *Telipogon marleneae:* **a,** habit; **b,** anther in ventral view; **c,** anther in front view; **d,** dissected perianth; **e,** pollinarium in front view; **f,** pollinarium in ventral view; **g,** column and callus in lateral view; **h,** column and callus in front view; **i,** column bristles; **j,** flower in front view. All drawn from *Nauray 3761 & Farfán* (HGI).

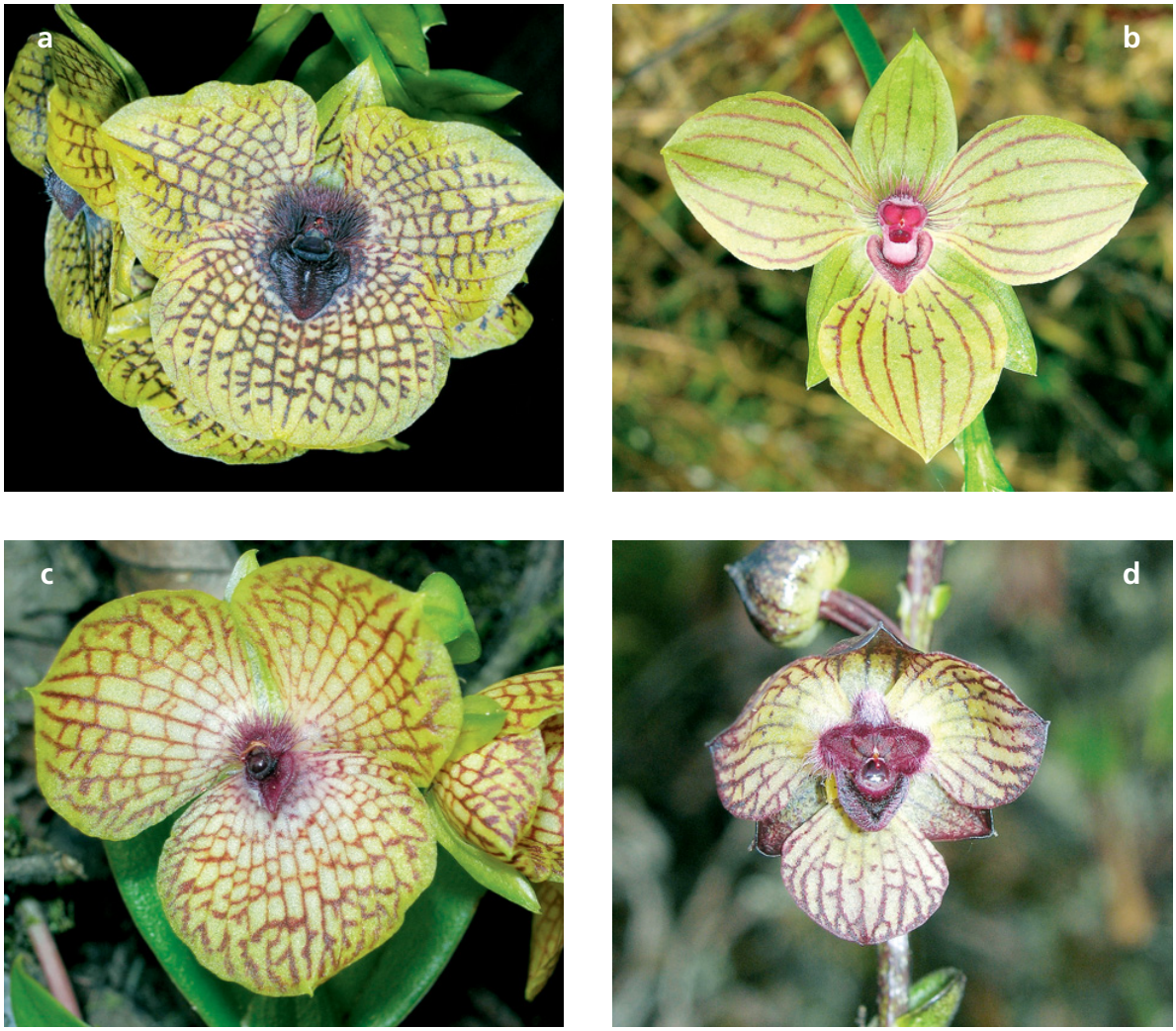

Fig. 10. Flowers of *Telipogon:* **a,** *T. marleneae*; **b,** *T. mesotropicalis*; **c,** *T. santiagocastroviejoi*; **d,** *T. tupayachii*.

Observations: Telipogon marleneae is similar to Andean species with reticulated veins in the petals and the lip. It differs from the Ecuadorian *T. tessellatus* Lindl. (holotype K!) in the emarginate lip, the callus trilobed and sharply convex, and the column with three tufts of bristles. *Telipogon marleneae* is related to *T. hutchisonii* Dodson & D.E. Benn. from northern Peru and Ecuador, but according to Dodson & Bennett (1989), in *T. hutchisonii*, the lip is 13 to 15-nerved, the callus is cordiform and unlobed, and the column is covered with bristles forming a hood. Other similar species are *T. thomasii* Dodson & R. Escobar, and *T. octavioi* Dodson & R. Escobar. The Ecuadorian *T. thomasii* has the petals and the lip with double marked longitudinal veins, the callus cordiform sligthtly convex, and the column crowned by bristles without differentiated tufts. On the other hand, *T. octavioi* has smaller flowers, and the callus tongue-like, and unlobed.

Telipogon mesotropicalis Nauray & A. Galán, **sp. nov.**

Type: PERU. **Cusco:** Paucartamabo, Kosñipata, Wayqecha, The Manu Biosphere Reserve, 13º 10' 33" S, 71º 35' 37" W, 2908 m, 27 Apr. 2007, *W. Nauray & M. Mamani* 3770 (holotype, CUZ; isotypes, HGI, MA, MOL).

Illustrations: Fig. 11 and 10b.

Speciei Telipogon boissierianus Rchb. fil. *similis, ab ea vero praesertim differens foliis floribusque maioribus et callo cordiforme.*

Plant caulescent, terrestrial or epiphytic, about 20 cm tall. Stem 18 cm, erect, leafy throughout. Leaves 4

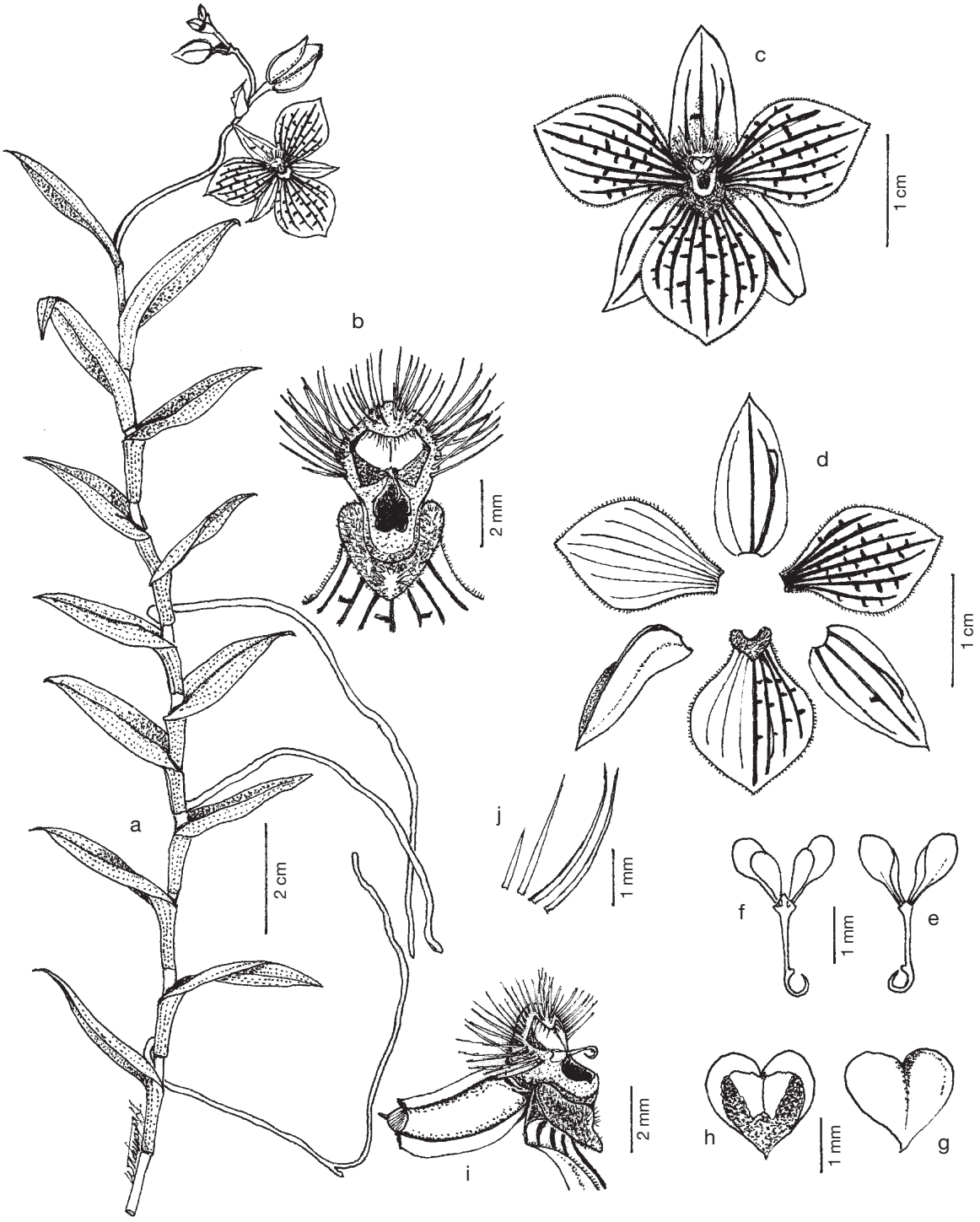

Fig. 11. *Telipogon mesotropicalis*: **a,** habit; **b,** column and callus in front view; **c,** flower in front view; **d,** dissected perianth; **e,** pollinarium in front view; **f,** pollinarium in ventral view; **g,** anther in front view; **h,** anther in ventral view; **i,** column, callus and ovary in lateral view; **j,** column bristles. All drawn from *Nauray & Mamani 3770* (HGI).

× 1 cm, ovate-lanceolate to oblanceolate, acuminate, sheath not articulated with the blade. Inflorescence and peduncle 5 cm long; peduncle cylindric, flexuous; raceme with 2-5 flowers, usually one open at a time; floral bract 1 × 0.7 cm, ovate-triangular, acuminate. Flowers 2.5-3 cm in diameter, normally not resupinate; pedicellate ovary 20 mm long, tricarinate; sepals 14-15 × 6-7 mm, lime green with purple veins, ovate, acute, concave, dorsally carinate, 3-nerved; petals 15 × 10 mm, lemon yellow with purple longitudinal veins and short transverse lines, rhombic-elliptic, obtuse, margin completely ciliolate, 7-nerved; lip 15 × 12 mm, similar in colour to the petals, rhombic-elliptic, obtuse, margin completely ciliolate, 7-nerved; callus 3 × 3 mm, purple, cordiform, hirsute in the front, velutinous in the rest of surface, the apical half free from the lip. Column 4 × 3 mm, pale purple, with three tufts of bristles around the anther; bristles to 3 mm long, longer in the two lateral tufts, pale purple, recurved to flexuous, acuminate or caudate apically; stigma quadrangular; anther 2 × 2 mm, hyaline purple, cordiform; stipe 1 mm long, hyaline purple; viscidium 0.7 mm long, hyaline orange, uncinate; pollinia 4, bright yellow, in two dissimilar pairs, ovoid, larger pair 1.5 × 0.7 mm.

Etymology: The name refers to the Mesotropical Bioclimatic Belt of the Eastern Andes, the biogeographic unit where this species grows.

Distribution and ecology: *Telipogon mesotropicalis* grows in the cloud forest (2700-2900 m) with *Chusquea* sp. (Poaceae), *Clusia sp.* (Clusiaceae), *Cavendishia bracteata* (Ruiz & Pav. ex J. St.-Hil.) Hoerold (Ericaceae), *Hesperomeles* sp. (Rosaceae), *Myrsine* sp. (Myrsinaceae), and *Weinmannia crassifolia* Ruiz & Pav. (Cunoniaceae); it flowers between April and November.

Additional specimen examined: PERU. **Cusco:** Paucartambo, Esperanza, 2700 m, Nov. 2006, *M. Mamani s.n.* (photograph USP).

Observations: Telipogon mesotropicalis differs to *T. boissierianus* Rchb.f. (holotype G!) in its larger leaves and flowers, ciliolate petal and lip margins, cordiform callus, and longer column bristles. Other related caulescent species are *T. inmaculatus* Christenson (Ecuador) and *T. valenciae* Dodson & R. Escobar (Colombia). The petals and lip in *T. inmaculatus* are unmarked with coloured veins or transverse lines, and their basal margins are overlapping. In contrast to *Telipogon mesotropicalis*, *T. valenciae* has shorter petals and lip with brown longitudinal veins and transverse lines, and both are glabrous; furthermore, its callus is trilobed and not cordiform.

Telipogon santiagocastroviejoi Nauray, A. Galán & R. Farfán, **sp. nov.**

Type: PERU. **Cusco:** Quispicanchis, Marcapata, Marcapata, 13º 35' 06" S, 70º 58' 12" W, 2864 m, 20 Apr. 2007, *W. Nauray & R. Farfán 3764* (holotype, CUZ; isotypes, HGI, MOL).

Illustrations: Fig. 12 and 10c.

Speciei Telipogon tessellatus Lindl. *similis, ab ea vero praesertim differens lateralibus petalis transverse rhomboideis et callo sagittato.*

Plant caespitose, epiphytic, about 10 cm tall. Stem to 3cm, with few basal leaves. Leaves 5.5 × 1.3 cm, oblanceolate, acuminate, sheath articulated with the blade. Inflorescence and peduncle 5.5 cm long; peduncle compressed, alate, recurved; raceme with 2-5 flowers, usually one open at a time; floral bract 1.3 × 1 cm, ovate-triangular, acuminate, dorsally carinate. Flowers 3-3.5 cm in diameter, normally resupinate; pedicellate ovary 30 mm long, trialate; sepals 16 × 8 mm, translucent greenish, ovate, acuminate, dorsally alate, 3-nerved; petals 20 × 24 mm, pale yellow, with purple reticulated veins wider toward the margin, tranversely rhombic, obtuse, 9 to 11-nerved with cross veins; lip 18 × 24 mm, similar in colour to the petals, transversely elliptic, acuminate, 17-nerved with cross veins; callus 5 × 4 mm, purple, sagittate-cordiform, convex, hirsute, the apical half free from of the lip. Column 2.5 × 3 mm, purple, cylindrical, crowned on top by bristles, rest of surface pubescent; bristles to 2.5 mm long, purple, rigid, acuminate or caudate apically; stigma circular; anther 3 × 2 mm, cordiform; stipe to 3 mm long, hyaline; viscidium 0.8 mm long, hyaline orange, uncinate; pollinia 4, bright yellow, in two dissimilar pairs, ovoid, larger pair 1.5 × 0.7 mm.

Etymology: Named in honor of Dr. Santiago Castroviejo Bolibar, botanist and researcher of the Neotropical Flora at the Real Jardín Botánico, Madrid.

Distribution and ecology: *Telipogon santiagocastroviejoi* is found in the cloud forest (2800 m) on *Aegiphila mortoni* Moldenke (Verbenaceae), *Barnadesia horrida* Muschl. (Asteraceae) and *Myrsine sp.* (Myrsinaceae). It flowers in April.

Observations: Telipogon santiagocastroviejoi is distinguished by the petals and lip coloured with veins reticulated, thicker towards the margin, the transverse petals, and the callus sagittate-cordiform, convex, and narrow toward the apex. It is similar to the other sympatric species *T. tessellatus* Lindl. (holotype K!), *T. jimburensis* Dodson & R. Escobar, and *T. thomasii* Dodson & R. Escobar, but differs in the different characters of the petals, lip, callus, and column. In *T.*

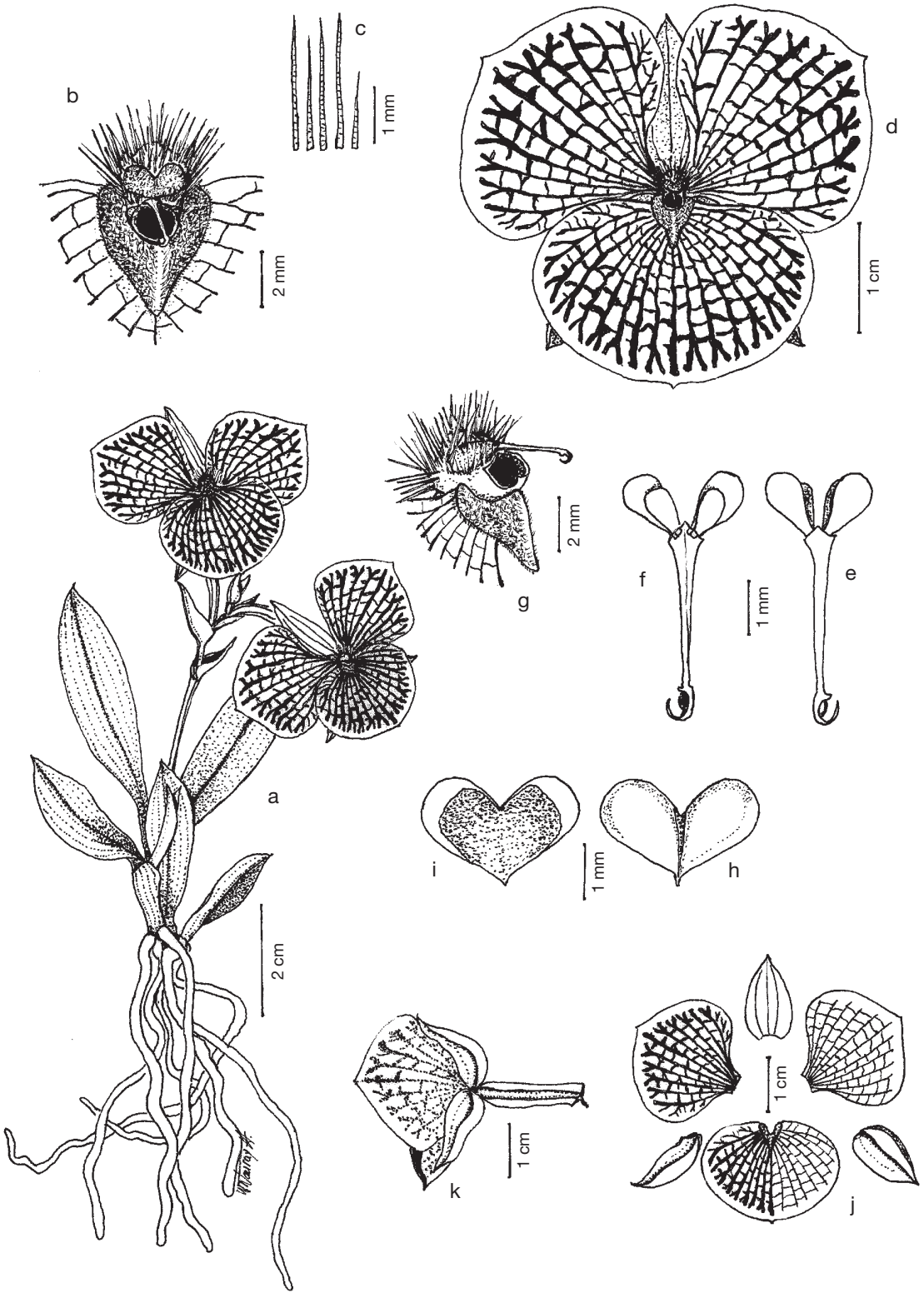

Fig. 12. *Telipogon santiagocastroviejoi:* **a,** habit; **b,** column and callus in front view; **c,** column bristles; **d,** flower in front view; **e,** pollinarium in front view; **f,** pollinarium in ventral view; **g,** column and callus in lateral view; **h,** anther in front view; **i,** anther in ventral view; **j,** dissected perianth; **k,** flower and ovary in lateral view. All drawn from *Nauray 3764 & Farfán* (HGI).

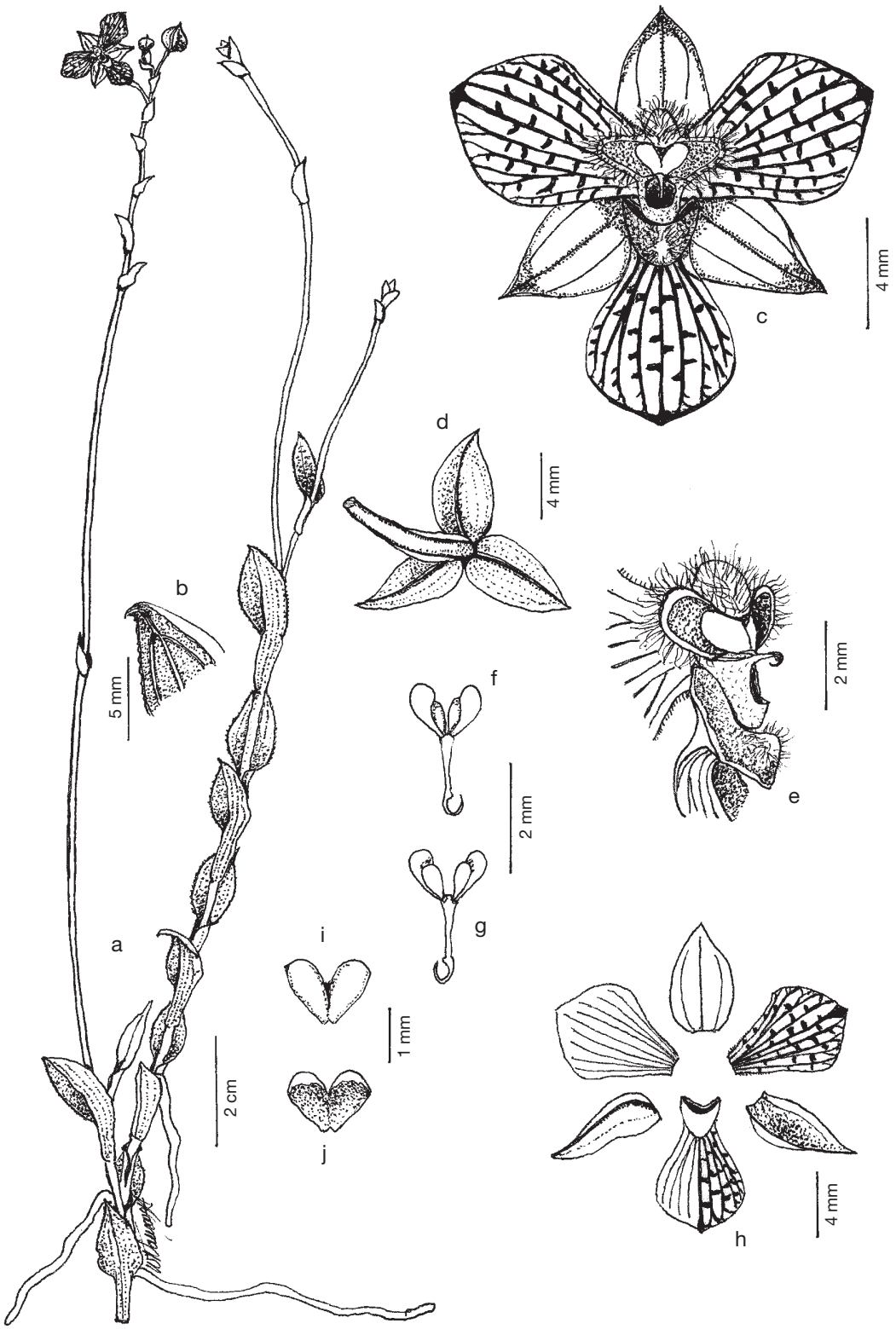

Fig. 13. *Telipogon tupayachii:* **a,** habit; **b,** leaf apex; **c,** flower in front view; **d,** ovary and sepals in dorsal view; **e,** column and callus in lateral view; **f,** pollinarium in front view; **g,** pollinarium in ventral view; **h,** dissected perianth; **i,** anther in front view; **j,** anther in ventral view. All drawn from *Nauray & Mamani 3768* (HGI).

tessellatus, the petals are elliptic not transverse, and the callus is pad shaped. According to Dodson & Dodson (1989), *T. jimburensis* has the petals broadly elliptic, 13-nerved, the callus trilobed, and the column with an apicule extended below the stigma. *Telipogon thomasii* has the petals and the lip with double marked longitudinal veins, the callus broadly cordiform, and the column larger than *T. santiagocastroviejoi*. Furthermore, in *T. santiagocastroviejoi*, the bristles (related to the column) are longer than in *T. jimburensis* and *T. thomasii.*

Telipogon tupayachii Nauray & A. Galán, **sp. nov.**

Type: PERU. **Cusco:** Paucartamabo, Kosñipata, Tres Cruces-Acjanaco, National Park of Manu, 13º 9' 49" S, 71º 37' 57" W, 3471 m, 25 Apr. 2007, *W. Nauray & M. Mamani 3768* (holotype, CUZ; isotypes, HGI, MA, MOL).

Illustrations: Fig. 13 and 10d.

Speciei Telipogon phutupatamarcensis W. Galiano, P. Núñez & A. Tupayachi *similis, ab ea vero praesertim differens lateralibus petalis atque labello venis purpurascentibus, marginem versus ramificatis, transversisque lineolis item purpurascentibus ornatis et columna longis pilis cooperta.*

Plant caulescent, terrestrial, about 40 cm tall. Stem 30 cm long, erect, leafy throughout. Leaves 3 × 1 cm, ovate-lanceolate, acuminate, margin erose, sheath not articulated with the blade. Inflorescence and peduncle 12 cm long; peduncle cylindric, flexuous; raceme with 5-12 flowers, usually one open at a time; floral bract 0.7 × 0.5 cm, ovate-triangular, conduplicate, acute. Flowers 1.5 cm in diameter, normally resupinate; pedicellate ovary 10-15 mm long, tricarinate; sepals 7 × 4 mm, pale lemon green with veins and apical spots purplish, ovate, acuminate, concave, 3-nerved; petals 8 × 6 mm, pale lemon yellow with veins ramified toward the margin and transverse lines purplish, obovate-rhombic, obtuse, basal margin ciliolate, 9-nerved; lip 8.5 × 5.5 mm, similar in colour to the petals, obovate, obtuse, basal margin ciliolate, 7 to 9-nerved; callus 3 × 3 mm, purplish, conical-sagittate, obtuse, with a hirsute knob in the front, the apical half free from the lip. Column 2.5-3 × 4-4.5 mm, purplish, trilobulate in the part that surrounds the anther, covered with long recurved or flexuous long pale purple hairs; stigma quadrangular; anther 1.25 × 1.5 mm, hyaline purple, cordiform; stipe 1 mm long, hyaline purple; viscidium 0.5 mm long, hyaline orange, uncinate; pollinia 4, bright yellow, in two dissimilar pairs, ovoid, larger pair 1 × 0.5 mm.

Etymology: Named in honor of M. Sc. Alfredo Tupayachi Herrera, professor and botanist at the Universidad Nacional de San Antonio Abad del Cusco.

Distribution and ecology: *Telipogon tupayachii* grows in the limit between the elfin forests and the humid Puna (3400 m), with *Clethra* sp. (Clethraceae), *Diplostephium* sp., *Gynoxis* sp. (Asteraceae), *Myrsine* sp. (Myrsinaceae), and *Weinmannia microphylla* Kunth (Cunoniaceae); it flowers in April.

Observations: Telipogon tupayachii differs to *T. phuyupatamarcensis* W. Galiano, P. Núñez & A. Tupayachi (holotype CUZ!) in the petals and lip with purplish veins branched towards the margin and transverse purplish lines, the sagittate-conical callus and the column with longer and denser hairs. Material of *T. tupayachii* was included in the holotype material of *T. phuyupatamarcensis*. The flowers of *T. tupayachii* are reminescent of the genus *Trichoceros* Kunth, but the plants are caulescent without pseudobulbs.

Additional remarks and conclusions

After the description of these new species, it seems that *T. benedicti, T. boissierianus, T. papilio*, *T. tessellatus*, and *T. venustus* are not present in southern Peru. *Telipogon benedicti* grows in Bolivia, and the Peruvian records are based on misidentifications and/or a broad concept of the species. The holotype of *T. boissierianus* has no specific locality in Peru, and is known only from this collection. The distribution of *T. papilio* includes Colombia, Ecuador and northern Peru; however, the records for these species in Cusco correspond to *T. antisuyuensis* and *T. peruvianus* T. Hashim. (holotype TNS!). At present, *T. tessellatus* is only registered for Ecuador; the description by Dodson & Bennett, (1989) for Peru is very different from the holotype. An additional revision indicates that *T. cuscoensis* Nauray & Christenson (holotype CUZ!) is synonymous of *T. phalaenopis* Braas*,* the flowers are very similar, even their columns have lateral bristles with capitate apex. As a result of these observations, the total number of *Telipogon* species (*sensu stricto*) recognized for the Peruvian flora is 46 (see Appendix).

Acknowledgements

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APPENDIX

CHECKLIST OF THE SPECIES OF *TELIPOGON* RECOGNIZED FROM PERU WITH THEIR AUTHORS, CITATION OF PROTOLOGUE, AND DEPARTMENTAL DISTRIBUTION WITHIN PERU (IN BRACKETS)

T. alegriae D.E. Benn. & Christenson, Ic. Orchidac. Peruv., tab. 779 (2001) [Huancavelica].

T. antisuyuensis Nauray & A. Galán, **sp. nov.** [Cusco].

T. antonietae D.E. Benn. & R. Fernández G., Publ. Mus. Hist. Nat. Univ. Nacion. Mayor San Marcos, Bot. 36: 2 (1992) [Junín].

T. ariasii Dodson & D.E. Benn., Ic. Pl. Trop. 2, tab. 184 (1989) [Junín].

T. atropurpurea D.E. Benn. & R. Fernández G., Publ. Mus. Hist. Nat. Univ. Nacion. Mayor San Marcos, Bot. 36: 9 (1997) [Piura].

T. auriculata D.E. Benn. & Christenson, Ic. Orchidac. Peruv., tab. 780 (2001) [Junín].

T. austroperuvianus Nauray & A. Galán, **sp. nov.** [Cusco].

T. boissierianus Rchb. f., Bonplandia 4: 213 (1856) [?].

T. campoverdei D.E. Benn. & R. Fernández G., Publ. Mus. Hist. Nat. Univ. Nacion. Mayor San Marcos, Bot. 36: 6 (1992) [Piura].

T. casadevalliae Nauray, A. Galán & M. Mamani, **sp. nov.** [Cusco].

T. collantesii D.E. Benn. & Christenson, Ic. Orchidac. Peruv., tab. 782 (2001) [Huancavelica].

T. dalstromii Dodson, Ic. Pl. Trop., 10, tab. 990 (1984) [Piura].

T. davidsonii D.E. Benn. & Christenson, Ic. Orchidac. Peruv., tab. 783 (2001) [Piura].

T. farfanii Nauray & A. Galán, **sp. nov.** [Cusco].

T. fritillum Rchb. f. & Warsz., Bonplandia 2: 101 (1854) [Peru, department unknown].

T. genegeorgei D.E. Benn. & R. Fernández G., Publ. Mus. Hist. Nat. Univ. Nacion. Mayor San Marcos, Bot. 36: 4 (1992) [Junín].

T. gnomus Schltr., Repert. Spec. Nov. Regni Veg. Beih. 9: 114 (1921) [Cajamarca].

T. gymnostele Rchb.f., Linnaea 41: 70 (1877) [Peru, department unknown].

T. hauschildianus Braas, Orchidee (Hamburg) 33(3): 92 (1982) [Junín].

T. hercules Rchb. f. ex Kraenzl., Ann. Nat. Mus. Wien 33: 27 (1920) [Peru, department unknown].

T. hutchinsonii Dodson & D.E. Benn., Ic. Pl. Trop. 2, tab. 188 (1989) [Amazonas].

T. intis Braas, Orchidee (Hamburg). 32(6): 245 (1981) [Amazonas].

T. javiercastroviejoi Nauray & A. Galán, **sp. nov.** [Cusco].

T. jucusbambae Dodson & R. Escobar, Orquideologia 21(1): 65 (1998) [San Martín].

T. kosnipatensis Farfán, Nauray & A. Galán, **sp. nov.** [Cusco].

T. luerii Dodson & D.E. Benn., Ic. Pl. Trop. 2, tab. 190 (1989) [Amazonas, Cajamarca].

T. machupicchuensis Nauray & Christenson, Orchids 72(9): 697 (2003) [Cusco].

T. marleneae Nauray & A. Galán, **sp. nov.** [Cusco].

T. mendiolae Dodson & D.E. Benn., Ic. Pl. Trop. 2, tab. 191 (1989) [Piura].

T. mesotropicalis Nauray & A. Galán, **sp. nov.** [Cusco].

T. obovatus Lindl., Bot. Reg. 1847, sub tab. 27 (1847) [Peru, department unknown].

T. papilio Reichb. f. & Warsz., Bonplandia 2: 101 (1854) [Piura].

T. peruvianus T. Hashim., Bull. Nation. Sci. Mus., Tokio, B. 16(1): 21 (1990) [Cusco].

T. phalaenopsis Braas, Orchidee 32(6): 246 (1981) [Syn.: *T. cuscoensis* Nauray & Christenson, Orchids 72(9): 696 (2003); Amazonas, Cusco].

T. phuyupatamarcensis W. Galiano, P. Núñez & A. Tupayachi, Cantua 11: 11 (2003) [Cusco].

T. piyacnuensis D.E. Benn. & Christenson, Ic. Orchidac. Peruv., tab. 785 (2001) [Pasco].

T. radiatus Rchb. f., Linnaea 41: 70 (1877) [Peru, department unknown].

T. rhombipetalus C. Schweinf., Amer. Orchid Soc. Bull. 15: 180 (1946) [Cajamarca].

T. salinasiae Farfán & Moretz, Orchid Rev. 111(1252): 239 (2003) [Cusco].

T. santiagocastroviejoi Nauray, A. Galán & R. Farfán, **sp. nov.** [Cusco].

T. sayakoae D.E. Benn. & Christenson, Arnaldoa 6(1): 61 (1999) [Pasco].

T. suarezii D.E. Benn. & Christenson, Ic. Orchidac. Peruv., tab. 787 (2001) [Huancavelica].

T. tayacajaensis D.E. Benn. & Christenson, Ic. Orchidac. Peruv., tab. 788 (2001) [Huancavelica].

T. tupayachii Nauray & A. Galán, **sp. nov.** [Cusco].

T. urceolatus C. Schweinf., Amer. Orch. Soc. Bull. 16: 292 (1947) [Huanuco].

T. vargasii C. Schweinf., Amer. Orch. Soc. Bull. 15: 290 (1946) [Cusco].

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