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## *Stelis machupicchuensis* (Orchidaceae), a new species from S Peru

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**Abstract:** *Stelis machupicchuensis* Collantes & C. Martel, from the cloud forest of Cusco, Peru, is proposed as a new species. The new species is similar to *S. antennata* Garay, from which it differs in the oblique subpentagonal-trullate petals, pentagonal-subtrullate lip and subquadrate to suborbicular callus. A description, illustrations and taxonomic account are provided.

**Key words:** Andes, cloud forest, Cusco, new species, *Orchidaceae*, Peru, *Pleurothallidinae*, *Stelis*

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## Introduction

*Stelis* Sw. is a highly diverse neotropical genus of *Orchidaceae* belonging to the subtribe *Pleurothallidinae*. It currently includes somewhere between 900 species in its narrowest circumscription (*Stelis* s.str.; Luer 2007, 2009) and 1100 species in its broadest circumscription (sensu Pridgeon 2005; Karremans & al. 2013; Karremans 2014, 2015). Species of *Stelis* are distributed from Mexico to Central America and the Caribbean, and from Venezuela to Bolivia and Brazil, but the greatest diversity is found along the cordilleras of the Andes (Solano-Gómez 2014).

In Peru, there are 150 recorded species of *Stelis* s.l. (Brako & Zarucchi 1993; Ulloa Ulloa & al. 2004; Rodríguez & al. 2006; Collantes & Karremans 2017), 139 of them belonging to *Stelis* s.str. Species of this group are characterized by a short column, which is surrounded by remarkably short petals and a lip, which Luer (2016) has denominated the “central apparatus”. However, a few species of *Stelis* s.s. do not present this feature, and the petals and lip are quite conspicuous (e.g. *S. antennata* Garay).

During field trips to the cloud forest of Cusco Department, in the SE Peruvian Andes, specimens of a remarkable, apparently undescribed *Stelis* taxon were col-

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lected. It is proposed here as a new species and formally described and illustrated.

## Material and methods

Specimens of the new taxon were collected during field work in the cloud forest of Machu Picchu Historical Sanctuary and Wayqecha Biological Station (Cusco Department, Peru), during 2004 and 2016, respectively. Collected material was pressed and dried or preserved in spirit. Further revision of fresh specimens was carried out in Machu Picchu and Wayqecha during 2016. The line drawings and figures were prepared from preserved specimens using a Leica Wild M8 stereomicroscope, a Canon A-1 camera with a Canon FD 50mm f/3.5 lens, and an HP Deskjet 2050 scanner. Herbarium specimens were deposited at USM (herbarium Code according to Index Herbariorum: <http://sweetgum.nybg.org/science/ih/>). The software DIVA-GIS (Version 7.5) was used to prepare the distribution map.

## Results and Discussion

*Stelis machupicchuensis* Collantes & C. Martel, **sp. nov.** — Fig. 1, 2, 4A.

Holotype: Peru, Prov. Urubamba, Dist. Machu Picchu: Santuario Histórico de Machu Picchu, Quebrada Allcamayo, c. 2600 m, bosque de neblina, 22 Jan 2004, M. Quispe & E. Quispe Batallanos 347 (USM!).

**Diagnosis** — The new species is similar to *Stelis antennata* Garay but differs in the broadly elliptic lateral sepals (vs broadly ovate lateral sepals in *S. antennata*), oblique subpentagonal-trullate petals (vs subpentagonal-rhombic petals), pentagonal-subtrullate lip (vs subquadrate, moderately unguiculate lip) and subquadrate to suborbicular callus (vs moderately unguiculate callus).

**Description** — *Herbs* epiphytic, caespitose, 15–19 cm tall (including inflorescence). *Roots* 0.6–0.9 mm in diam. *Ramicaul* robust, erect, 3.6–4.5 cm long, with 2 bracts at base of stem and 1 at apex; *spathe* 6.5–8.9 mm long. *Leaf* petiolate, erect or upward arcuate to suberect, purple on abaxial surface, green and purple on adaxial surface, 4–10 mm long; *leaf blade* narrowly elliptic to elliptic, 18–32 × 10–14 mm, base narrowed into a 4–10 mm long petiole, apex obtuse and emarginate with a short apiculum. *Inflorescences* erect, distichous, sinuous, 2 per stem, with a double spathe, racemose, 19–20 cm long (including peduncle), up to 29-flowered, flowers successively opening, only 1 or 2 open simultaneously; *floral bract* infundibuliform, oblique, when expanded ovate, pentagonal, c. 2.2 × 2.1 mm, apex acute, apical bracts smaller; *pedicel* 3.6–6 mm long; *ovary* triquetrous, c. 1.1 mm long, c. 0.5 mm in diam. *Sepals* translucent, wine-red to greyish olive-green, 3-veined; *dorsal sepal* ovate, 1.4–2.1

× 1.4–1.7 mm, apex obtuse; *lateral sepals* broadly elliptic, c. 2.1 × 1.5 mm, apex subacute. *Petals* greyish fuchsia, oblique subpentagonal-trullate, c. 1.9 × 1.2 mm, 1- or 3-veined, margin entire, apex long acute, subcaudate. *Lip* light fuchsia with light pink at base, pentagonal-subtrullate, 1.9–2.2 × 1.1–1.3 mm, 3-veined, ventral surface minutely glandular papillose, margin entire, basal margin slightly erect, apex acute-acuminate; *callus* on basal ½ of lip, creamy green, subquadrate to suborbicular, densely and minutely pubescent, hairs arranged in rows, digitiform. *Column* c. 0.9 × 0.7 mm, winged, clinandrium conspicuous, minutely pubescent at base of ventral surface, hairs digitiform; *rostellum* apical, laminar-oblong with a light longitudinal rib at middle. *Stigma* ventral. *Anther* apical, subrectangular, external surface densely papillose. *Pollinia* 2, obovoid.

**Phenology** — Flowering was observed between January and May.

**Distribution and ecology** — This species is known only from the cloud forest of Cusco Department, in the SE Peruvian Andes, between 2600 and 2800 m (Fig. 3). The plants grow on branches and trunks of live and dead trees in primary cloud forests.

**Conservation status** — Up to now, *Stelis machupicchuensis* is known from only two localities. Few individuals (genets consisting of several ramets) have been found in Machu Picchu and Wayqecha Biological Station (upper side of the Kosñipata basin) and both subpopulations may comprise fewer than 250 mature individuals. According to the IUCN Red List (IUCN 2017), the species can be categorized as Endangered (EN), criterion D, based on the number of mature individuals.

**Etymology** — The name honours the Machu Picchu Historical Sanctuary, where the species was first discovered.

**Remarks** — Flowers of plants from Machu Picchu bear 3-veined petals, whereas those from Wayqecha are 1-veined. Furthermore, the sepals, petals and lip of flowers from Wayqecha present laterally reflexed edges (Fig. 2C). *Stelis machupicchuensis* presents flowers with tailed, long acuminate petals (more than half the length of the sepals), a character observed in few *Stelis* s.str. species [e.g. *S. antennata*, *S. barbellata* Luer & Hirtz and *S. miranda* Luer & R. Escobar; Luer (2016)]. *Stelis machupicchuensis* is most similar to *S. antennata*, with which it shares a similar general morphology of the petals and column (Fig. 4). However, it is easily distinguishable in the pentagonal-subtrullate lip and subquadrate to suborbicular callus. Both *S. antennata* and *S. machupicchuensis* occur sympatrically in Machu Picchu and Wayqecha Biological Station.

**Additional specimen examined** — PERU: CUSCO: Prov. Paucartambo, Wayqecha Biological Station, Oso trail,

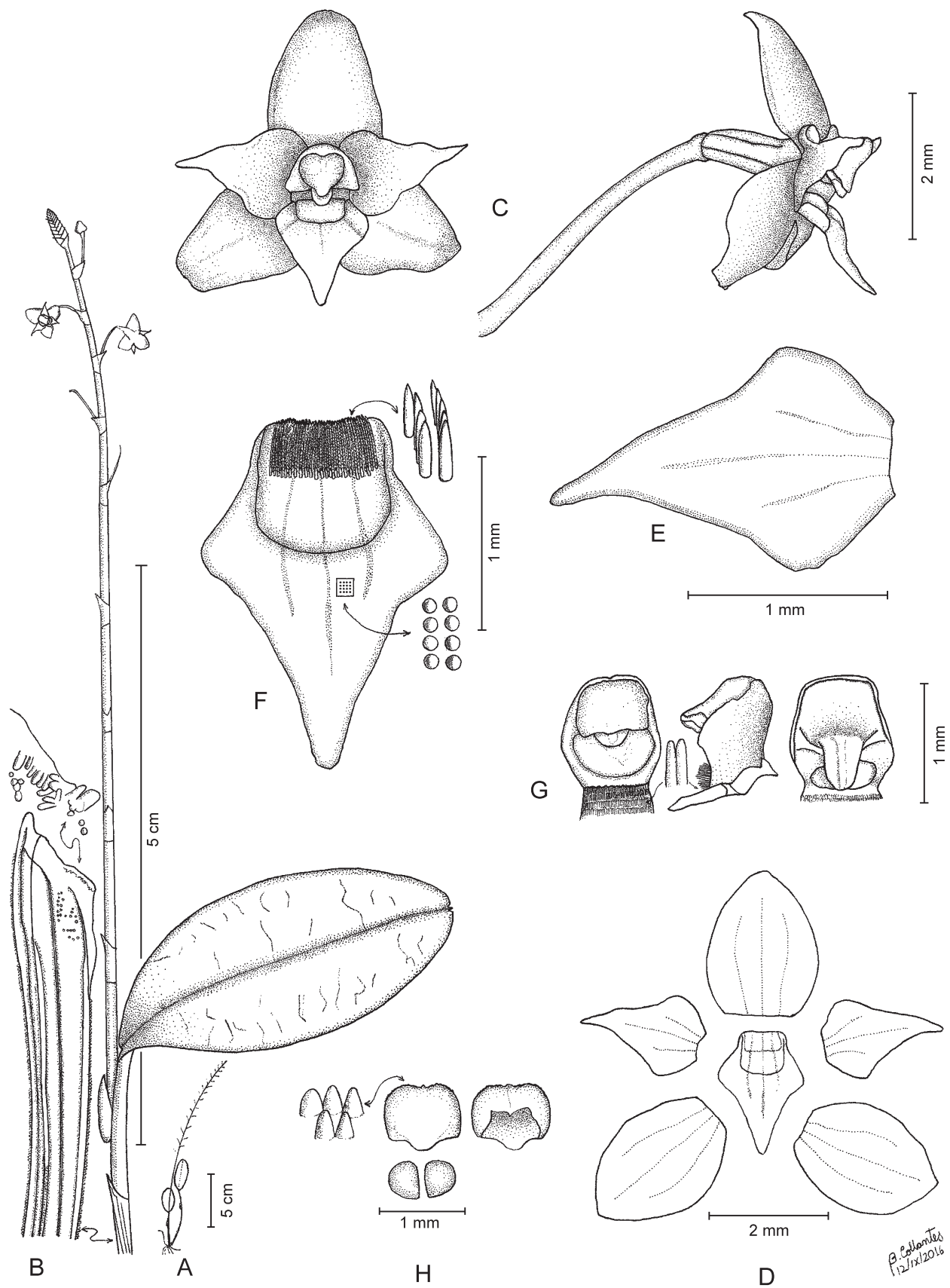


Fig. 1. *Stelis machupicchuensis* – A: habit; B: inflorescence in development, with details of caulinar bract; C: flower, frontal and lateral views; D: dissected flower; E: expanded petal, ventral view; F: expanded lip, ventral view, with details of callus and papillae; G: column, ventral, lateral and frontal views; H: anther, ventral and dorsal views, with details of papillae and pollinia. – Drawing by B. Collantes, based on the holotype.

B. Collantes  
11/2/11/2016





Fig. 2. *Stelis machupicchuensis* – A: habit of plant; B, C: segments of an inflorescence; D: flowers in close-up. – Photographs: A–C by J. Farfán based on Martel & Farfán 73 (USM!); D by B. Collantes based on the holotype.

2700 m, 20 Mar 2016, C. Martel & J. Farfán 73 (USM! [Fig. 2A–C]).

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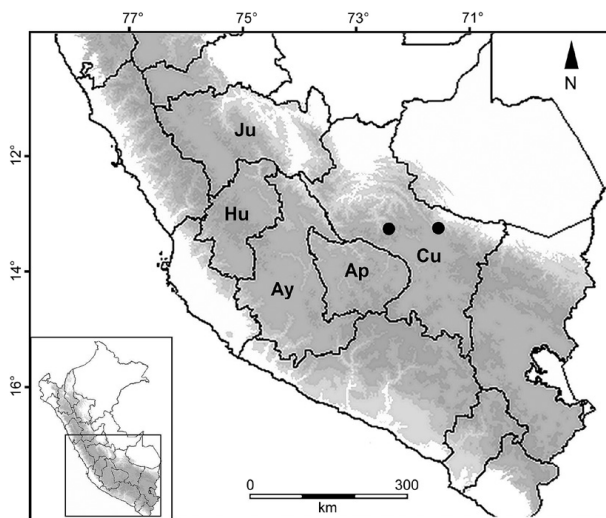


Fig. 3. Map of the known localities of *Stelis machupicchuensis* (black dots). Greyscale indicates altitude (white [0 m] to dark grey [6500 m]). Abbreviations refer to Department names (Ap: Apurímac; Ay: Ayacucho; Cu: Cusco; Hu: Huancavelica; Ju: Junín). – Prepared by C. Martel.

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Fig. 4. Flowers of *Stelis machupicchuensis* (A) and *Stelis antennata* (B). Note the morphological differences of their lips. Both specimens from the same locality: Wayqecha Biological Station. – Photographs: A by J. Farfán based on Martel & Farfán 73 (USM!); B by R. Repasky based on Repasky & al. 155 (BRIT).

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