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

Authors: Collantes, Benjamín, Farfán, Javier, and Martel, Carlos

Source: Willdenowia, 47(2) : 167-172

Published By: Botanic Garden and Botanical Museum Berlin (BGBM)

URL: https://doi.org/10.3372/wi.47.47208
Stelis machupicchuensis (Orchidaceae), a new species from S Peru

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

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-
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 fuchs- sia, 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 papilllose, 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 machupicchuen-sis 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 tallied, 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 machupicchuen-sis 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.
2700 m, 20 Mar 2016, C. Martel & J. Farfán 73 (USM! [Fig. 2A–C]).

Acknowledgements

We are very grateful to the staff of the Inkaterra Machu Picchu Hotel, Wayqecha Biological Station and Jardín de Orquídeas Pachacuteq. We give special thanks to Jose Koechlin (Inkaterra Machu Picchu Hotel) for study facilities and support at Inkaterra; Dani Gutierrez (Jardín de Orquídeas Pachacuteq) for allowing us to work on the living orchid collection; and Rebecca Repasky and AABP Atrium for allowing reproduction of the photograph of Stelis antennata (Fig. 4B). Adam Karremans (Jardín Botánico Lankester, Universidad de Costa Rica) and two anonymous reviewers gave helpful comments on an earlier version of this paper. The Association for Conservation of
the Amazon Basin (ACCA) generously supported C.M.’s research on orchid pollination at Wayqecha Biological Station (ACCA grant program with support from the EROL Foundation), during which the new species was found.

References

Brako L. & Zarucchi J. L. 1993: Catálogo de las Angiospermas y Gimnospermas del Perú. – Monogr. Syst. Bot. Missouri Bot. Gard. 45: 1–1286.

Collantes B. & Karremans A. P. 2016: An eccentric new species of *Stelis* from Peru (*Orchidaceae*: *Pleurothallidinae*). – *Brittonia* 69: 218–227.

IUCN. 2017: Guidelines for using the IUCN Red List categories and criteria, Version 13. Prepared by the Standards and Petitions Subcommittee in March 2017. – Published at [http://cmsdocs.s3.amazonaws.com/RedListGuidelines.pdf](http://cmsdocs.s3.amazonaws.com/RedListGuidelines.pdf) [accessed 9 Apr 2017].

Karremans A. P. 2014: *Lankesteriana*, a new genus in the *Pleurothallidinae* (*Orchidaceae*). – *Lankesteriana* 13: 319–332.

Karremans A. P. 2015: Nomenclatural notes in the *Pleurothallidinae* (*Orchidaceae*): *Stelis*. – *Phytotaxa* 203: 292–296.

Karremans A. P., Bakker F. T., Pupulín F., Solano-Gómez R. & Smulders M. J. M. 2013: Phylogenetics of *Stelis* and closely related genera (*Orchidaceae*: *Pleurothallidinae*). – *Pl. Syst. Evol.* 299: 151–176.

Luer C. A. 2007: Icones Pleurothallidinarum 29: A third century of *Stelis* of Ecuador. Systematics of Apoda–Prorepentia. – Monogr. Syst. Bot. Missouri Bot. Gard. 112: 1–130.

Luer C. A. 2009: Icones Pleurothallidinarum 30: *Leperanthes* of Jamaica. Systematics of *Stelis*. *Stelis* of Ecuador, part four. Systematics of *Masdevallia*, new species from Ecuador and miscellaneous new combinations. – Monogr. Syst. Bot. Missouri Bot. Gard. 115: 1–260.

Luer C. A. 2016: Icones Stelidarum (*Orchidaceae*) Colombiae II. – *Harvard Pap. Bot.* 21: 193–225.

Pridgeon A. M., Cribb P. J., Chase M. W. & Rasmussen F. N. 2005: Genera Orchidacearum 4: *Epidendroideae* (part one). – Oxford: Oxford University Press.

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.

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).
Rodríguez E. F., Vásquez R., Rojas R., Calatayud G., León B. & Campos J. 2006: Nuevas adiciones de Angiospermas a la flora de Perú. – Revista Peruana Biol 13: 129–138.

Solano-Gómez R. 2014: Three new species of Stelis (Orchidaceae, Pleurothallidinae) from Mexico. – Phyto-taxa 158: 255–264.

Ulloa Ulloa C., Zarucchi J. L. & León B. 2004: Diez años de adiciones a la Flora del Perú: 1993–2003. – Arnaldoa (Edic. Esp. Noviembre 2004): 1–242.