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## A NEW SPECIES OF *PLEUROTHALLIS* (ORCHIDACEAE: PLEUROTHALLIDINAE) FROM QUITO, ECUADOR

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**ABSTRACT.** A new species of *Pleurothallis* from Ecuador, *Pleurothallis quitu-cara*, is described, illustrated and compared with the similar species *P. corysta*. The new finding is a surprise for the orchid flora of Quito and its valleys.

**RESUMEN.** Una nueva especie de *Pleurothallis* de Ecuador, *Pleurothallis quitu-cara* se describe, ilustra y compara con la especie similar *P. corysta*. El hallazgo es una sorpresa para la flora orquídea de Quito y sus valles.

**KEY WORDS:** *Acronia*, callus, glenion, Hoya de Quito, *Pleurothallis quitu-cara*

Ecuador holds about 15% of the world's described species in the family Orchidaceae, with 4,032 species of orchids, a third of which are endemic to the country (León-Yáñez *et al* 2011, Neil 2012, Christenhusz & Byng 2016). The diversity of orchids from Ecuador is still understudied, and new species continue to be discovered and described every year (Doucette, Portilla & Cameron 2016, Wilson *et al.* 2016, Baquero 2017, Baquero & Iturralde 2017, Baquero & Zuchan 2017, Jost & Iturralde 2017, Wilson *et al.* 2017a, b).

Within the large subtribe Pleurothallidinae, several taxonomic problems have been identified at generic and infrageneric levels (Chase & Pridgeon 2001, Karremans 2016). Traditionally, hundreds of species have been included in the genus *Pleurothallis sensu lato* (Luer 1986), but morphological and molecular analyses evidenced its polyphyly (Pridgeon & Chase 2001). Several proposals to split it have been presented, with different generic and infrageneric definitions and circumscriptions (Szlachetko & Margonska 2001, Chase *et al.* 2003, Luer 2005). *Pleurothallis*

*jupiter* was described by Luer (1975) and placed in the section *Macrophyllae-Fasciculatae* Lindl. Szlachetko & Margonska (2001) proposed the genus *Zosterophyllanthos* for species of section *Macrophyllae-Fasciculatae*, but Luer (2005) resurrected the genus *Acronia* for previously included species in sections *Acronia*, *Amphigya* and *Macrophyllae-Fasciculatae*. Molecular analyses have evidenced that species of the section *Macrophyllae-Fasciculatae* are closely related with the type species of *Pleurothallis*, *P. ruscifolia* R.Br., thus supporting its inclusion in *Pleurothallis sensu stricto* (Pridgeon *et al.* 2001, Wilson *et al.* 2011, 2013). Based on morphological similarity to other member of the section *Macrophyllae-Fasciculatae* (Table 1), we describe here a new species as a member of the genus *Pleurothallis*.

### Results

**Plant material.**— Specimens collected in 1994 are deposited in the collections of the Herbario de Botánica Económica del Ecuador QUSF. Flowers are preserved

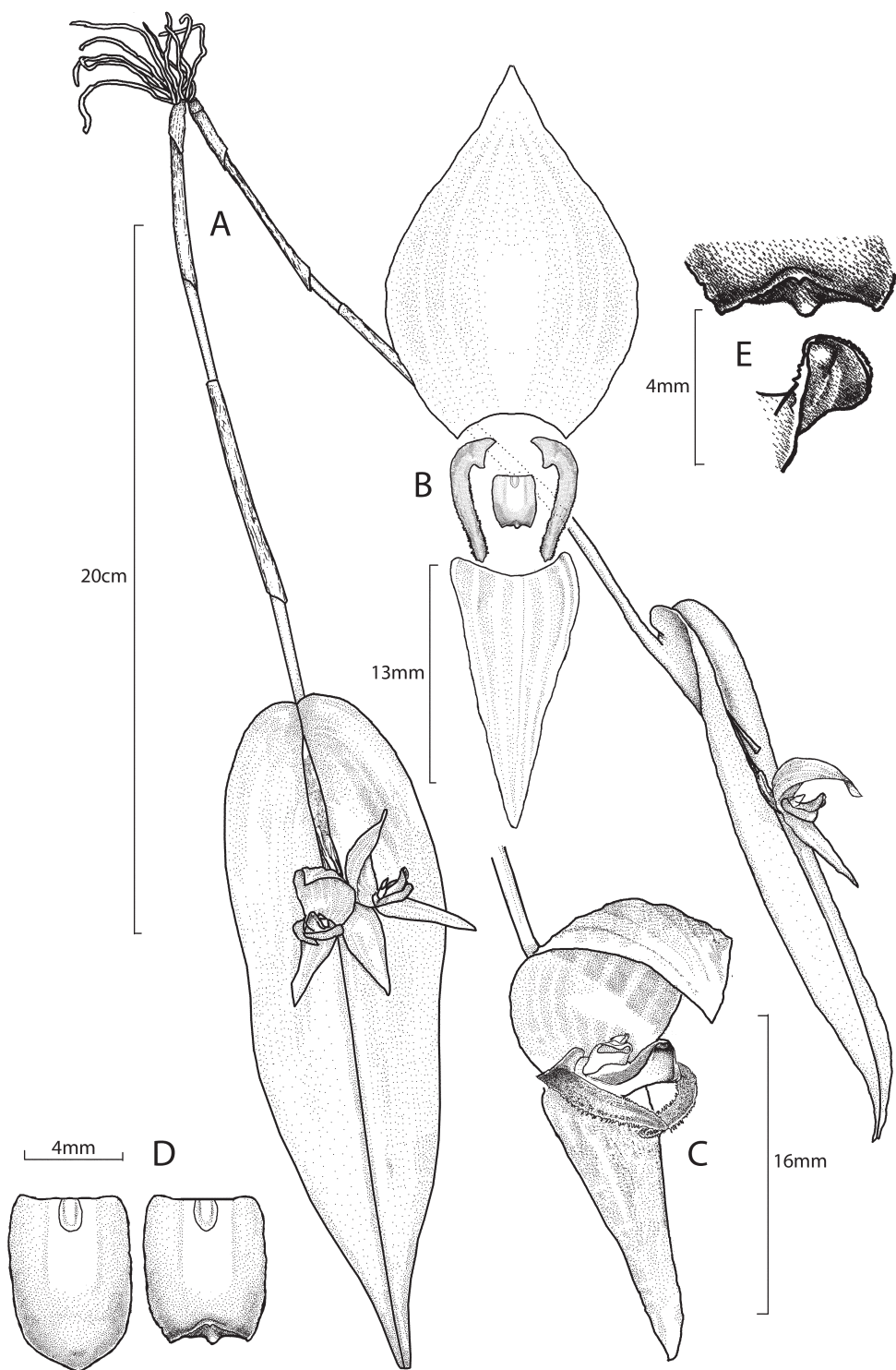


FIGURE 1. *Pleurothallis quitu-cara*. A, habit. B, dissected flower. C, flower close-up. D, dorsal view of the lip, flattened (left), with normal bent apex (right). E, lip close up showing with protruding abaxial callus (Illustration: Luis Baquero).

in 75% ethanol with glicerine. Living individuals were found and examined at the type locality in 2015 and 2016, but no specimens were collected, and photographs were taken *in-situ*. Research on the material lead to the knowledge that it belonged to a new species.

**Study area.**— The only known population of the new species was discovered close to Quito, in the southern valley of Los Chillos near Pita river.

***Pleurothallis quitu-cara* Carrera & Baquero, *sp. nov.*** (Fig. 1–3).

**TYPE:** Ecuador. Provincia de Pichincha: Valle de los Chillos, Río, -0.436431°S, -78.4118900°W, 2980 m, April 10th, 1994, *V. Zak 6543* (holotype: 2380 QUSF).

**DIAGNOSIS:** *Pleurothallis quitu-cara* is similar to *P. corysta* Luer, from which it differs in the rectangular lip with an elliptical small glenion with an elevated center at the base, a minutely pubescent, protruding callus and the apex of the lip bent upwards *versus* the erect, subovate, without an obvious glenion and an elevated line on the disc and the apex of the lip not bent in *P. corysta* (Fig. 3).

**Plant** medium in size, epiphytic or terrestrial, caespitose, with slender roots. **Ramicauls** stout and glandular, pendent to horizontal, 25–35 cm long, with three, 8–10 cm long, tubular sheaths. **Leaf** horizontal to pendent, coriaceous, oblong, slightly undulated, leaf-margins slightly deflexed, 13–20 × 6–8 cm, base sub sessile, cordate to deeply cordate, apex rostrate and acute. **Inflorescence** a fascicle of 1–4 medium sized simultaneous flowers subtended by a spathe 1 cm long, peduncles 10–12 mm long withing the spathe; floral bracts 4.5–6.0 mm long; pedicel 7.0–8.5 mm long; ovary smooth, six-ridged, 5.0–5.5 mm long. **Dorsal sepal** deeply concave, ovate, acute, 19 × 12 mm, 7 veined, sulphur-coloured (xanthic above and below) or sulphur coloured with 7 sanguine color veins (non xanthic above, below without colored veins). **Lateral sepals** connate into a side-decurved, lanceolate, acute synsepal, 16 × 8 mm, 6 veined, yellow-sulphur coloured, powdered with sanguine color glands (non-xanthic form with more obvious). **Petals** pubescent, deeply decurved below the lip, crescent shaped, subacute, 10.0 × 1.8 mm, colored

as the dorsal sepal. **Lip** oblong, 6.8 × 4.1 mm, sides bent downwards, papillose, apex obtuse, apiculate, bent upwards, with a small swollen callus underneath, pubescent at the margins, the base truncate with a small elliptical glenion with an elevated center, the quadrangular disc convex, minutely pubescent, lemon-coloured above, milk-white color at the base suffused with leather-yellow in xanthic form, lemon-coloured suffused with a sanguine color above, milk-white color at the base, suffused with leather-yellow in the middle and suffused with sanguine color below in non xanthic form. **Column** stout, 2.5 mm long, 2.3 mm wide, foot thick, rostellum and bilobed stigma apical. **Pollinia** 2, yellow.

**EPONYMY:** Honoring Quitu-Cara, the indigenous group which originally inhabited Quito and the valley near Quito, where the known population of the new species persists.

**DISTRIBUTION AND HABITAT:** *Pleurothallis quitu-cara* has been found only at one locality in the Hoya de Guayllabamba, valley of Los Chillos, on the canyon of the River Pita (Fig. 4). A population of approximately 50 plants of *Pleurothallis quitu-cara* grows at the type locality. Two color forms, a xanthic and a non-xanthic form, coexist (Fig. 2B). It is not clear if the species is always represented by this two colour forms, or other phenotypes could be found somewhere else. Nevertheless, no other populations of the species are known by the authors at the moment, which does not necessarily mean *P. quitu-cara* is restricted to this single population. More exploration is needed to confirm if this original population is the only one known for the species. This finding confirms that, even so close to Quito, the capital of a well explored country, when it comes to orchids, a new species of orchid can still be found anywhere.

**CONSERVATION STATUS AND EXTINCTION RISK:** The type locality of *Pleurothallis quitu-cara* is located in one of the most populated valleys of the northern Andes, Los Chillos. Habitat destruction in Los Chillos is extensive, mostly produced by expansion of the agricultural frontier focused on monocultures, especially for the floral industry, and expansion of the urban frontier. The few remnants of natural ecosystems in Los Chillos are found in ravines,

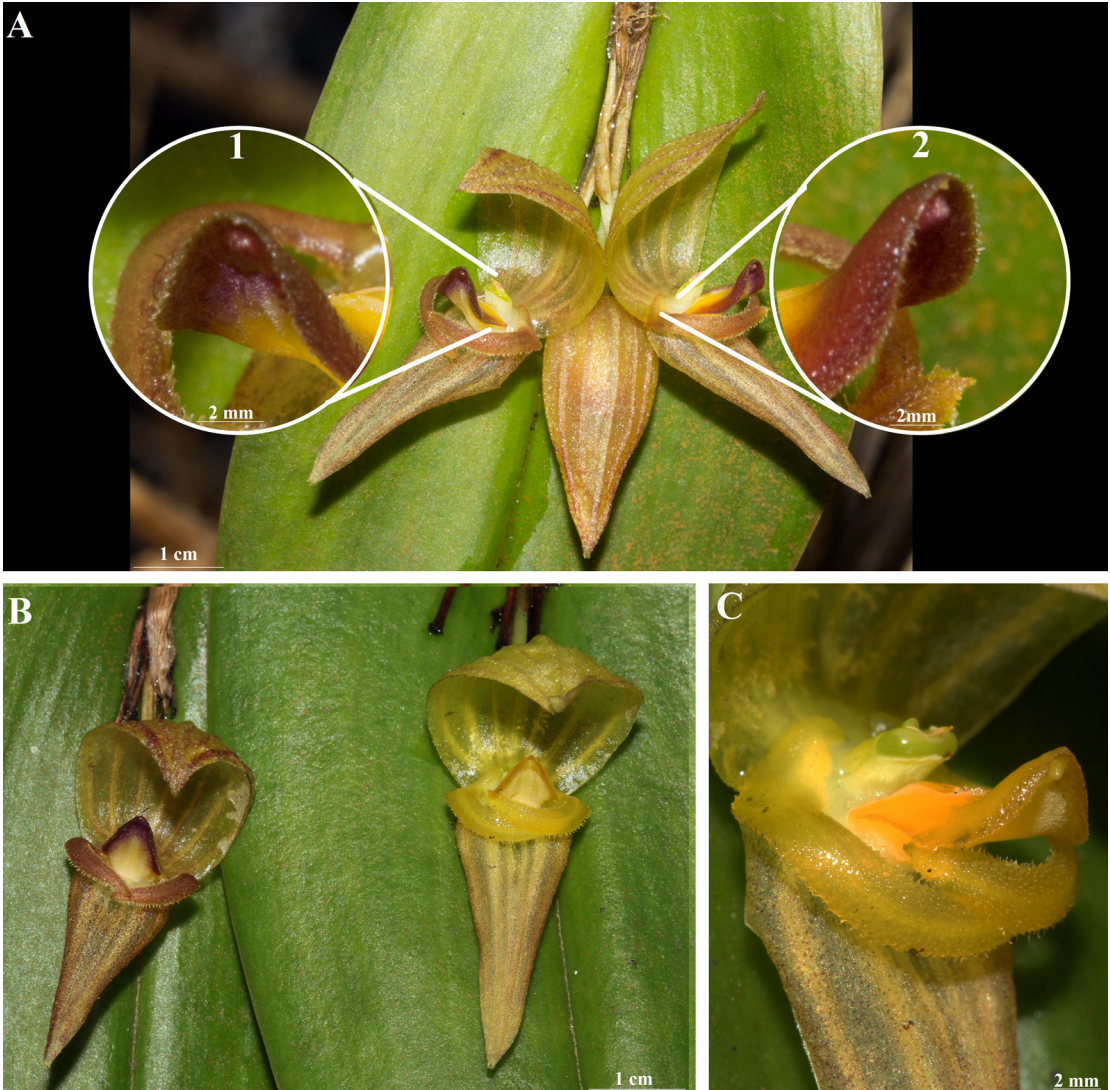


FIGURE 2. Photos of *Pleurothallis quitu-cara*. A, leaf with a inflorescence with successive flowers; 1 = callus at the abaxial surface of the lip; 2 = apex of the lip bented upwards. B, two color forms, non xanthic form at the left and xanthic form at the right. C, petals notably crossed below the lip (Photos: Kilian Zuchan, Luis Baquero).

gorges and protective forests, although most of them are in precarious state of conservation. Unfortunately, the area is not under any type of formal protection. Exploration of additional surrounding canyons and surrounding areas is needed to confirm how restricted is the distribution of this new species. Urgent conservation actions are needed in order to preserve the known population of *P. quitu-cara* and other species that are restricted to the particular ecosystem. We are unaware of the presence of this new species

in *ex situ* situations. However, it is important to remember that *in situ* conservation actions should lead the way to preserve biodiversity, while *ex situ* management by itself is only complementary and alone has little conservation impacts (Wilson *et al.* 2016).

**Discussion.** In its general shape of the flower, *P. quitu-cara* reminds some other species and species-complex of *Pleurothallis*; *P. corysta*, *P. adonis* Luer,



FIGURE 3. Comparison between *Pleurothallis corysta* Luer and *Pleurothallis quitu-cara*. A, *P. corysta* (left) and *P. quitu-cara* (right). B–C, *P. corysta* in situ (habit and flower). Photo by Martín Carrera (A) and Luis E. Baquero (B–C).

*P. linguifera* Lindl., *P. grandiflora* Lindl., *P. jupiter* Luer and *P. sarcochila* Garay (Table 1). It is most similar to *P. corysta* but, the size of the flowers, the pubescent, slim petals and the shape of the lip are totally different among the two species (Fig. 3). Two distinctive traits are present in *P. quitu-cara* lip; an elevated, microscopically pubescent, and quadrangular disc, and a small, protruding callus at the upward bent apex of the lip. Considering that the final portion of the lip bends upwards, the protrusion in the apex of the lip is most conspicuous and might have something to do with pollinator attraction. *Pleurothallis corysta*, on the other hand, has a similar growing habit to the new species and a swollen apex of the central vein at the apex of the lip, also similar to *P. quitu-cara* although the shape of the petals, the glabrous flowers and the absence

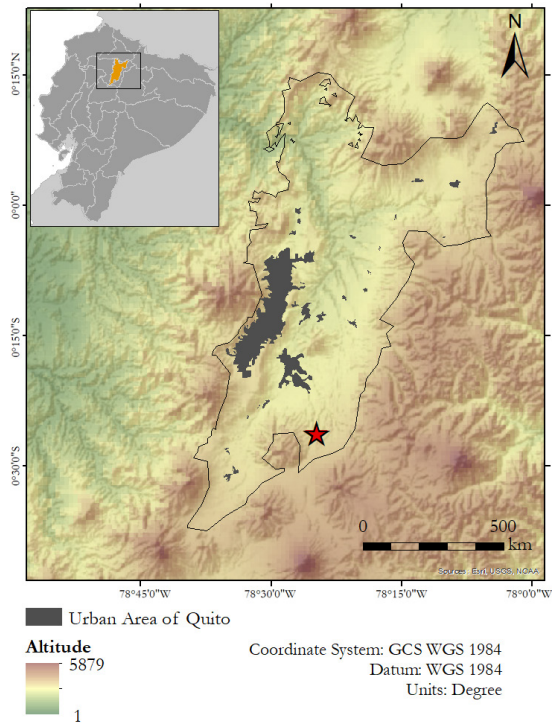


FIGURE 4. Collection location of *Pleurothallis quitu-cara* (red star) in the gorge of “Río Pita” in “Valle de los Chillos” near Quito (Map: Emilia Peñaherrera).

of an obvious glenion separates it from *P. quitu-cara* (Fig. 1, 2A, 3).

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TABLE 1. Comparison between *Pleurothallis quitu-cara* and other related species.

Species	Ramical orientation	Petals position	Lip apex	Glenion	Disc
<i>P. quitu-cara</i>	Horizontal to pendant	Crossed forward in front of the lip	Bent upwards and with a protruding callus in the abaxial side	Elliptical, slightly elevated	Quadrangular, convex, elevated and microscopically pubescent
<i>P. corysta</i>	Suberect to horizontal	Downwards, decurved	Sides revolute above the middle, the apex narrowly obtuse with the end of the mid vein beneath markedly swollen	Not obvious	Subrhombic to broadly elliptical. Glabrous
<i>P. jupiter</i>	Suberect	Forward (petal tips touching)	Sides bent downwards and tip remains unfolded	Broad, above the base	Subquadrate, verrucose and ciliate above the middle
<i>P. adonis</i>	Erect	Forward (without crossing)	Sides bent downwards, tip unfolded	Small, at the base	Not given
<i>P. linguifera</i>	Erect	Forward (petals tips may touch)	Slightly bent downwards with a small crest like	Small at the base	Not given
<i>P. grandiflora</i>	Erect	Downwards	Bent upwards with a canal in the middle	Above the base	More or less convex
<i>P. sarcochila</i>	Erect	Down and forward	Bent downwards	Not given	More or less convex

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