FRANCO PUPULIN & DIEGO BOGARÍN

A second species of Restrepiella (Orchidaceae: Pleurothallidinae)

Abstract


Restrepiella lueri is described as a species new to science and illustrated from Costa Rica. The new species differs from R. ophiocephal a by (1) the free lateral sepals with irregularly dentate margins, (2) the glabrous petals provided with three low, longitudinal keels, (3) the elliptic, simple lip, longer than the column and as long as the petals, ciliate along the margins and hirsute at apex, with three longitudinal keels from the base extending to the middle of the blade, and (4) the column without a foot. A key to the species of Restrepiella is provided.

Key words: orchids, Restrepiella lueri, cleistogamy, Costa Rica, taxonomy.

Introduction

When Garay & Dunsterville (1966) founded the orchid genus Restrepiella, they defined the new taxon by the fasciculate inflorescence, the abbreviate pedicels, the dissimilar floral segments and the presence of four pollinia, a set of features useful in distinguishing a group of species that do not fit well either Pleurothallis R. Br., Restrepia Kunth or Octomeria R. Br. (Garay 1967). They selected as the typus generis Pleurothallis ophiocephal a Lindl. 1838, nom. illeg. [non P. ophiocephal a Barb. Rodr. 1822 = Acianthera ophiantha (Cogn.) Pridgeon & M. W. Chase] ≡ R. ophiocephal a Garay & Dunst. (Art. 53.3 and 58.1 ICBN, see Mc Neill & al. 2006), a species based on a collection by G. Loddiges & G. Barker from Mexico (Lindley 1838), and transferred to Restrepiella four other species formerly placed under Pleurothallis (Garay & Dunsterville 1966).

With the removal to Dresslerella Luer (1986) and Restrepiopsis Luer (1978) of some discordant elements originally included by Garay in his concept of Restrepiella (Garay 1967), the genus became monotypic with Restrepiella ophiocephal a as the unique representative species.

Today Restrepiella is one of the few genera of the large neotropical subtribe Pleurothallidinae that received strong and unanimous support as a monophyletic unit from anatomical, morphological and molecular data. Vegetatively, Restrepiella is characterized by the caespitose
Fig. 1. *Restrepiella lucri* – A: habit; B: apex of stem and inflorescence; C: dissected perianth; the lip in natural position (left) and flattened (right); D: lip, flattened; E: ovary, column and lip, lateral view; F: column, ventral view. – Scale bar: A = 5 cm, B = 2 cm, C = 1 cm, D = 3 mm, E = 5 mm, F = 3 mm. – Drawn from the holotype.
habit with thick rami
calaus provided with a few imbricating sheaths at the base and a tubular
sheath near the middle, a leathery, shortly petiolate leaf without an annulus and a fascicled inflo-
rescence of single successive flowers produced from a prominent spathe (Luer 1991). The flow-
eries are characterized by a bilabiate, fleshy and shortly pubescent perianth, minutely pubescent to
furfuraceous sepals, ciliate-pubescent petals, a thick, oblong-ovoid, entire lip with obtuse, erect,
basal angles and 4 obovoid pollinia with short caudicles (Luer 1991). The minutely papillose
abaxial cuticle of the leaf, the anticlinally rectangular, dome-shaped or triangular marginal epi-
dermal cells, the thick cuticle of the stem, as well as the rarity of sunken, glandular trichomes
with prominent nuclei in both trichome cells and the absence of helical thickenings in the
hypodermal cells (present in most Pleurothallidinae taxa) are anatomically diagnostic (Pridgeon
(1995) and molecular results from nuclear and plastid DNA sequences by Pridgeon & al. (2001)
and Pridgeon & Chase (2001) confirmed the monophyly of Restrepiella. The resulting clado-
grams show that the monotypic Restrepiella is sister to Barbosella in a clade that includes a
group of clearly monophyletic genera with four or eight pollinia (Restrepia, Restrepiella, Bar-
bosella including Barbrodria, Dresslerella and Restrepiopsis/Pleurothalopsis).

As presently circumscribed, the genus is mainly distributed in Central America, ranging from
central Mexico to Colombia, where it is usually found in lowland to premontane humid forests at
elevations of 450-1900 m. Although the distribution of Restrepiella is usually stated to range
geon 2005), the type of the synonymous Pleurothallis puberula Klotzsch is actually from “New
Granada”, or Colombia, and another Colombian specimen has been recorded from the region of
Antioquia (M. Ospina 81, JAUM).

Two other species referable to Lindley’s concept of Pleurothallis ophiocephala have been
described since 1843: Pleurothallis peduncularis Hook. 1843 and P. puberula Klotzsch 1854; in
addition P. stigmatoglossa Lindl. 1859 was published as a nomen nudum. In his systematic re-
vision of Restrepiella, Luer (1991) treats these three names as synonyms of R. ophiocephala and
considers Restrepiella as unspecific.

In 1996, Irene Bock described a cleistogamous form of Restrepiella ophiocephala, the
f. clausa, on the basis of a plant collected by Clarence K. Horich at Sabanillas de Acosta (San
José, Costa Rica), along the northern Pacific slopes of the Talamanca mountain range (Bock
1996). This taxon should not be confused with R. clausa (Luer & R. Escobar) Braas & Mohr,
based on Restrepiopsis clausa Luer & R. Escobar (Braas & al. 1982), a species today assigned to
the distantly related genera Restrepiopsis or Pleurothalopsis. Besides its cleistogamous condi-
tion, R. ophiocephala f. clausa differs from the typical form by the shape of the trichomes cover-
ing the distal portion of the petals, which are dendroid instead of simple as in the forma typica
(Bock 1996).

We recently had the opportunity to study living material of another cleistogamous form of
Restrepiella from Costa Rica, coming from a different locality as the plant described by Bock,
and we concluded that the morphological features of our finding deserve specific recognition. For
this reason, we describe it here a new species in the genus Restrepiella.

Restrepiella lueri Pupulin & Bogarín, sp. nov.
Holotype: Cultivated at Jardín Botánico Lankester from the collection “Costa Rica, Alajuela,
Los Ángeles de San Ramón, c. 800-1000 m, by D. Jiménez”, vouchered 14.12.2006, D. Bogarín 3009 (CR; isotypes: Jardín Botánico Lankester [spirit], USJ [spirit]) – Fig. 1, 2.

A forma typica Restrepiellae ophiocephalae floribus plerumque cleistogamis statim dignos-
cendae; ab ea et forma clausa Bock sepalis lateralis liberas marginibus irregulariter lacernatis,
petalis tribus carinis humilis ornatis, labello elliptico petalis aequilongo columnae duplo majore,
apicaliter hirsuto marginibus ciliatis, tribus carinis ornato, lateralibus humilioribus, basi lobulis
destituta, columna apoda recedit.
Epiphytic, cespiteose herb with monophyllous stems, to 23 cm long. Roots slender, flexuous, c.1 mm in diameter. Stems terete, stout, erect, 3.5-8.5 cm long, 3-3.5 mm in diameter, covered by 3-4 short (to 9 mm long), imbricating, papyraceous sheaths at the base, and a tubular, apically loose, membranaceous sheath (becoming papyraceous and eventually shed with age) to 4.5 cm long, mostly exceeding half of the stem length. Leaf elliptic, coriaceous, erect, subacute to broadly obtuse, slightly emarginate at apex, cuneate at the base into a distinct petiole, 7-11.5 × 1.9-2.8 cm, the abscission layer a slightly protruding, rounded ring. Inflorescence a fascicle of 2-3 flowers produced singly in succession from a conspicuous, papyraceous, ovate-triangular, boldly nerved spathe near the apex of the stem, without an annulus, c. 1 cm long. Peduncle stout, cylindric, 3 mm long. Floral bract membranaceous, semiamplectent, shorter than the ovary, 7 × c. 4 mm. Ovary cylindric-subclavate, minutely and shortly hirsute-verrucose, 7 mm long, 3.7 mm wide at apex. Flowers cleistogamous, rarely partially opening and autogamous, boldly suffused with purple from a white base, externally glabrous. Dorsal sepal narrowly elliptic-oblong, rounded, apically convex into a distinct cushion, 15-18 × 5-6 mm, externally glabrous, the inner surface with short, transversal, low warts, the basal margins inrolled-replicate and irregularly serrulate. Lateral sepals narrowly elliptic-lanceolate, subacute, 16-18 × 4 mm, shortly connate at the base for less than 1 mm, adaxially marked with short, transversal, low warts, the margins strongly inrolled-tubular, irregularly ciliate-sublacerate. Petals linear-oblong, rounded, glabrous, 6 × 2 mm, 3-nerved, the nerves adaxially protruding into low, rounded keels, the apical margins ciliate. Lip elliptic from a shortly cuneate base, rounded, 4.5 × 2.5 mm, hirsute at apex, with 3 rounded keels running from the base to over the half of the blade, the lateral keels lower, the margins densely long-ciliate, apically strongly infolded in natural position. Column stout, quadrangular-cubic, bidenticate on the lower apex, the margins shortly winged, the stigma ventral. Unpollinate column and pollinia not seen.

Eponymy. – Named in honour of Carlyle A. Luer, who more than any other botanist has contributed to the understanding of the diversity of Pleurothallidinae and their systematics.

Fig. 2. Comparison between Restrepiella lueri (A) and R. ophiocephala (B) – 1-1*: flower; 2-2*: column and lip, lateral view; 3-3*: lip, adaxial view. – Scale bar: 1, 1* = 1 cm; 2-3, 2*-3* = 5 mm; A after Bogarín 3009 (Jardín Botánico Lankester [spirit]), B after Jardín Botánico Lankester 04262 (id., [spirit]).
**Distribution and habitat.** – Known only from the type locality in Costa Rica, close to the continental divide of the Tilarán mountain range, between 800 and 1000 m elevation. The species grows as an epiphyte in tropical wet forest, premontane belt transition and premontane rain forest in secondary vegetation along a small stream. According to Bock (1996), populations of *Restrepiella* are very common in Mexico but less frequent in other Central American regions. In Costa Rica, in spite of their large size compared with other pleurothallid species, plants of *Restrepiella* are poorly known ecologically and apparently rare in the field (Mora-Retana & Atwood 1992), at least judging by the few specimens represented in herbaria and living collections.

**Phenology.** – Flowering occurs mostly from late November to January, roughly corresponding in Costa Rica to the end of the rainy season.

**Discussion**

Although the number of pollinia has been traditionally emphasized as the essential diagnostic feature of *Restrepiella* (i.e., Luer 1986, Dressler 1993, 2003), the genus can be easily characterized among the *Pleurothallidinae* by a unique set of macro-morphological features, such as the caespitose plants with stem not cane-like, formed by two internodes, without an annulus, provided with cauline, tubular, not leafy nor lepanthiform sheaths, the single, not sheathing leaf attenuate at the base into a petiole, the flowers emerging near the apex of the stem, the fascicled inflorescence of solitary flowers and the sepals not united at their apices (Solano Gómez 2005).

*Restrepiella lueri* is distinguished from its relative, *R. ophiocephala*, as well as from the forma *clausa* of the latter species, by the free lateral sepals with irregularly dentate margins (vs. connate into a ciliate synsepal), the petals provided with three low, longitudinal keels (vs. smooth), the elliptic, simple lip with the basal margins flat, provided with three low, longitudinal keels (vs. 3-lobed, with erect, basal angles and two high keels), longer than column and as long as the petals (vs. as long as the column and shorter than petals), hirsute at apex and ciliate along the margins (vs. entire), and the column without a foot (vs. with a distinct foot). The flowers of *R. lueri* are mostly cleistogamous, but in some cases the segments of the perianth spread out slightly before self-pollination takes place, and D. Jiménez photographed a cultivated specimen of *R. lueri* with the flower almost completely open at anthesis. When they show the cleistogamous condition, plants of *R. lueri* are likely undistinguishable from those of *R. ophiocephala f. clausa* without dissection of the flower.

**Key to the species of Restrepiella**

1. Lip without basal lobes, hirsute at apex and ciliate along the margins, twice longer than the column and as long as the petals; column without a foot; lateral sepals free  
   – Lip provided with erect basal lobes, entire at apex and along the margins, slightly longer than the column and shorter than petals; column with a distinct foot; lateral sepals connate into a synsepal 2

2. Flowers always opened at anthesis, not autogamous; trichomes at the apex of petals simple  
   – Flowers cleistogamous; trichomes at the apex of petals dendroid

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