A NEW AND BIZARRE SPECIES IN THE GENUS *CONDYLAGO* (ORCHIDACEAE: PLEUROTHALLIDINAE) FROM PANAMA

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Abstract. *Condylago furculifera* from Panama is described and illustrated. This species is distinguished from its Colombian relative, *C. rodrigoi*, by more sparsely villous sepals (vs. densely white-villous); obovate-pandurate petals without decurrent basal lobes and the ovate (vs. orbicular) viscid callus. The most striking feature, however, is the inflorescence with persistent, Y-shaped, flattened pedicels, each articulated to an "epipedicel" to 2 cm long. Colombian photographs suggest that *C. rodrigoi* also has an epipedicel between the pedicel and the flower, but the pedicel is much simpler. This epipedicel is of special interest, as the Pleurothallidinae are usually characterized by having the ovary articulated directly to the pedicel. A key to the species is given.

Keywords: Orchidaceae, Pleurothallidinae, *Condylago, Condylago furculifera,* new species, Panama.

When described in 1982 by C. Luer, the genus *Condylago* included only *Condylago rodrigoi* Luer, endemic to the Western Cordillera of Colombia (Luer, 1982; Christenson, 1998). The generic name is based on the Latin word *condylus*, or "projection," referring to the unique mechanism of the sensitive motile lip that is different from other Pleurothallid genera (Luer, 1982).

Molecular studies based on nuclear and plastid DNA sequences by Pridgeon et al. (2001) showed *Condylago* to be placed near *Pleurothallis segoviensis* Rchb. f. (subgenus *Unciferia* Luer). However, this relationship is weakly supported. Both are sister to a subclade formed by *Stelis* Sw. sensu stricto and seven subgenera of *Pleurothallis* R. Br. (*Dracontia*, *Elongatia*, *Mystax*, *Effusia*, *Physosiphon*, *Physothallis,* and *Crocodeilanthe*, following Luer, 1986) and *Salpistele lutea* Dressler. All of these groups form a grade leading to a monophyletic *Stelis* Sw. sensu stricto. Consequently, Pridgeon and Chase (2001) treated those subgenera as members of the genus *Stelis*.

Pridgeon and Chase (2001) indicate that actively motile lips have evolved independently in *Acostaea* Schltr., *Condylago*, *Porroglossum* Schltr., and *Masdevallia teaguei* Luer. Motile lips are also found in some species of *Trichosalpinx* Luer, such as *T. blaisdelli* (S. Wats.) Luer, in which the lip is extended below into a pair of deflexed, rigid, short clavate appendages, hinged to the under surface of the column foot by a slender, flexible, membranous median strap (D. Bogarín, pers. obs.)

Luer (1986, 1987) placed *Condylago* close to *Pleurothallis flexuosa* (Poepp. & Endl.) Lindl. of subgenus *Effusia* (Luer, 2000), differing from that subgenus primarily by having a sensitive motile lip. As Pridgeon and Chase (2001) noted, motile lips have arisen independently in other clades. They conclude that, considering the low levels of divergence, vegetative similarities, and floral homoplasy, there is little justification for recognizing *Salpistele*, *Condylago*, or the several subgenera of *Pleurothallis* mentioned above as anything but subgroups of *Stelis*.

We are indebted to Andrés Maduro, Edilberto Rosa, and Erick Olmos of Finca Dracula, Panama, who provided us the critical material and information to describe this species. Franco Pupulin kindly revised the Latin diagnosis. Gratitude is extended to the officers of Costa Rica's Ministry of the Environment and Energy (Ministerio de Ambiente y Energía, MINAE) and its National System of Conservation Areas (Sistema Nacional de Áreas de Conservación, SINAC) for providing Scientific Passport No. 1281 to collect and manage orchid specimens in the collections of Lankester Botanical Garden, as well as for the necessary documentation to import orchid specimens, together with the Autoridad Nacional del Ambiente (ANAM) of Panama. Part of this study has been sponsored by the Darwin Initiative, UK, within the framework of the project "Conservation and Monitoring of Meso-American Orchids."

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Harvard Papers in Botany, Vol. 12, No. 1, 2007, pp. 1–5.

Motile lips alone cannot be taken to define a genus in the Pleurothallidinae. Some floral characters are convergent and can arise independently in different clades. However, at the moment, molecular studies do not place the genus *Condylago* in a well-supported clade (Pridgeon et al., 2001). Although one cannot use the motile lip alone to distinguish a genus, *Condylago* can be distinguished from its relatives by a set of features such as the "epipedicel" between the ovary and pedicel and the sensitive, motile lip hinged to the bulbous column foot by a flexible membranous strap. Near the base, the lip is bent downward at about 90°, with a viscid callus just distal to the bend and two parallel keels distally. The sepals have revolute margins, and the lateral sepals are connate with short apicules. The petals are rhombic or pandurate (Luer, 1982). This set of features may be used to define the genus *Condylago* and distinguishes it from *Stelis* sensu stricto, *P. segoviensis,* and the seven subgenera of *Pleurothallis* that form a subclade in Pridgeon et al. (2001).

Floristic studies in the orchid flora of Panama allow us to confidently describe a new distinctive species of *Condylago* with a bizarre inflorescence.

Condylago furculifera Dressler & Bogarín, *sp. nov.* TYPE: PANAMA. Veraguas: Chilagro, near Cerro Arizona, west of Santa Fé, 1000–1200 m, flowered in cultivation at Finca Dracula, Cerro Punta, Chiriquí, 14 December 2006, *R. L. Dressler 6835* (Holotype: PMA; Isotype: JBL-spirit). Fig. 1–2.

Condylagini rodrigoi pedicellis perennibus furcatiformibus, sepalis lateralibus leviter villosis margine ciliato (versus villosis), petalis obovato-panduratis lobulis basalibus decurrentibus destitutis (versus obovato-rhombicis lobis decurrentibus in base), callo ovato viscoso (versus orbiculari viscoso) praecipue differt.

Plant epiphytic, cespitose, with monophyllous stems, to 10 cm tall. *Roots* slender, flexuous, 0.5–0.8 mm in diam. *Stems* (ramicauls) 1-leaved, terete, stout, erect, 1.8–2.2 cm long, enclosed at the base by 2 short (to 1.0–1.3 mm long), tubular, conduplicate, acute, imbricating, papyraceous sheaths. *Leaf* elliptic, oblanceolate to obovate, conduplicate, coriaceous, erect, acute, slightly emarginate or 3-denticulate, 6.0–8.3 cm long, 1.4–2.1 cm wide, cuneate at the base into a short petiole. *Inflorescence* a distichous, loose raceme, progressively congested near the apex, to 30 cm long (including the peduncle). *Peduncle* stout, cylindric, 12–18 cm long, with tubular, amplexicaul, ovate-triangular papyraceous sheaths (to 8 mm long). *Raceme* 8–15 cm long, zig-zag, flowering successively. *Pedicel* Y-shaped, persistent, 0.5–1.6 cm long, the divisions 10–15 mm long, flattened, subacute, subobtuse or obliquely bifid, green when young, progressively shorter toward the apex of inflorescence. *Floral bract* amplexicaul, tubular, acute, papyraceous, to 1 cm long. *Ovary* 3 mm long, stalked, the stalk, or "epipedicel," to 2 cm long, cylindric, smooth. *Flowers* green boldly spotted and suffused with dark purple. *Dorsal sepal* rectangular to slightly obovate, acute, the margins basally decurrent on the column foot, with revolute margins toward the apex, sparsely white-villose near apex, cuneate, ending in a short erose apicule, 6.5–7.0 × 3.5–3.7 mm. *Lateral sepals* connate for 3.5 mm (to near middle), forming a mentum with the column foot, ovate to oblong, sparsely white-villous with revolute entire margins, acute to subacute, cuneate, ending in short erose apicules, 7.5–8.0 × 2.5–2.7 mm, to 5.5 mm wide where connate. *Petals* obovate-pandurate, acute, glabrous, 4.5 × 2.0 mm, slightly thickened, without decurrent basal lobes. *Lip* ovate to oblong, extended below into a pair of deflexed, rigid, short (to 1 mm long) clavate appendages, hinged to the under surface of the column foot by a slender, flexible, membranous strap; with a flat, ovate, viscid callus, the apex obtuse, with two short parallel keels distally, 4.6 × 1.5 mm. *Column* semiterete, with a bulbous foot in contact with the appendages of the lip, slightly alate at margins, erose to denticulate at apex, 6.6 × 1.5 mm; the stigma ventral; anther apical. *Pollinia* not seen.

Distribution: known only from Province of Veraguas in Panama, but may well occur in the mountains of eastern Bocas del Toro Province.

Etymology: the epithet is based on the Latin diminutive *furcula,* "little fork," in allusion to the unusual and characteristic fork-like pedicels of the inflorescence of this species.

Habitat and ecology: this species was collected in the mountains west of Santa Fé de Veraguas, near Cerro Arizona, which has cloud forest on its upper slopes.

Phenology: flowers in cultivation from September to January.

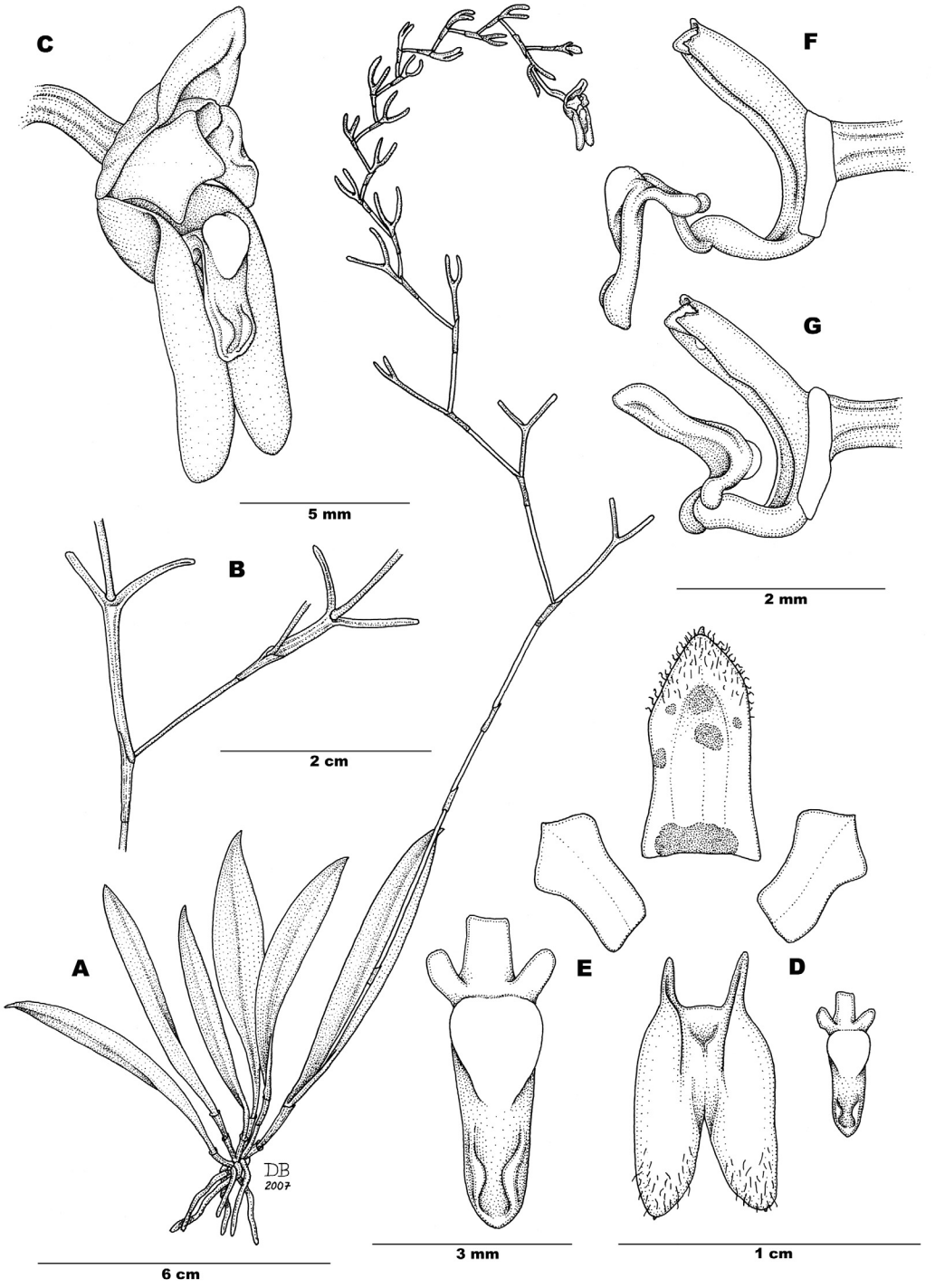

FIGURE 1. *Condylago furculifera* Dressler & Bogarín. **A**, habit; **B**, portion of inflorescence, showing the Y-shaped pedicels; **C**, flower in natural position; **D**, dissected perianth; **E**, lip (at higher magnification); **F**, column and lip, lateral view, with the lip not tripped; **G**, same, with the lip tripped. Drawn from the holotype by Diego Bogarín.

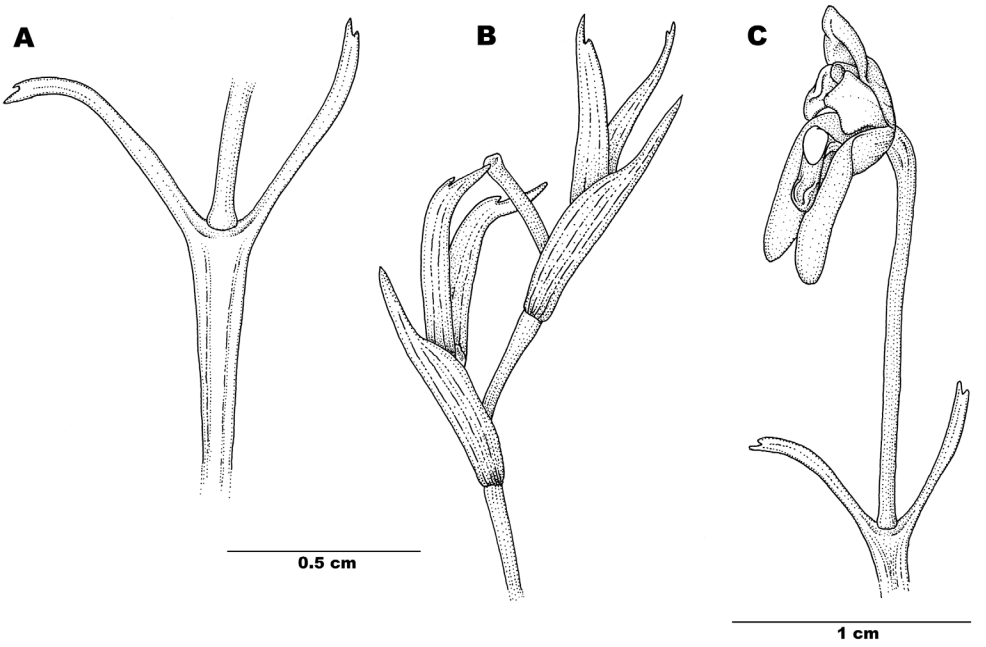

FIGURE 2. Details of the inflorescence of *Condylago furculifera* Dressler & Bogarín. **A**, articulation between the bifurcate pedicel and the stalk (epipedicel); **B**, apex of the inflorescence showing the shorter apical pedicels covered by the floral bracts; **C**, pedicel articulated to the stalk (epipedicel) supporting the ovary. Drawn from the holotype by Diego Bogarín.

DISCUSSION

Until the discovery of this species, the genus *Condylago* was thought to be monospecific (Luer, 1987). *Condylago furculifera* is distinguished from the Colombian *C. rodrigoi* by the sparsely villous sepals (vs. densely white-villous), the obovate-pandurate petals without decurrent basal lobes (vs. rhombic with decurrent basal lobes), and the ovate (vs. orbicular) viscid callus. However, the most conspicuous difference is the bizarre inflorescence with persistent, Y-shaped, flattened pedicels, articulated to the stalk (or "epipedicel") supporting the ovary (Fig. 2).

In the species described here, the pedicels are quite prominent and somewhat flattened. They are divided just below the apical abscission with spreading, acute to obliquely bifid lobules. The pedicel diverges from the axis of the raceme 2.0–4.5 mm above the base of the floral bract, suggesting that the pedicels are basally adnate to the axis. What is especially unusual in the Pleurothallidinae is that the ovary is subtended and separated from the pedicel by a slender stalk (to 2 cm long). This stalk, here termed the "epipedicel," between the abscission and the ovary seems somewhat analogous to the gynophore of Capparidaceae and some other plant groups but, as mentioned above, it supports the ovary (Fig. 2). This feature, then, falsifies the customary characterization of the Pleurothallidinae as having the ovaries articulated directly to the pedicels. Whereas the original drawing of *Condylago rodrigoi* (Luer, 1982) suggests that an ovary 2–3 mm long might have been articulated to a pedicel, the photograph in Escobar (1990) shows that *C. rodrigoi*, like *C. furculifera*, has an "epipedicel" 8–10 mm long below the ovary with a distinct articulation between the epipedicel and the pedicel, though the pedicels of *C. rodrigoi* are neither flattened nor Y-shaped. Indeed, Ortiz (1995) confirms the presence of a "neck" between the ovary and the pedicel in the Colombian *Condylago*.

Persistent pedicels are especially prominent in some of the groups treated as *Stelis* by Pridgeon and Chase (2001). They are found in *Pleurothallis* subgenera *Dracontea*, *Mystax*, *Rhynchopera*, and *Pleurothallis* sect. *Effusae* of subgenus *Specklinia* (Luer, 1986). Comparison with these related groups suggests that the stalk between the floral bract and the abscission layer of *Condylago* is the pedicel, and we have thus used "epipedicel" for the stalk between the abscission and the flower.

Luer (1987) stated that *Condylago* superficially resembles the widespread *Pleurothallis flexuosa* (Poepp. & Endl.) Lindl. of *Pleurothallis* sect. *Effusae* in features of plant, inflorescence, and flowers. The lips, however, are quite different. According to Pridgeon et al. (2001), molecular evidence showed *Condylago rodrigoi* to be placed near *Pleurothallis segoviensis* Rchb. f.; however, morphologically they are quite distinct by the set of features that define *Condylago* (see introduction). Geographically, *Pleurothallis segoviensis* ranges from Panama to Guatemala, but the genus *Condylago* seems to be restricted to Panama and Colombia and has not been reported from Costa Rica or further north. At the moment, the relationships within some groups of Pleurothallidinae remain unclear. We prefer to accept *Condylago* as a small, easily recognized group, rather than to consider it in the large and taxonomically unresolved genus *Stelis* s.l.

Key to the Species of *Condylago*

1a. Pedicels simple, not Y-shaped; sepals densely white-villose toward the apex; petals rhombic with decurrent basal lobes; callus of lip orbicular . . . . . *C. rodrigoi*

1b. Pedicels bifurcate, Y-shaped; sepals sparsely villose toward the apex; petals obovate-pandurate without decurrent basal lobes; callus of lip ovate . . . . . *C. furculifera*

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