

Rosibel, 115 m, 10°37'18.1"N, 84°31'17.6"W, bosque muy húmedo tropical, transición a basal, epífitas en árboles aislados de *Psidium guajava* en potreros, 14 diciembre 2005, *D. Bogarín* 2220, *F. Pupulin* & *E. Vargas* (JBL-Spirit, USJ). Cartago: Turrialba, Turrialba, Campus de la Universidad de Costa Rica, Sede Atlántico, 9°54'03"N, 83°40'04"W, 643 m, bosque muy húmedo premontano, epífitas en zonas verdes y jardines, sobre *Terminalia catappa* (Combretaceae), 20 diciembre 2004, *D. Bogarín* 1119 & 1120, *A. Karremans*, & *A. Prendas* (JBL-Spirit, USJ). Heredia: Sarapiquí, Horquetas, en jardín de Doña Otilia Vargas, sobre árbol de guayaba (*Psidium guajava*), 30 Diciembre 2004, *C. Ossenbach* 336 (JBL-Spirit, USJ, Fig. 18). Heredia: Sarapiquí. Horquetas, Buenos Aires, en jardines de la casa de Doña Otilia Vargas, 10°20'34.3"N, 83°57'32.5"W, 100 m, bosque muy húmedo tropical, epífita en *Citrus* spp., 12 abril 2008, *D. Bogarín* 4481 (JBL-Spirit). Limón: Siquirres, Siquirres, Guayacán, en potreros bajando el camino frente el bar Guayacán, en las orillas de la Quebrada Quebrador, 10°02'1.44"N, 83°32'13.5"W, 477 m, bosque muy húmedo tropical transición a premontano, epífita en *Psidium guajava* en potrero, 25 enero 2008, *D. Bogarín* 4051 & *A. Karremans* (JBL-Spirit). Limón: Siquirres, Florida, San Antonio, rivera del Río Reventazón, entre los ríos Blanco y Pascua, 10°02'38.7"N, 83°36'47"W, 650 m, bosque muy húmedo tropical transición a premontano, epífita en árboles de *Psidium guajava*, aislados en potreros, 2 abril 2008, *D. Bogarín* 4245, *R.L. Dressler*, *A. Karremans*, *A. Russell* & *R. Samuel* (JBL-Spirit).

Phenology: February to May and October to November.

Habitat and ecology: epiphytic in premontane wet forest along the Caribbean watershed between 100 and 650 m of elevation. Plants can be found growing in secondary vegetation, disturbed areas, gardens and pastures. The populations were found mainly on twigs of *Citrus* spp. (Rutaceae), *Psidium guajava* (Myrtaceae) and *Terminalia catappa* (Combretaceae).

Etymology: derived from the Latin *fascia*, "little bandage," in allusion to the characteristic bands of the spur.

This species belongs to section *Dendrophyllopsis*, characterized by the aphyllous condition of the plants. Because vegetative characters are reduced in the aphyllous species, the taxonomy of this group has been based largely on gross floral morphology. *Campylocentrum fasciola*

can be easily recognized by its spur, narrow at the base and wider at apex, with three longitudinal keels.

In Costa Rica, this species is restricted to the Caribbean watershed. It is distinguished from its relative, *C. multiflorum*, by the spur narrow at the base and wider at the apex (vs. spur wider at the base and progressively narrowing to the apex in *C. multiflorum*), with conspicuous longitudinal keels (vs. without keels), the midlobe of the lip truncate (vs. acute), and the cuspidate sepals (vs. acute or rounded in *C. multiflorum*).

Campylocentrum lankesteri was described by Oakes Ames in 1923 from the shores of the Reventazón River in the Atlantic lowlands of Costa Rica. Ames (1923) compared *C. lankesteri* with *Campylocentrum sullivanii* Fawc. & Rendle, a species described from Jamaica in 1909, stating that it "differs in the outline of the labellum which has the neurion less heavy." Later in 1937, in his treatment of the Orchidaceae for Standley's Flora of Costa Rica, Ames reduced *C. lankesteri* in synonymy under *Campylocentrum sullivanii*. An assessment of plants from the vicinity of Reventazón River in Turrialba (*D. Bogarín* 1119, JBL-spirit) together with a direct examination of the type specimen of *C. lankesteri* (*C. Lankester* 71, K), led us to support the previous inclusion of the former species under the synonymy of *C. fasciola* (Todzia, 1980; Pupulin, 2002; Dressler, 2003).

3. *Campylocentrum generalense* Bogarín & Pupulin, *sp. nov.* TYPE: COSTA RICA. San José: Pérez Zeledón, San Isidro de El General, Palmares, growing on *Citrus* sp. in disturbed area, 9°19'15"N, 83°39'44"W, 600 m, collected by Jorge Cambronero, flowered in cultivation in the garden of J. Cambronero at Palmares de San Isidro del General, February 2005, flowers in spirit, *D. Bogarín* 2130 (Holotype: JBL-spirit; Isotype: CR). Fig. 20–21.

Species *Campylocentro pachyrrhizo* (Rchb.f.) Rolfe *similis*, *inflorescentia congesta* (vs. *laxam*), *calcar labelli leviter trilobato* (vs. *integrum*) *sursum curvato* (vs. *deorsum curvatum*) *angustiore in base quam in apice prae-cipue differt*.

Acaulescent herb, a leafless cluster of roots. *Roots* flat, conspicuous, flexuous, glabrous, with rather sharply defined edges, produced from the cormlike body of the obsolescent stem, to 5 mm wide with the tips orange. *Inflorescence* 1 to many patent racemes, many flowered

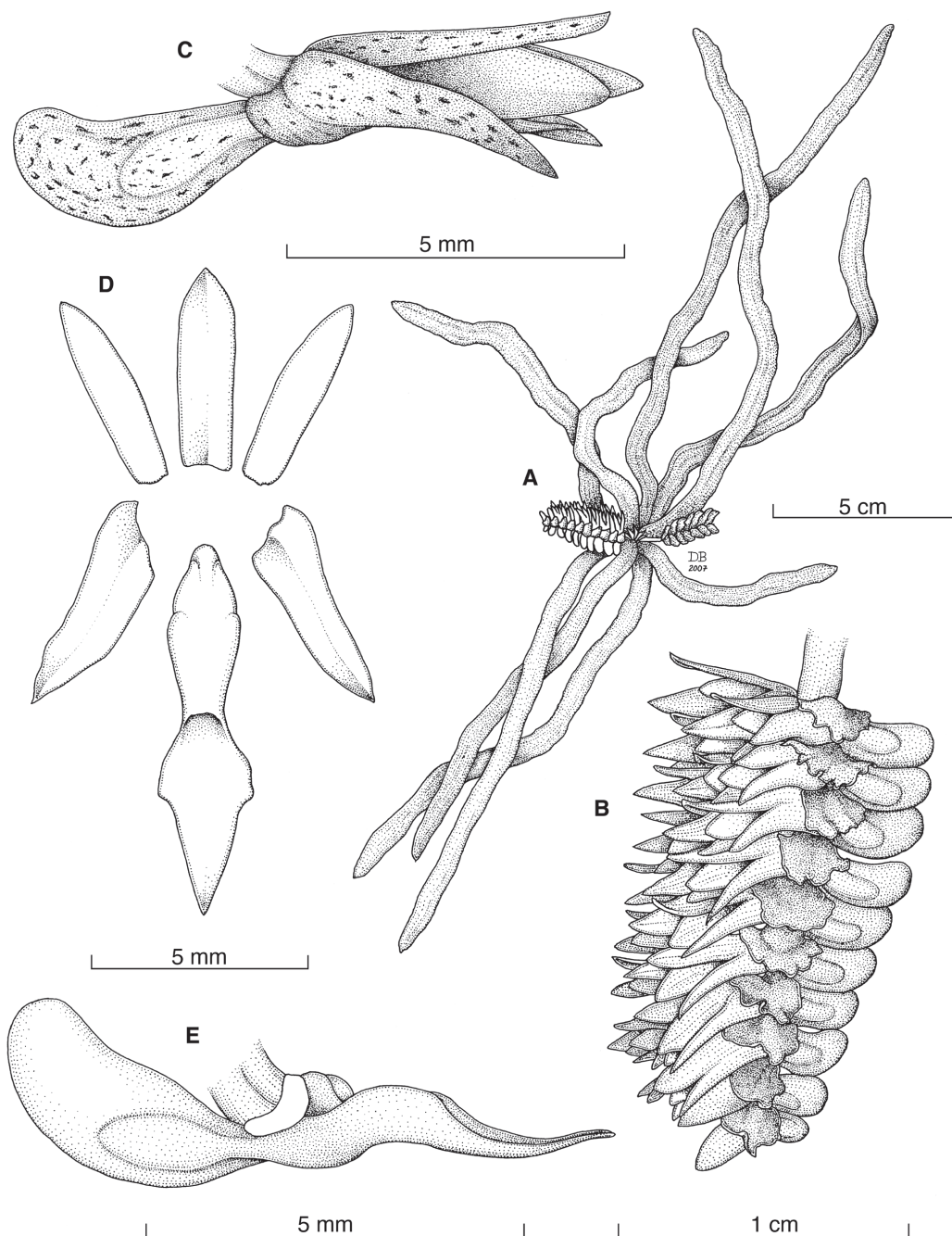


FIGURE 20. **A–E.** *Campylocentrum generalense* Bogarín & Pupulin, ined. **A**, habit; **B**, segment of the inflorescence; **C**, flower; **D**, dissected perianth; **E**, column and lip, lateral view. Drawn by D. Bogarín from *Bogarín 2130* (JBL-Spirit).

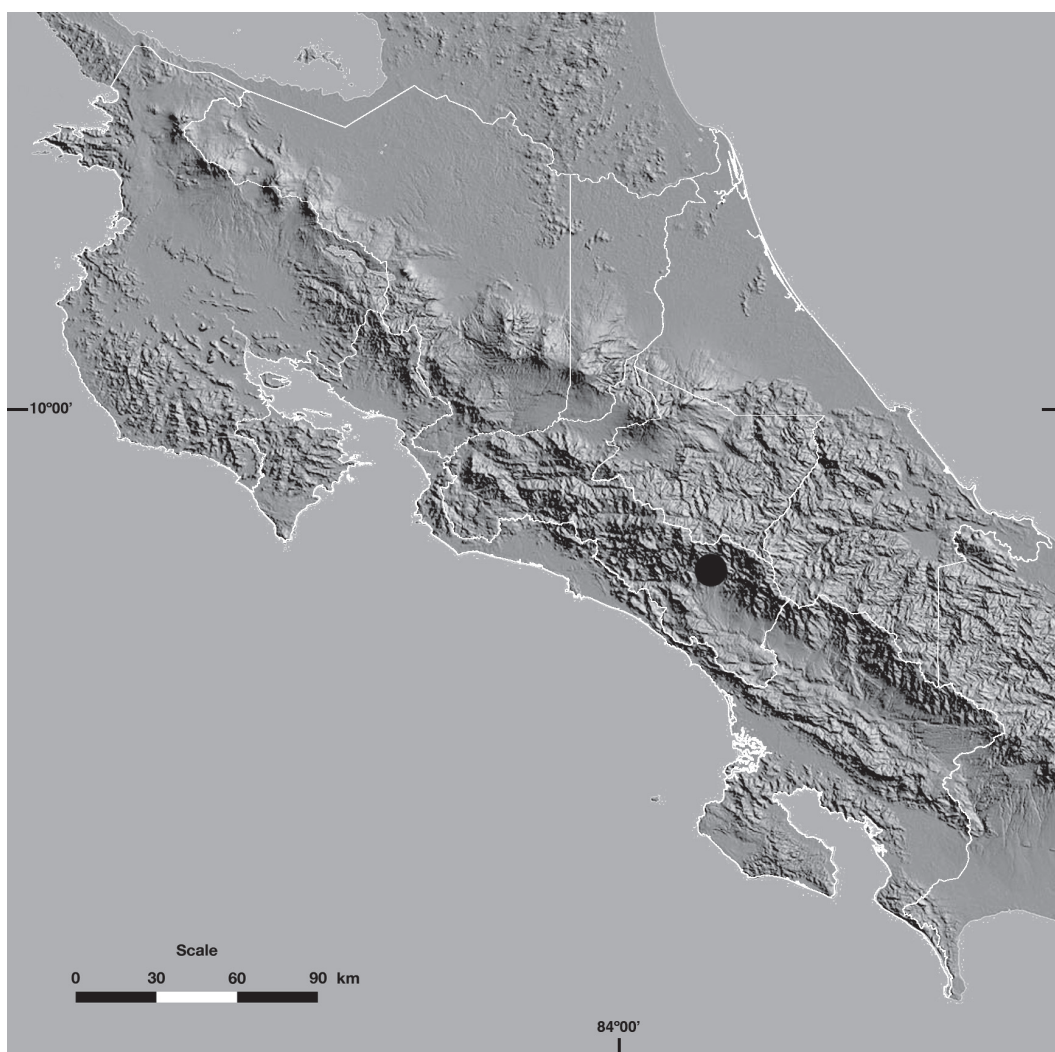


FIGURE 21. Distribution map of *C. generalense* in Costa Rica.

(to 12), congested, usually produced in pairs, with filiform, glabrous or scurfy peduncle, to 2.5 cm long; *floral bracts* conspicuous, covering the ovary, scarious, ovate, acute, the margins erose. *Ovary* less than 1 mm long, scurfy. *Flowers* small, to 8 mm long, distichous, orange to yellowish with yellowish spur. *Dorsal sepal* rectangular, acute, 4.2 x 1.5 mm. *Lateral sepals* ovate to broadly ovate, acute, 4.2 x 1.8 mm. *Petals* elliptic, rectangular, acute, about 4.1 x 1 mm. *Lip* 3-lobed, the lateral lobes obtuse, small comparing with the midlobe, the midlobe triangular, acute, with pubescent callous extended at the base into a curved, slightly three-lobed, saccate, conspicuous, bulbous spur, narrow at the base, 1 mm, and wide at the apex 2 mm, curved upward the lip about 8 mm long including the

spur, 2 mm wide. *Column* very short, with terminal anther, about 1 mm long. *Pollinia* 2, ovoid, on a short hyaline stipe; viscidium elliptic. *Anther cap* cucullate, ellipsoid, 2-celled.

Distribution: only known from Costa Rica.

Etymology: named after the type locality of El General Valley in San Isidro de El General, Pérez Zeledón, located in the southern Pacific side of San José province, Costa Rica.

Habitat and ecology: epiphytic in *Citrus* spp. trees in premontane wet forest in El General Valley in the Pacific lowlands of the Cordillera de Talamanca at 600 m of elevation.

Phenology: January to February.

Campylocentrum generalense is similar to *Campylocentrum pachyrrhizum*, a species described by H. G. Reichenbach from Cuba.

They are the only species of *Campylocentrum* which produce conspicuously flat roots with rather sharply defined edges from the leafless, obsolescent stem, and present conspicuous floral bracts that cover the ovary. *Campylocentrum generalense* differs from *C. pachyrrhizum* in having a congested inflorescence (vs. loose), the spur of the lip curved upward (vs. curved downward), narrow at base and wider at apex (vs. entire), and obscurely 3-lobed (vs. unlobed). Among the species of *Campylocentrum* in Costa Rica, it is the only aphyllous species with conspicuously flattened roots.

A sketch of the type specimen of *C. pachyrrhizum* in Reichenbach Herbarium at Vienna shows a flower with an unlobed spur curved downward (Wright 3207, W-Rchb Orch). Also the drawing of a Venezuelan voucher published by Dunsterville and Garay (1959), shows a specimen with lax inflorescence and flowers that present a cylindric, unlobed, downward curved spur. The same features are shown in the pictures of specimens from Florida (U.S.A) provided by Luer (1972: 275) and Brown (2002: 51), especially the lax inflorescences and the downward curved spur.

The presence of *C. pachyrrhizum* in Costa Rica has not been documented so far. Mora-Retana and García (1992) and Dressler (1993b) listed this species for Costa Rica without any specific reference to a voucher. Dressler (pers. comm.) observed a leafless and flowerless specimen of *Campylocentrum* with flat roots in Milla 28, Finca Waldeck in Siquirres, along the Caribbean plains of Limón province, but no voucher was prepared at that time. In absence of voucher, we are unable to determine if this specimen corresponds to *C. generalense* or to a true *C. pachyrrhizum*. See excluded species for further discussion.

4. *Campylocentrum micranthum* (Lindl.) Maury, J. Bot. (M. Louis Morot) 3: 273. 1889. Fig. 22–24.

Basionym: *Angraecum micranthum* Lindl., Ann. Bot. Syst. 6: 901. 1864. TYPE: SURINAM. *G. Loddiges s.n.* (Holotype: K–L). Homotypic synonyms: *Aeranthus micranthus* (Lindley) Rchb.f., Ann. Bot. Syst. 6: 901. 1864.

Epidorchis micrantha (Lindl.) Kuntze, Revis. Gen. Pl. 2: 660. 1891.

Mystacidium micranthum (Lindl.) T. Durand & Schinz, Consp. Fl. Afr. 5: 54. 1895.

Campylocentrum micranthum Rolfe, Orchid Rev. 11(128): 245. 1903. *isonym*.

Heterotypic synonym: *Campylocentrum peniculus* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 17: 91. 1922. TYPE: PANAMA. auf Hügeln bei Panama City, C. W. Powell 184 (Holotype: B†; Lectotype: selected by Christenson (1991), AMES; Isolectotype MO, photograph).

Pendent, rarely suberect *herb*, with terete, leafy stem to 75 cm long. *Roots* fleshy, up to 30 cm long, less than 3 mm in diameter, white to greenish, with green tips. *Leaves* many (to 15), elliptic-oblong to suborbicular, obtuse or emarginate, unequally 2-lobed at the apex, conduplicate, coriaceous to fleshy, distichously arranged, to about 7.5 x 2–3 cm, articulate with the sheath envolving the stem, the sheaths lacerate at apex. *Inflorescence* a many-flowered (to 13) raceme usually shorter than the leaves, produced along the stem, opposite to the leaves, the flowers arranged distichously on the rachis, about 3.5 cm long; *pedicel* inconspicuous, less than 0.5 mm long; *floral bracts* subquadrate or triangular, scarious. *Ovary* cylindric, less than 2 mm long, covered with sparsely minute trichomes. *Flowers* small, about 1.3 cm in length, distichous, white with greenish spur. *Dorsal sepal* subequal to the lateral sepals, elliptic, oblong to linear-elliptic, lanceolate, acute, 5.5 x 1.5 mm. *Lateral sepals* elliptic-oblong, lanceolate, rectangular, acute, concave towards the base, 8.3 x 1.6 mm. *Petals* elliptic, lanceolate, acute, 5.6 x 1.5 mm. *Lip* 3-lobed; the lateral lobes triangular, acute, less than 1 mm long, clasping the column; the midlobe lanceolate, triangular, strongly acute, larger than lateral lobes, slightly conduplicate, concave, with a hairy callus along the midrib, extended at the base into a cylindric, clavate, porrect, down-curved spur, sometimes obscurely 3-lobed, more or less continuous with the lip, larger than the blade of the lip (to 5 mm long, 2 mm wide); entire lip 13 mm long including the spur, 2.3 mm wide between the lateral lobes. *Column* very short, to 1 mm long, with terminal anther. *Pollinia* 2, ovoid, on short, ligulate, hyaline stipe; viscidium elliptic. *Anther cap* subquadrate-cucullate, 2-celled.

Distribution: Belize to Brazil and the Antilles.

Additional material examined: COSTA RICA. Cartago: Turrialba, Parque Central de Turrialba, ca. 600 m, bosque muy húmedo premontano, epífita, planta colectada por