

## NEW TAXA IN COSTA RICAN *LEPANTHES* (ORCHIDACEAE)

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**Abstract.** Two new orchid species and one subspecies are described and illustrated in the genus *Lepanthes* from Costa Rica: *Lepanthes rafaeliana*, *L. spadarii*, and *L. johnsonii* subsp. *costaricensis*. Ecological and taxonomic notes are provided for each taxon.

**Keywords:** Costa Rica, *Lepanthes*, Orchidaceae, taxonomy.

The genus *Lepanthes* Sw. includes in Costa Rica about 90 species (C. A. Luer, in prep.), most of which (about 75%) are endemic. However, recent collections done in the country and the survey of historical material kept at the herbarium of the Escuela de Biología, Universidad de Costa Rica (USJ), as well as of the extensive living collections maintained at Jardín Botánico Lankester, revealed the existence of hitherto-undescribed taxa pertaining to *Lepanthes*. Preceding the publication of the treatment of this genus for the *Manual de la flora de Costa Rica*, the following Costa Rican taxa are therefore proposed as new to science.

***Lepanthes rafaeliana*** Pupulin, *sp. nov.* TYPE: COSTA RICA. San José: Ojo de Agua, Carretera Interamericana Sur, 14 April 1967, H. Hesperheide *s.n.* (Holotype: USJ!). Fig. 1.

*Herba epiphytica parva, racemo congesto disticho folio elliptico longiore, sepalo postico ovato-lanceolato, attenuato, sepalis lateralibus connatis, lanceolatis, acuminatis, sepalorum marginibus ciliatis, petalorum lobo superiore lineari-subfalcato, longicaudato, lobo inferiore subnullo, rotundato, labello subquadrato, abrupte brevicaudato.*

Plant epiphytic, small, cespitose, suberect, to 7 cm tall. Roots slender, glabrous. Ramicauls slender, 3.5–5.0 cm long, enclosed by 7–9 lepanthiform, minutely ciliate sheaths with dilated, ciliated ostia. Leaf thinly coriaceous, elliptic to ovate-elliptic, minutely tridenticulate at apex, 16–20 mm long, 5–8 mm wide, cuneate at the base into a petiole about 1 mm long. Inflorescence a congested, distichous, successively many-flowered raceme to about

30 mm long, produced behind the leaf by a filiform peduncle to 18 mm long. Floral bracts 2 mm long, sparsely muriculate; pedicel 1.5 mm long; ovary 2 mm long, winged. Flowers rather large, with yellowish sepals striped by red, rose-purple petals, the lip and column yellowish. Dorsal sepal ovate-lanceolate, attenuate, sparsely ciliate to muriculate, 6 mm long, 2.3 mm wide, 5-veined, connate to the lateral sepals for 0.5 mm. Lateral sepals narrowly lanceolate, acuminate, ciliate, 5 mm long, 1.3 mm wide, connate 3.5 mm. Petals transversely bilobed, 3.5 mm long, 0.8 mm wide at the base, the upper lobes linear-attenuate, subfalcate, long-caudate, 6 mm long, 0.4 mm wide, the lower lobes triangular, rounded at apex, 0.6 mm long, 0.9 mm wide. Lip subquadrate, appressed to the column, apically abruptly constricted into a short tail, 0.6 mm long, 0.4 mm wide, the body apparently connate to the the column base. Column stout, 1.5 mm long, the anther dorsal, the stigma apical. Anther cap cordate, 2-celled.

**Distribution:** only known from Costa Rica.

**Ecology:** epiphytic in montane cloud forest at about 2800 m on the Cordillera de Talamanca.

**Etymology:** named after Rafael Lucas Rodríguez C., who first depicted the species in 1967.

This species is known only by the type specimen, including two ramicauls with leaves and inflorescences and two immature buds, and the accurate illustration by Rafael Lucas Rodríguez C. (#494), a copy of which is preserved at the herbarium of the Escuela de Biología of the Universidad de Costa Rica, in San José. Apparently, no subsequent collection has been

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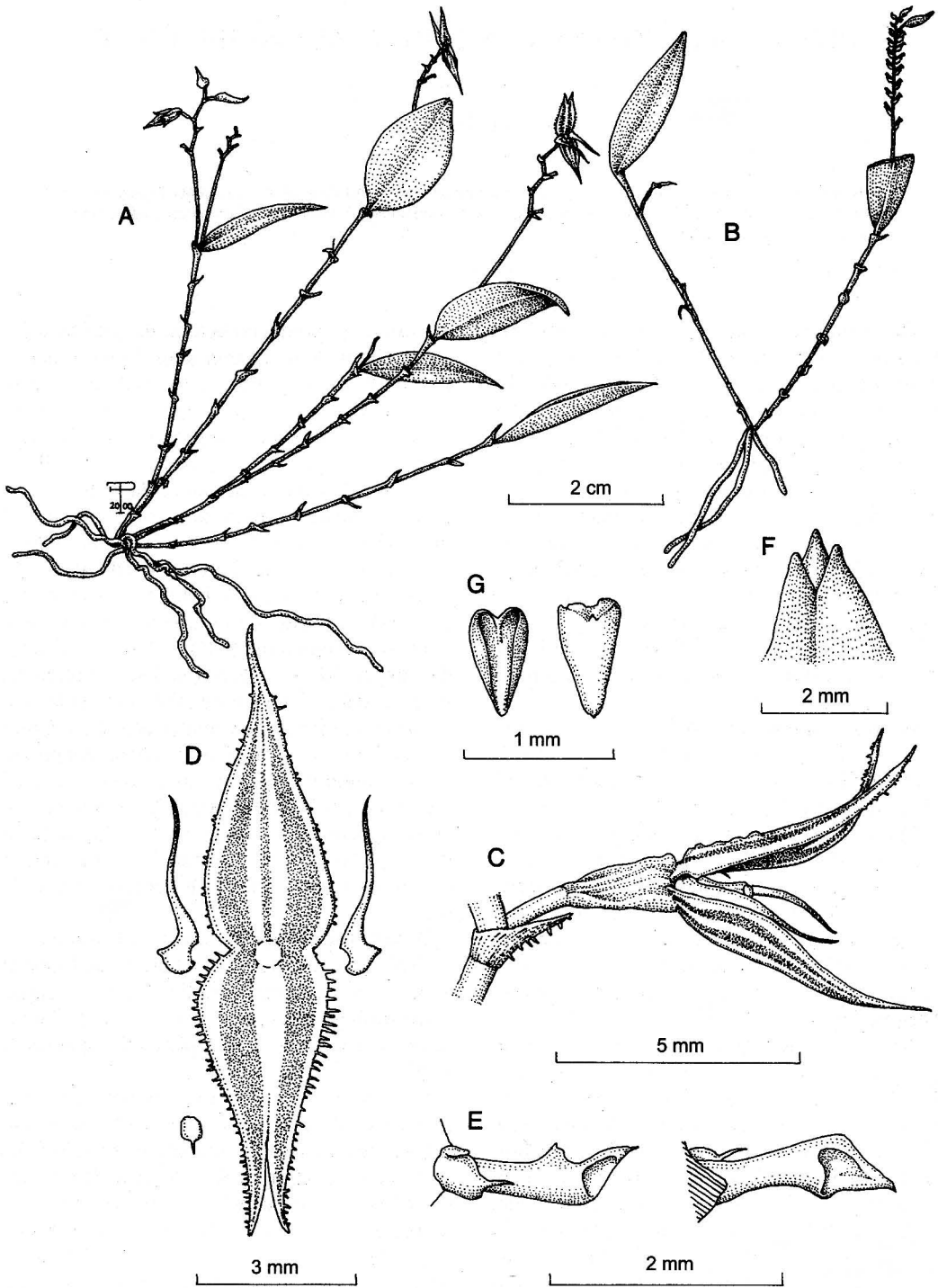


FIGURE 1. *Lepanthes rafaiana* Pupulin. A-B, habit; C, flower; D, dissected perianth; E, column (lateral and three-quarter view); F, apex of leaf; G, anther cap. Illustration voucher: *H. Hesperheide s.n.* (USJ). A, C, E-G, from the original drawing by R. L. Rodríguez; B, drawn from the holotype; D, modified from the original drawing by R. L. Rodríguez.

made. The above description and the accompanying illustration were prepared from the actual material kept at USJ and inking a copy of Rodríguez's original drawing.

*Lepanthes spadarii* Pupulin, *sp. nov.* TYPE: COSTA RICA. San José: Pérez Zeledón, San Ramón Norte, trail to Cerro Pelón, near the summit of the mountain, 1640 m, 3 May 2000, *F. Pupulin, M. L. Spadari, J. Cambroner, V. Juarez-Pérez & K. Granado 2372* (Holotype: USJ!; Isotype: SEL-spirit!). Fig. 2.

*Herba epiphytica parva, racemo congesto disticho folio elliptico brevior, sepalis anguste lanceolatis, acutis, petalorum lobo superiore subnullo, lobo inferiore lineari-subfalcato, longicaudato, labello obcuneato-flabellato, appendice externa hemisphaerica minuta.*

Plant epiphytic, small, caespitose, suberect to pendent, to 7 cm tall. Roots slender, glabrous. Ramicauls slender, 2.0–4.5 cm long, enclosed by 5–7 glabrous, lepanthiform sheaths with dilated ostia. Leaf thinly coriaceous, elliptic, minutely tridenticulate at apex, 20–25 mm long, 7–9 mm wide, cuneate at the base into a petiole about 1 mm long. Inflorescence a congested, distichous, successively many-flowered raceme to 15 mm long, produced behind the leaf by a filiform peduncle to 11 mm long. Floral bracts 1 mm long, glabrous; pedicel 1.5 mm long; ovary 1 mm long. Flowers rather large, with yellowish brown sepals, red petals, the lip red with yellow apex, and rose-purple column. Dorsal sepal narrowly lanceolate, acute, 4.5 mm long, 1.2 mm wide, 3-veined, connate to the lateral sepals for 0.5 mm. Lateral sepals narrowly lanceolate, acute, oblique, 5 mm long, 1.2 mm wide, connate 1 mm. Petals microscopically pubescent, transversely bilobed, 3 mm long, 0.3 mm wide, the upper lobes vestigial, subcircular, 0.3 mm long, 0.3 mm wide, the lower lobes linear-attenuate, subfalcate, long-caudate, 2.7 mm long, 0.2 mm wide. Lip obcuneate-flabellate, appressed to the column, bilobed at apex, 0.9 mm long, 0.3 mm wide, the apical margins microscopically verruculose, the body connate to the column above the base, the appendix extern, hemispheric, pubescent. Column stout, 1.5 mm long, the anther dorsal, the stigma apical. Pollinia 2, clavate.

**Paratypes:** COSTA RICA. Same locality, 3 May 2000, *F. Pupulin, M.L. Spadari, J. Cambroner, V. Juarez-Pérez & K. Granado 2373* (USJ!).

**Distribution:** only known from Costa Rica.

**Ecology:** epiphytic on trunks and branchlets of understory trees in submontane moist forest at 1500–1600 m on the Pacific watershed of Cordillera de Talamanca.

**Etymology:** named in honor of M. Laura Spadari of Milan, Italy, who discovered the species near the summit of Cerro Pelón.

This species is easily recognized among Costa Rican *Lepanthes* for the long-caudate lower lobes of the petals and the very reduced upper lobes. Moreover, the entire, flabellate lip with external appendix of *L. spadarii* is unique among the species of *Lepanthes* in the country.

*Lepanthes johnsonii* subsp. *costaricensis* Pupulin, *subsp. nov.* TYPE: COSTA RICA. Cartago: Orosi, road to the Parque Nacional Tapantí, about 1 km before the entrance of the Park, 1160 m, epiphytic on a short tree along the roadside, 6 February 2000, *F. Pupulin 1979* (Holotype: USJ!). Fig. 3.

*A forma typica sepalis lateralibus multo majoribus non caudatis differt.*

Plant epiphytic, very small, caespitose, erect to pendent, to 2.5 cm tall. Roots thick, glabrous, 1.5–1.8 mm diam. Ramicauls slender, 0.6–1.2 cm long, enclosed by 2–3 glabrous, brown sheaths. Leaf thinly coriaceous, elliptic, obtuse, minutely tridenticulate at apex, 7–8 mm long, 4 mm wide, cuneate at the base into a petiole about 1 mm long. Inflorescence 1–2 per growth, produced singly behind the leaf at any new growth season, a loose, distichous, successively few-flowered (to 11 flowers) raceme to 32 mm long; filiform peduncle to 15 mm long, covered at the base by a tubular sheath; rhachis fractiflex. Floral bracts widely ovate, 0.8 mm long, 0.7 mm wide, glabrous; pedicel 1.8 mm long; ovary 1 mm long. Flowers large for the genus, with purple-brown sepals, petals red-purple, the lateral lobes of the lip red-purple with yellow apex, and red-purple column. Dorsal sepal very broadly triangular-ovate, contracted at apex into an acuminate tail 4 mm long, 8.5 mm long including the tail, 5.5 mm wide, 3-veined, connate to the lateral sepals for 2.5 mm. Lateral sepals connate for three quarters of their length into a broadly ovate, bifid lamina with acute apices, 11 mm long, 8.5 mm wide, connate to the dorsal sepal for 2.5 mm. Petals transversely bilobed, 0.8 mm long, 1.9 mm wide, the upper lobes obliquely triangular, 0.6 mm long, 1.2 mm wide, the lower lobes smaller, hemi-circular, 2.7 mm long, 0.2 mm

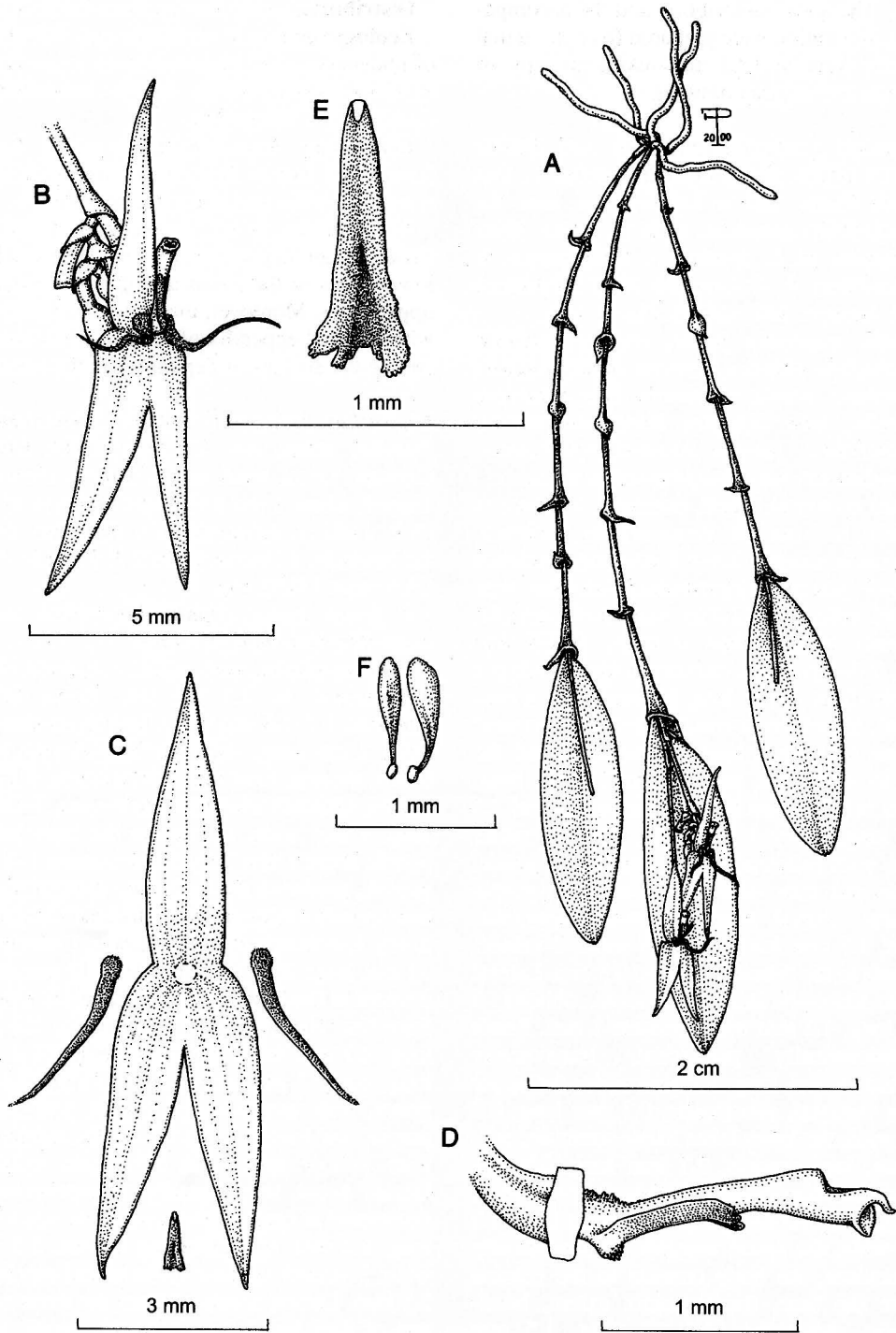


FIGURE 2. *Lepanthes spadarii* Pupulin. A, habit; B, flower; C, dissected perianth; D, column and lip (lateral view); E, lip (adaxial view); F, pollinia. Illustration voucher: F. Pupulin, M. L. Spadari, J. Cambronero, V. Juarez-Pérez & K. Granado 2372 (USJ). Drawn from the holotype.

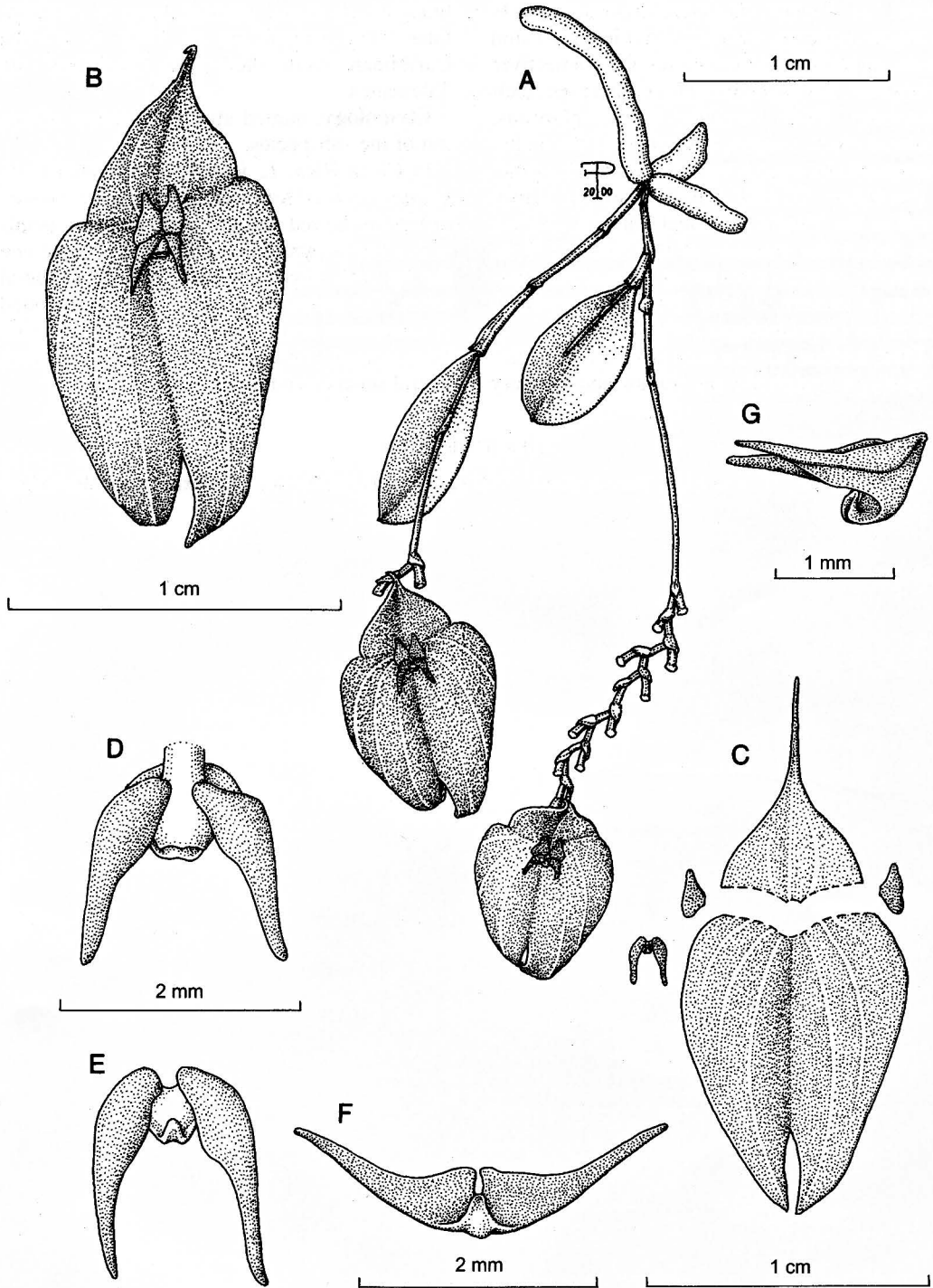


FIGURE 3. *Lepanthes johnsonii* subsp. *costaricensis* Pupulin. A, habit; B, flower; C, dissected perianth; D, column and lip (adaxial view); E, lip in natural position (adaxial view); F, lip flattened (adaxial view); G, lip (lateral view). Illustration voucher: *F. Pupulin* 1979 (USJ). Drawn from the holotype.

wide. Lip 3-lobed, the lateral blades narrowly triangular-falcate, acute, 1.6 mm long, 0.7 mm wide, appressed to the column, the connectives triangular, the appendix oblong, incurved, cleft abaxially from revolute sides, glabrous. Column short, winged, 0.8 mm long, the anther subapical, the stigma ventral. Pollinia 2, ovoid.

**Paratype:** COSTA RICA. Cartago: Orosi, road to the Parque Nacional Tapantí, about 1 km before the entrance of the Park, 1170 m, epiphytic on short trees along the roadside, bordering a pasture, 7 May 2000, *F. Pupulin & Curso de Orquideología 2409* (USJ!).

**Distribution:** known only from Costa Rica.

**Ecology:** epiphytic on trunks and primary

branches of short, exposed trees in submontane, very wet forest at 1200 m on the Caribbean watershed of Cordillera de Talamanca.

**Etymology:** named after the country of origin of the subspecies.

In Costa Rica, *L. johnsonii* is related to *L. guanacastensis* Ames & C. Schweinf., which differs in the red and green flowers, the petals with a fleshy pyramidal callus in the center, and the lip with large, obliquely triangular lateral lobes. The typical form of the species, as found in Guatemala and Mexico (Salazar Chavez and Soto-Arenas, 1996), has shorter and narrower lateral sepals terminating in short tails.

#### LITERATURE CITED

- SALAZAR CHÁVEZ, G., AND M. A. SOTO-ARENAS. 1996. El género *Lepanthes* Sw. en México. *Orquídea* (Méx.) 14: 1–231.