3. **Lepanthes pulcherrima** Endrés ex Bogarín & Pupulin, *sp. nov.* TYPE: COSTA RICA. Alajuela: San Ramón, Santiago, finca of Jesús Salas Jiménez, mountains toward the towers of Berlín, 10°02'21"N 84°12'02"W, 1300 m, epiphytic in old tress along coffee plantations, *F. Pupulin 7159, E. Salas-Pupulin & Jesús Salas*, 14 September 2008 (Holotype: JBL-spirit) Figs. 5–7.

A Lepanthe jimenezii Schltr. *rhachidi pubescenti, apicibus sepalorum caudatis, sepalis luteis, dorsali macula rubra in base notato, sepalis lateralibus ellipticis connatis minus quam 1 mm, petalis aurantiacis rubrofasciatis basaliter erubescentibus marginibus glabris lobo superno late ovato infernoque lineari differt*.

Plant epiphytic, caespitose, small, up to 6 cm tall. *Roots* slender, flexuous, to 1.5 mm in diam. *Ramicauls* slender, erect, to 4 cm long, enclosed by 3–5 hirsute, lepanthiform sheaths, the ostia ciliate and obliquely dilated. *Leaves* erect or suberect, coriaceous, elliptic to orbicular, somewhat lenticulate, conduplicate, obtuse, retuse,

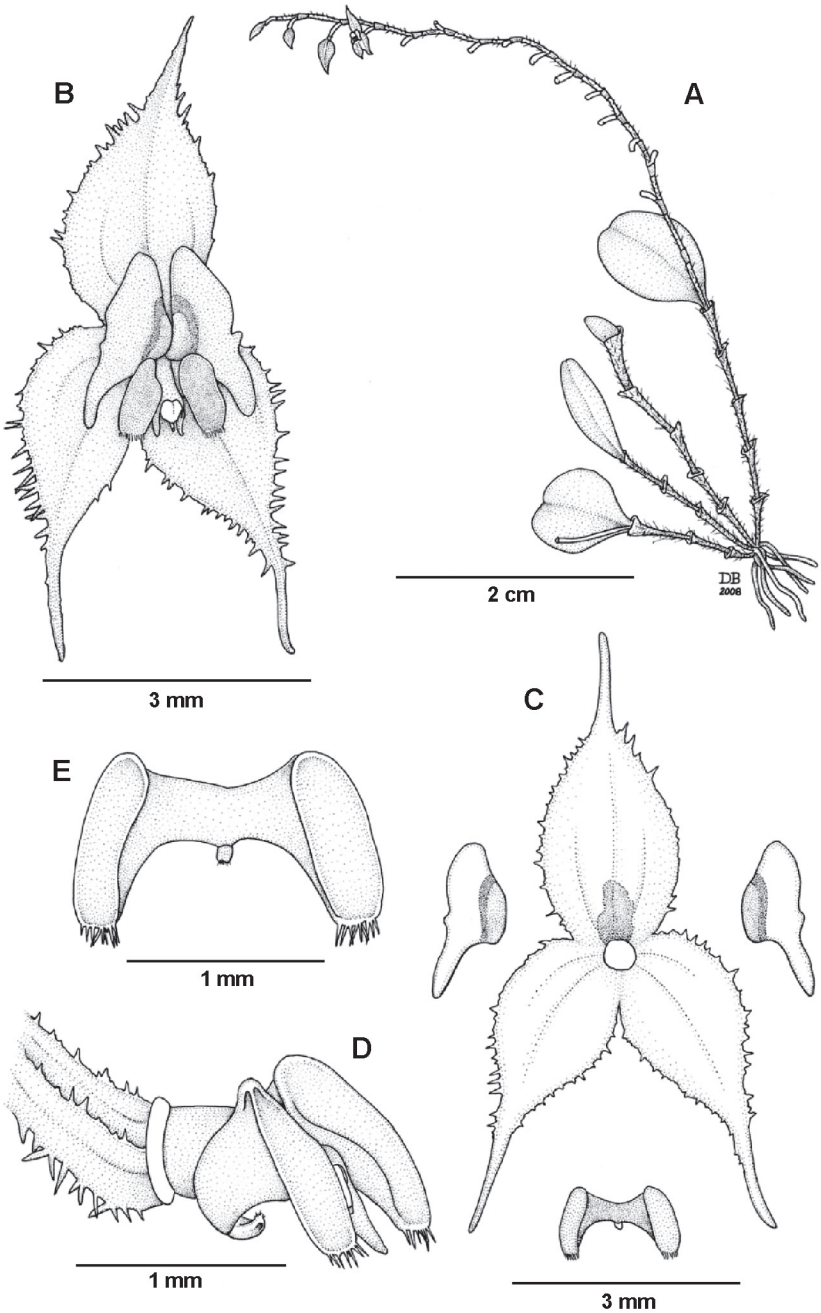

FIGURE 5. *Lepanthes pulcherrima* Endrés ex Bogarín & Pupulin. **A**, habit; **B**, flower; **C**, dissected perianth; **D**, ovary, column, and lip, lateral view; **E**, lip, spread. Drawn from the holotype by Diego Bogarín.

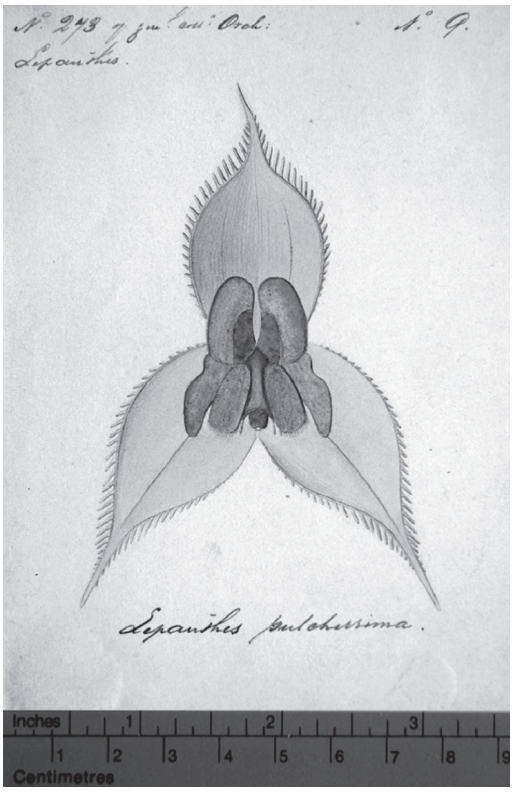

FIGURE 6. *Lepanthes pulcherrima* Endrés ex Bogarín & Pupulin. Sketch of a paratype by A. R. Endrés (*Endrés 273*, W *Rchb-Orch 07589*). Reproduced with permission of the Herbarium, Naturhistorisches Museum, Wien.

0.8–1.5 × 0.6–0.9 cm, the rounded base narrowing into a petiole 1 mm long. *Inflorescence* racemose, distichous, pubescent, successively flowered, borne above the leaf, to 4.5 cm including the peduncle to 1.5 cm. *Floral bracts* 1 mm, ciliate, spiculate. *Pedicels* 1 mm long, persistent. *Ovary* 1 mm long, spiculate-muriculate. *Flowers* with the sepals yellowish, the dorsal sepal with a reddish spot at base, the petals orange to red-scarlet basally pink spotted. *Dorsal sepal* elliptic, caudate, ciliate or denticulate to serrulate, dorsally carinate-muriculate, connate to the lateral sepals for about 0.5 mm, 4.0 × 1.7 mm. *Lateral sepals* elliptic to ovate, caudate, ciliate or denticulate to serrulate, dorsally carinate–muriculate, connate to 0.5 mm, the apices made up slender tails (to 2 mm long), 4.0 × 1.7 mm. *Petals* transversely bilobed, entire, 2 × 1 mm, the upper lobe ovate to wide oblong, rounded, the lower lobe smaller than the upper lobe, linear. *Lip* bilobate, adnate to the column, the blades elliptic to oblong with rounded ends and ciliate at apex, 1.2 × 1.0 mm, he connectives cuneate, to 0.5 mm long, embracing but do not hide the column, the body oblong, connate to the base of the column, the appendix small, rounded, ciliate. *Column* cylindric, 1 mm long, with two apical arms, the anther dorsal, the stigma ventral. *Pollinia* two, ovoid.

Distribution: Costa Rica and Panama.

Habitat: plants grow epiphytic in secondary vegetation in lower montane rain forest in Tilarán range in Costa Rica and Talamanca range in western Panama.

Etymology: from the Latin *pulcher*, "lovely," in allusion to the beautiful flowers of this species. This name was proposed by Endrés, however it had not been validly published until now.

Paratypes: COSTA RICA. (Alajuela:) South

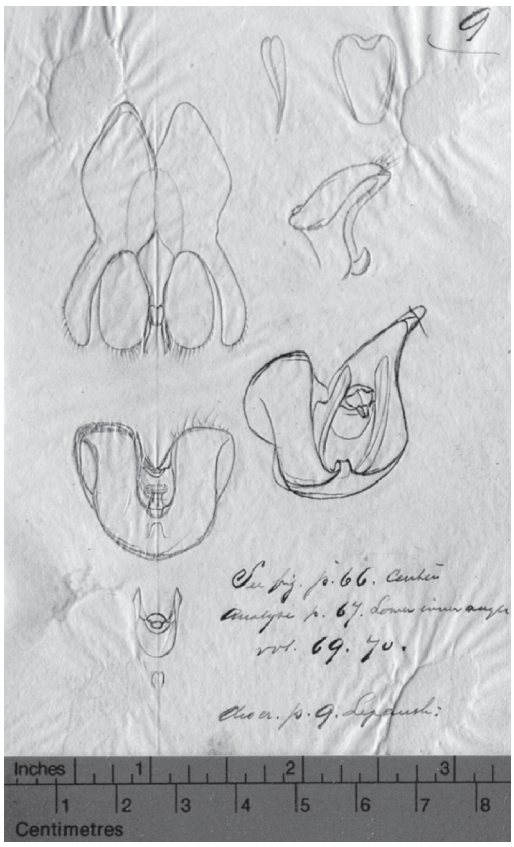

FIGURE 7. *Lepanthes pulcherrima* Endrés ex Bogarín & Pupulin. Sketch of a paratype by A. R. Endrés (*Endrés* 273, W *Rchb-Orch 38644*). Reproduced with permission of the Herbarium, Naturhistorisches Museum, Wien.

West of San Ramón, rainy season, *A. R. Endrés 273* (W *Rchb-Orch* 07859, drawing; W *Rchb-Orch 36239*, drawing; W *Rchb-Orch 38644*, drawing, W *Rchb-Orch 38643*, description); [without collecting data]: *A. R. Endrés s.n.* (W *Rchb-Orch* 41417). Sin datos de recolecta, una planta decomisada por el MINAE, floreció en cultivo en el Jardín Botánico Lankester, No. Acceso JBL-01304, 14 Julio 2006, *D. Bogarín 2942* (JBL-spirit). PANAMA. Bocas del Toro: Culebra, collected by Beni and cultivated by Steve & Marjorie Sarner, N. 862, Boquete, Panamá, flowered in cultivation 19 Diciembre 2008, *D. Bogarín 5992* (JBL-spirit).

This species is distinguished from its closest relatives, *L. caroli-lueri* and *L. jimenezii*, by the pubescent rachis, the lateral sepals yellow, connate less than 1 mm, and the dorsal sepal yellow, with a small reddish spot at the base. The petals are glabrous, with the upper lobe ovate and the lower lobe linear; they are orange, with the base pink, surrounded with a scarlet-red stripe. The connectives embrace the column but the lip blades do not hide it, while in *L. caroli-lueri* and *L. jimenezii* they completely cover the column (see key below).

Key to the species of the *Lepanthes jimenezii* group

1. Inflorescence glabrous; sepals with short tails; petals ciliate, with the upper lobe narrowly oblong . . . *L. jimenezii*
1. Inflorescence pubescent; sepals with ling tails; petals glabrous, with the upper lobe broadly oblong 2
2. Margin of sepals irregularly denticulate; lateral sepals connate ca. 2 mm; lower lobe of the petals oblong . . . . . *L. caroli-lueri*
2. Margin of sepals ciliate; lateral sepals connate <1 mm; lower lobe of the petals linear. . . . . *L. pulcherrima*

Literature Cited

Blaxter, M. L., B. Elsworth, and J. Daub. 2004. DNA taxonomy of a neglected animal phylum: an unexpected diversity of tardigrades. Proc. Roy. Soc. London, Ser. B, Biol. Sci. 271(4): S189–192.

Dayrat, B. 2005. Towards integrative taxonomy. Biol. J. Linn. Soc. 85: 407–415.

Dressler, R. L., and D. Bogarín. 2007. A new and bizarre species in the genus *Condylago* (Orchidaceae: Pleurothallidinae) from Panama. Harvard Pap. Bot. 12(1): 1–5.

Ebach, M. C., and C. Holdrege. 2005. More taxonomy, not DNA barcoding. BioScience 55(10): 822–823.

Hajibabaei, M., D. H. Janzen, J. M. Burns, W. Hallwachs, and P. D. N. Hebert. 2006. DNA barcodes distinguish species of tropical Lepidoptera. Proc. Natl. Acad. Sci. U.S.A. 103: 968–971.

Hebert, P. D. N, and T. R. Gregory. 2005. The promise for DNA barcoding for taxonomy. Syst. Biol. 54(5):852–859.

Janzen, D. H., M. Hajibabaei, J. M. Burns, W. Hallwachs, E. Remigio, and P. D. N. Hebert. 2005. Wedding biodiversity inventory of a large and complex Lepidoptera fauna with DNA barcoding. Philos. Trans., Ser. B 360(1462): 1835–1845.

Lahaye, R., M. van der Bank, D. Bogarín, J. Warner, F. Pupulin, G. Gigot, O. Maurin, S. Duthoit, T. G. Barraclough, and V. Savolainen. 2008. DNA Barcoding the Floras of Biodiversity Hotspots. Proc. Natl. Acad. Sci. U.S.A. 105: 2923–2928.

Luer, C. A. 1987. New *Lepanthes* species from Costa Rica and Panama. Lindleyana 2: 185–217.

———. 2003. *Lepanthes*. Pages 216–255 in B. E. Hammel, M. H. Grayum, C. Herrera, and N. Zamora, eds., *Manual de Plantas de Costa Rica. Volumen III: Monocotiledóneas (Orchidaceae-Zingiberaceae)*. Monogr. Syst. Bot. Missouri Bot. Gard. 93.

Ossenbach, C., F. Pupulin and R. L. Dressler. 2007. Orquídeas del Istmo Centroamericano: Catálogo y Estado de Conservación/Orchids of the Central American isthmus: Checklist and Conservation Status. Editorial 25 de Mayo, Costa Rica.

Pupulin, F. 2001. New taxa in Costa Rican *Lepanthes* (Orchidaceae). Harvard Pap. Bot. 6(1): 289–294.

Pupulin, F., and D. Bogarín. 2004. Two new species of *Lepanthes* (Orchidaceae: Pleurothallidinae) from Costa Rica. Kew Bull. 59: 559–563.

———. 2007. A second species of *Restrepiella* (Orchidaceae: Pleurothallidinae). Willdenowia 37: 323–329.

Pupulin, F., G. A. Rojas, and J. D. Zuñiga. 2007. Three new species of *Acianthera* (Orchidaceae: Pleurothallidinae) from Costa Rica. Harvard Pap. Bot. 12(1):155–162.

Pupulin, F., D. Bogarín, and D. Jiménez. 2009. New species and records in Mesoamerican *Lepanthes*. Orchid Digest. 73: 136–145.

Schlechter, R. 1923. Beiträge zur Orchideenkunde von Zentralamerika. II Additamenta ad Orchideologiam Costaricensem. IV Orchidaceae novae et rariorum collectorum variorum in Costa Rica collectae. Repert. Spec. Nov. Regni Veg. Beih. 19: 281.