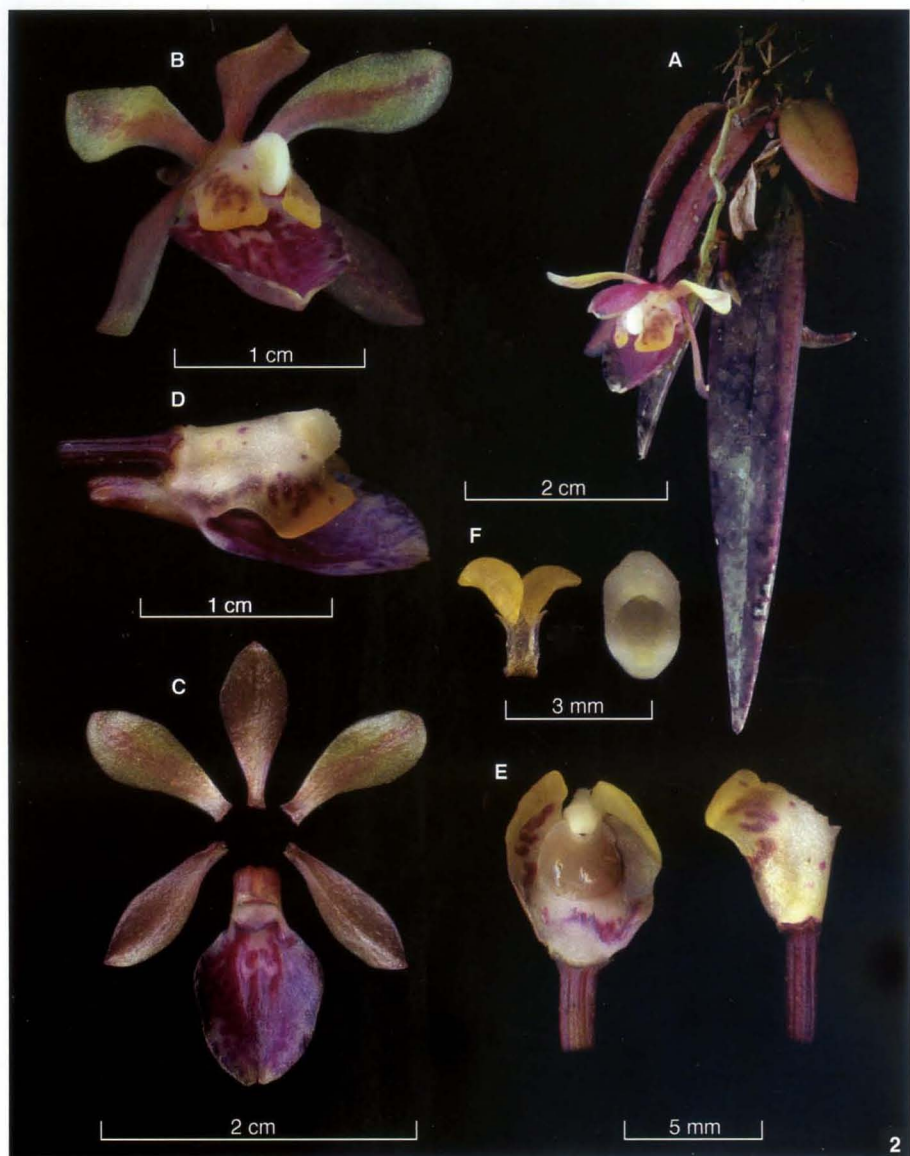


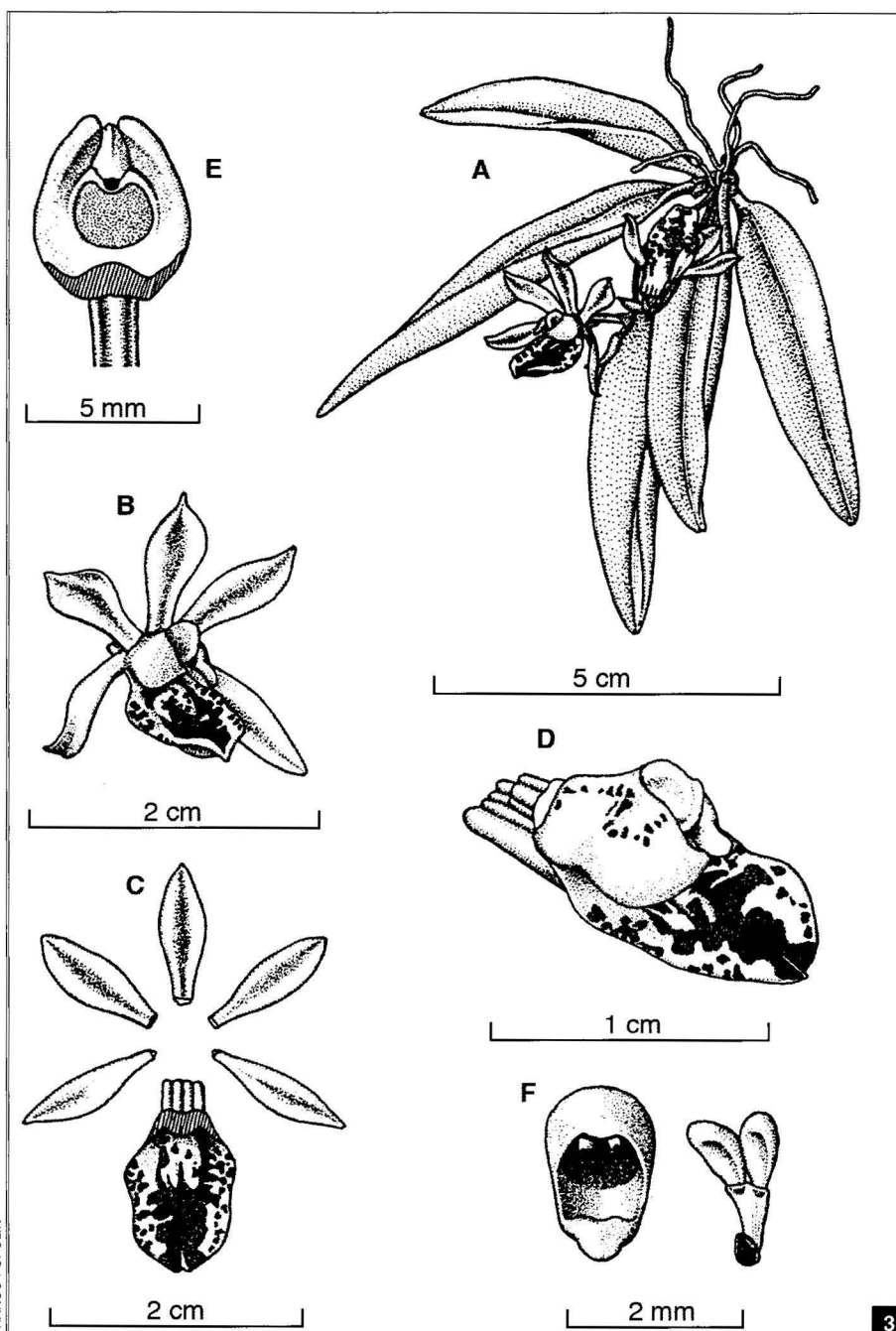


FRANCO PUPULIN



ADAM P. KARREMANS AND DIEGO BOGARÍN

- [1] Franco Pupulin's self-portrait.
 [2] *Trichocentrum pupulinianum* Bogarín & Karremans. A. Habit. B. Flower. C. Perianth, flattened. D. Column and lip, lateral view. E. Column, ventral view. F. Anther cap and pollinarium. Plate from the holotype, A.P. Karremans et al. 3963 (JBL).



***Trichocentrum pupulinianum* Bogarín & Karremans, sp. nov.**

TYPE Costa Rica. Coto Brus, Sabalito, San Miguel, carretera entre Unión y Mellizas, 2.5 km después de Unión, orillas de la Quebrada Sereno, 8°51'17.0"N, 82°52'35.2"W, 994 m, bosque muy húmedo premontano transición a pluvial "supra truncos ad ripas silvarum prope San Miguel juxta flumen ad Quebrada Sereno," [translation: road between Unión and Mellizas, 2.5 km after the town of Unión, banks of Quebrada Sereno, 8° 51'17 .0 "N, 82° 52'35 .2" W, 994 m, premontane wet forest, rainforest transition,] April 18, 2011, A.P. Karremans 3963, D. Bogarín and D. Jiménez (JBL-Spirit; Fig. 2).

Species Trichocentrum caloceras Endres & Rchb. f. *affinis*, sed foliis oblongis-ellipticis, alis columnae brevioribus, rhombicis, concavis marginibus revolutis, labello ovato-subpandurato purpureo maculato et anthera glabra differt.

Plant epiphytic, pendent, with abbreviated rhizome. Roots filiform, glabrous, with green apices. Pseudobulbs minute, cespitose, rounded, 2.0–2.5 mm long, unifoliate. Leaf green, more or less spotted with purple, fleshy, oblong to oblong-elliptic, subacute and somewhat minutely mucronate, sessile, to 7.0 × 1.4 cm. Inflorescences lateral, basal, racemose; peduncle terete, pendent, brownish, 3.0–3.5 cm long; rachis short, fractiflex, successively 5–6 flowered. Bracts conspicuous, imbricating, ovate, cucullate, acute, 4 mm long. Ovaries 8–10 mm long, including the pedicel. Flowers small, spreading, with sepals and petals brownish yellow and the lip white, marked with large purple blotches. Dorsal sepal erect, elliptic-lanceolate,

[3] *Trichocentrum pupulinianum* Bogarín & Karremans. A. Habit. B. Flower.

C. Perianth, flattened. D. Column and lip, lateral view. E. Column, ventral view. F. Anther cap and pollinarium. Based on F. Pupulin and D. Castelfranco 1 (USJ).

subacute, slightly concave, to 11 × 4 mm. Lateral sepals obliquely elliptic-lanceolate, subacute, carinate at apex, 12 × 3 mm. Petals elliptic-oblong, obtuse, 12 × 4–5 mm. Lip ovate-subpandurate, adnate to the column, carinate, slightly constricted in middle, emarginate in front, cuneate at the base to produce a short, flattened, subquadrate,

four-lobed spur; disc with a pair of thick, glabrous, converging keels at the base; entire lip 16×8 mm. Column short, without a foot, to 5 mm long, with a pair of fleshy, decurrent, short, rhombic, concave wings with revolute margins. Anther white, cucullate, carinate, glabrous. Pollinia 2, pyriform, complanate, on a triangular–elongate stipe; viscidium peltate, brown.

PARATYPES Costa Rica. Puntarenas: Coto Brus, Las Cruces, 1,300 m, epiphytic in cloud forest, prepared from cultivated

[4] Lectotype of *Trichocentrum caloceras* Endrés & Rchb.f. (Drawing N. 16 by A.R. Endrés, Rchb.f. Orch W-00220954). Reproduced with permission of the Herbarium, Naturhistorisches Museum, Vienna.

material, December 1989, F. Pupulin and D. Castelfranco 1 (USJ!; Fig. 3). Puntarenas: Coto Brus, San Vito de Java, Las Cruces, woods along the road to Wilson Botani-

cal Garden, ca. 500 m west of the Garden, $8^{\circ}47'12.5''\text{N}$, $82^{\circ}57'20.6''\text{W}$, 1,227 m, premontane wet forest, October 25, 2005, F. Pupulin 5823, D. Bogarín, R.L. Dressler, R. Gómez, A.P. Karremans, A. and S. Rambelli (JBL-Spirit!). Same locality and date, F. Pupulin 5824, D. Bogarín, R.L. Dressler, R. Gómez, A.P. Karremans, A. and S. Rambelli (JBL-Spirit!). Same locality and date, F. Pupulin 5825, D. Bogarín, R.L. Dressler, R. Gómez, A.P. Karremans, A. and S. Rambelli (JBL-Spirit!). Coto Brus, San Vito de Java, Las Cruces, deviation point at right after at the southern end of Wilson Botanical Garden, ca. 1 km, $8^{\circ}46'52.3''\text{N}$, $82^{\circ}57'58.7''\text{W}$, 1,980 m, premontane wet forest, mature secondary woods at the edge of a pasture, October 27, 2005, F. Pupulin 5865, D. Bogarín, R.L. Dressler, R. Gómez, A. and S. Rambelli (JBL-Spirit!). Fila Naranja (about 800 m), epiphytic on trunks in primary forest, November 1989. Flowered in cultivation. May 1992, F. Pupulin and J. Cambronero s.n. (USJ!). Coto Brus, Las Cruces, Jardín Botánico Wilson, 1,250 m. Collected by M. Blanco and D.E. Mora, flowered in cultivation 16 Jan. 2001, F. Pupulin 2809 (USJ-Spirit!). San José: Pérez Zeledón, San Isidro, Alto de San Juan, road to Dominical, 1,090 m, epiphytic on *Citrus* sp. in pasture, August 28, 1991, F. Pupulin 186 (USJ). Pérez Zeledón, San Juan de San Isidro, 980 m, on *Citrus aurantium* trees, prepared from cultivated material 12/1986, F. Pupulin 10 (USJ). Pérez Zeledón, Fila Tinamaste, road between Dominical and San Isidro de Pérez Zeledón, near El Alto de San Juan, 900–1,050 m, epiphytic along the roadside, November 8, 2000, F. Pupulin 2485, D. Castelfranco and J. Prada (JBL-Spirit!). Same locality and date F. Pupulin 2506, D. Castelfranco and J. Prada (JBL-Spirit!). Road from San Isidro to Dominical, El Alto de San Juan, $9^{\circ}19'42.4''\text{N}$ $83^{\circ}45'18.9''\text{W}$, 1,150 m, premontane moist forest, October 22, 2005, F. Pupulin 5747, D. Bogarín, R.L. Dressler, R. Gómez, A.P. Karremans, A. and S. Rambelli (JBL-Spirit!). Pérez Zeledón, road from San Isidro to Dominical, deviation to Pacuarillo, Bijagual, $9^{\circ}17'35.5''\text{N}$, $83^{\circ}45'24.0''\text{W}$, 1,000 m, premontane wet forest, October 23, 2005, F. Pupulin 5774, D. Bogarín, R.L. Dressler, R. Gómez, A.P. Karremans, A. and S. Rambelli (JBL-Spirit!). Same locality and date, F. Pupulin 5804, D. Bogarín, R.L. Dressler, R. Gómez, A.P. Karremans, A. and S. Rambelli (JBL-Spirit!). Same locality and date, F. Pupulin 5805, D. Bogarín, R.L. Dressler, R. Gómez, A.P. Karremans, A. and S. Rambelli (JBL-Spirit!). Alto de San Juan, R.L. Dressler 6682 (USJ!). San Juan de San Isidro, 1,100 m, October 29, 1989, F. Pupulin and M. Flores 6 (USJ!).

Pérez Zeledón, San Rafael de Platanar. Recolector desconocido, March 24, 1993. Floreció en cultivo en el Jardín Botánico Lankester, March 11, 2001, M. Blanco 1851 (USJ!). Panama. Chiriquí: side road between Volcán and Concepción, 500 m, December 17, 1976, Norris H. Williams 1352, Carl A. Luer and Robert L. Dressler (SEL). Volcán, February 4, 1961, H.P. Butcher 652 (SEL). Bugaba, between Concepción and Volcán, 900 m, December 7, 1983, C.A. Luer 9280, J. Luer and H.P. Butcher (SEL).

DISTRIBUTION Known from southern Costa Rica and western Panama.

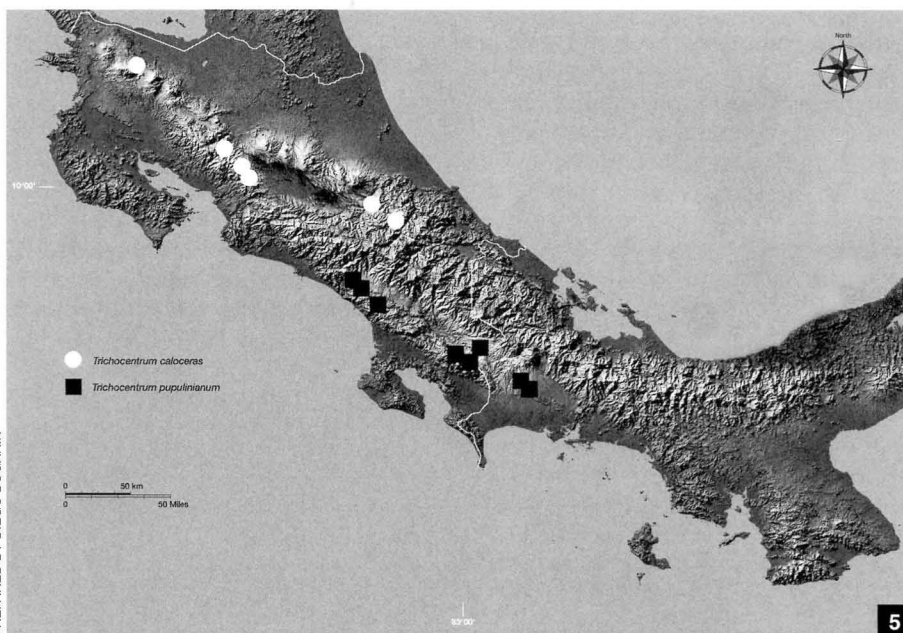
HABITAT AND ECOLOGY Plants grow in secondary and primary forest in premontane wet forest, rainforest transition and tropical wet and moist forest along the Pacific watershed of Cordillera de Talamanca at elevations from 500 to 1,300 m.

EPONYMY Honoring Franco Pupulin, Italo–Costa Rican botanist, current head of research at JBL, in recognition of his outstanding contributions to the knowledge of the orchid flora of the Neotropics and the development of the Lankester Botanical Garden Research Center.

PHENOLOGY Plants flower December–March.

CULTIVATION Plants inhabit moist to wet forests, where they grow on branches covered by mosses in relatively exposed sunny condition. Like most of *Trichocentrum* species, *T. pupulinianum* is easy to grow if moisture, warm temperature and good light and air movement are provided. It is advisable to cultivate plants on slabs so they can hang down freely, as in their natural habitat. The leaves tend to rot if water lodges near the axis with the pseudobulb, especially in plants grown in pots. To maintain plants in pots, they must be rather small and with perfect drainage so they can dry out quickly after watering.

DISCUSSION H.G. Reichenbach f. (1871) described *T. caloceras*, as compared with *T. capistratum*, “bearing the same most remarkable spurs, broad ovate acute leaves, brown sepals and petals, and a rhomboid white lip, with purplish numerous spots, a shorter column, with rhomboid wings.” This description also fits the description of *T. costaricense*. *Trichocentrum caloceras* (= *T. costaricense*) is recognized by the widely ovate leaves (rather than oblong–elliptic), the column wings decurrent, obtuse, introrse apically (rather than short, rhombic, concave with revolute margins) with a papillose or hirsute anther cap (rather than glabrous). The lip has bright red spots as described by Reichenbach (1871; rather than the purple blotches present in *T. pupulinianum*). The description written by Endrés (W-0021717),



PREPARED BY DIEGO BOGARIN

which also refers to the drawing N. 16 (W-0020954, Fig. 4), describes a plant with the leaves “fleshy, ovate, acute” with the lip “white spotted with bright red.” The drawing N. 16 shows a plant with broad ovate leaves, characteristic of *T. caloceras*. Moreover, the localities given by Endrés in his descriptions are San Ramón de Alajuela, along Barranca river, Candelaria, a village about 3.2 km south of Palmares, near San Ramón and Guayabo, spelled “Guayavo,” a site north of Turrialba. The locality where *T. pupulinianum* can be found remained inaccessible for Endrés at that time (1867) because of the lack of access from San José toward San Isidro de El General and Buenos Aires. Endrés was able to visit Santa María de Dota over Copey and the Paramo de Vueltas on the way to the southern Pacific but still at too high an elevation for *T. pupulinianum*. Based on this evidence, we concluded that the concept of *T. caloceras* is best applied for the populations restricted to the Caribbean watershed in Costa Rica and the northern Pacific slopes of Cordillera de Tilarán. Populations restricted to the southern Pacific watershed of Cordillera de Talamanca, ranging from San Isidro del General, Buenos Aires, Coto Brus into western Panama close to the border with Costa Rica, are referred to another distinct entity, to which the name *T. caloceras* was erroneously applied in part by the lack of information about Endrés collections and itineraries now revealed (Fig. 5). The name proposed to those populations, *T. pupulinianum*, refers to plants with oblong–elliptic leaves (rather than widely ovate in *T. caloceras*), short, rhombic, concave column wings with revolute margins (rather than obtuse, subfalcate), the obovate–subpandurate lip marked with broad purple blotches (rather

[5] Distribution map of *T. caloceras* and *T. pupulinianum* in Costa Rica and Panama.

than elliptic, spotted) and the glabrous anther cap (rather than hirsute).