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STUDIES ON COSTA RICAN VANILLOIDEAE: THE RETURN OF *CLEISTES ROSEA* AND A REAFFIRMATION OF *EPISTEPHIUM ELLIPTICUM*

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Abstract. Subfamily Vanilloideae represents a small fraction of the orchid flora of Costa Rica, and yet our knowledge of this predominantly South American group has significantly increased in the last two decades. Until recently, Vanilloideae was represented in Costa Rica by just two genera: *Cleistes* and *Vanilla*, with one and seven species respectively. Today, up to 13 species of *Vanilla* are shown to occur in the country, we evidence the presence of a second species of *Cleistes* and confirm the presence of a third genus Vanilloideae in Costa Rica: *Epistephium*. The rare *Cleistes rosea* and *Epistephium ellipticum* are fully illustrated on the basis of Costa Rican materials with Lankester Composite Digital Plates (LCDP). The typification of *Cleistes rosea* is discussed and a color illustration is provided of *C. costaricensis* for comparison.

Resumen. La subfamilia Vanilloideae representa una pequeña fracción de la flora de orquídeas de Costa Rica, y sin embargo, nuestro conocimiento de este grupo predominantemente sudamericano ha aumentado significativamente en las últimas dos décadas. Hasta hace poco, Vanilloideae estaba representada en Costa Rica por solo dos géneros: *Cleistes* y *Vanilla*, con una y siete especies respectivamente. Hoy en día, se ha comprobado la presencia de hasta 13 especies de *Vanilla* en el país, aquí evidenciamos la presencia de una segunda especie de *Cleistes* y confirmamos la presencia de un tercer género de Vanilloideae en Costa Rica: *Epistephium*. Las raras *Cleistes rosea* y *Epistephium ellipticum* se ilustran completamente con base en materiales costarricenses con Láminas Digitales Compuestas Lankester (LCDP). Se discute la tipificación de *Cleistes rosea* y se proporciona una ilustración a color de *C. costaricensis* para su comparación.

Keywords / Palabras clave: *Cleistes costaricensis*, *Cleistes rosea*, *Epistephium ellipticum*, new country records, nuevos registros del país, Orchidaceae, tipificación, typification

Introduction. The Vanilloideae are one of the five subfamilies of Orchidaceae and their distribution is worldwide despite being significantly less diverse in species numbers than the ubiquitous members of the Orchidoideae and Epidendroideae subfamilies. Even though they represent only a small component of the Costa Rican flora, our knowledge on the country's Vanilloideae has grown significantly in the last two decades. The curated compilations of the Costa Rican orchid species (Dressler 2003, Pupulin 2002, Soto Arenas & Dressler 2003) recorded the presence of only two genera belonging to this subfamily occurring in the country: *Cleistes* Rich. ex Lindl. and *Vanilla* Mill.

Vanilla is a Pantropical genus of *ca*. 120 accepted species (Karremans *et al*. 2020), widely appreciated on account of the world-famous vanilla flavoring that is extracted from the fruits of some of its species (Bouetard *et al*. 2010). *Vanilla* are taxonomically challenging due to the sparsity and poor state of flower material in herbarium specimens (Lubinsky *et al*. 2008, Soto Arenas & Dressler 2010) and their unusually broad geographic distributions (Karremans *et al*. 2020). In recent compilations of the country's orchid flora, Pupulin (2002) and Soto Arenas & Dressler (2003) recorded seven species of *Vanilla* occurring in Costa Rica; additionally listing 3–4 undescribed taxa. Four species were formally added

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by Soto Arenas & Dressler (2010), three of them new to science and one being a new country record. Two more taxa were published by Azofeifa-Bolaños *et al*. (2017) and another shortly after by Karremans & Lehmann (2018). We now accept 13 species of *Vanilla* naturally occurring in Costa Rica (Karremans *et al*. 2020).

Among the Vanilloideae, only the genus *Cleistes* has been listed for the Costa Rican flora other than *Vanilla*. The 60 or so accepted species of *Cleistes* are exclusively Neotropical. Its distribution is primarily South American, with the highest species diversity in Brazil and extending north up to Costa Rica in Central America (Batista *et al*. 2023). A single species has typically featured in the flora of Costa Rica, often under the name *Cleistes rosea* Lindl., a well-known and widespread species that has been reported to occur from Costa Rica downward to Bolivia and Brazil (Batista *et al*. 2023). However, Christenson (1992) noted that populations of *Cleistes* in central Costa Rica differed from the true *C. rosea* and segregated these under the name *Cleistes costaricensis* Christenson. Consequently, the name *C. costaricensis* replaced the concept of *C. rosea* in the country and the latter ceased to appear in the Costa Rican flora (Pupulin 2002, Dressler 2003).

A recent integrative study on the identity of the species and variations in the *C. rosea* complex once again confirmed the separation of populations from central Costa Rica into a different species, *C. costaricensis*, which is well isolated from its South American counterparts. However, our explorations of the Costa Rican southern Pacific range of the Talamanca mountains has revealed the presence of a second species of *Cleistes* in the country. These southern plants are quite different from those from the central valley, bearing large open flowers typical of the true *C. rosea*. Therefore, after three decades of exclusion, *C. rosea* returns to the orchid flora of Costa Rica. We characterize and illustrate the species here based on living material.

Furthermore, recent records have confirmed the presence of a third genus of Vanilloideae occurring in Costa Rica: *Epistephium* Kunth (Karremans 2022, Karremans *et al*. 2012). *Epistephium* is a Neotropical genus widely distributed from Belize to Paraguay, with most of its 28 currently recognized species localized in South America, especially Colombia and northeastern Brazil (Cameron 2003). The broadly distributed *E. ellipticum* R.O.Williams & Summerh., the only member of this genus to extend into Central America, grows as a terrestrial herb in the shaded understory in lowland primary forests along the Caribbean coast. Despite having been collected as far north as Belize since almost a century (McLeish *et al*. 1995), this tiny understory species, easily confused with other understory vegetation, has so far rarely been recorded in other Central American countries. It was collected for the first time in Costa Rica close to the border with Panama in 1995 (Karremans *et al*. 2012), and only rediscovered in 2022 when a flowering plant was photographed by a tourist close to the border with Nicaragua and posted on iNaturalist (Karremans 2022). A full color plate and description of this elusive taxon based on Costa Rican material is presented for the first time here.

Cleistes rosea Lindl., Gen. Sp. Orchid. Pl.: 410. 1840. *Pogonia rosea* (Lindl.) Rchb.f., Xenia Orchid. 2: 89. 1865. *Pogonia rosea* (Lindl.) Hemsl., Biol. Centr.-Amer., Bot. 3: 304. 1884, *nom. superfl.*

TYPE: GUYANA: "Savannahs adjacent to the lake Capooey, Arabisee Coast of Essequibo", *R.H. Schomburgk s.n.* [holotype: K-L barcode K000079712!; record of type: AMES-00024325!]. Discussion on typification below.

Heterotypic synonyms (following Batista *et al*. 2023):

Epistephium monanthum Poepp. & Endl., Nov. Gen. Sp. Pl. 1: 53. 1836. *Pogonia monantha* (Poepp. & Endl.) Schltr., Repert. Spec. Nov. Regni Veg. Beih. 9: 121. 1921, *nom. illeg.* [*non Pogonia monantha* Barb. Rodr., Gen. Spec. Orchid. 1: 167. 1877 = *Cleistes monantha* (Barb. Rodr.) Schltr., Arch. Bot. São Paulo 1: 179. 1926].

TYPE: PERU. Loreto: Huánuco, between Cuchero- and Chihuamecala, Dec 1829, *E.F. Poeppig 1601B* [lectotype designated by Garay (1978): W-R-00007715].

Pogonia acuminata Schltr., Repert. Spec. Nov. Regni Veg. Beih. 7: 40. 1920. *nom. illeg. Cleistes acuminata* Schltr., Arch. Bot. Sao Paulo 1: 180. 1926.

TYPE: COLOMBIA. Antioquia: c. 1000 m, s.d., *M. Madero s.n.* [holotype: B destroyed; lectotype, designated by Batista *et al.* (2023): Mansfeld (1929), table 10, fig. 35 (reproduction of Schlechter's drawing of the species, probably from the holotype)].

Pogonia venusta Schltr., Repert. Spec. Nov. Regni Veg. Beih. 7: 42. 1920. *Cleistes venusta* (Schltr.) Schltr., Arch. Bot. Sao Paulo 1: 180. 1926.

TYPE: COLOMBIA. Cauca: c. 1500 m, s.d., *M. Madero s.n.* (B destroyed); lectotype, designated by Batista *et al.* (2023): Mansfeld (1929), table 10, fig. 38 [reproduction of Schlechter's drawing of the species, probably from the holotype].

Cleistes aboucharii Szlach., Kolan. & Baranow, Mater. Orchid Fl. Colombia 3: 167. 2020.

TYPE: COLOMBIA. Valle del Cauca: alrededores de Cali, ramales de la Cordillera Occidental, 1400 bm, Jan 1968 (fl.), *A. Abouchar s.n.* (holotype: COL-119652).

Terrestrial *plant* up to 50 cm tall. *Roots* thick, tuberous, 3 mm in diameter, to 3 cm long. *Stem* erect, cylindrical, hollowed, 3.5–5.5 mm in diameter, brownish to purplish basally. *Leaves* ovate-lanceolate, acute, erect, chartaceous, glaucous, with the base clasping the stem, slightly concave, 4.5–9.0 × 2.0–3.6 cm, the apex acute, forming a very small hooded tip, the basal leaf reduced to a small *ca.* 2 × 1 cm sheath. *Inflorescence* a raceme with a single flower open at a time, and a few more opening several days afterwards in slow succession, subtended by foliaceous, ovate-lanceolate, acute, erect, chartaceous, glaucous bracts, 5.1–10.0 × 1.8–3.5 cm, the apical one smaller, the base with its base clasping and decurrent with the stem for 1–2 cm, the apex acute, forming a very small hooded tip; rachis 7.5 cm long and 2.5 mm in diameter; the remnant of the axis in a form a 1 mm long filament at the base of the apical ovary, opposite to the bract. *Ovary* pedicellate, 2 cm long, 3 mm wide, cylindrical, terete. *Flowers* resupinate, with sepals spreading, petals and lip flanking the porrect lip and column. *Dorsal sepal* free, 6.3 × 1.1 cm, ensiform, acute, with incurved margins, pinkish with light green at the base, 12-veined. *Lateral sepals* free, 6.0 × 1.1 cm, ensiform, acute, with incurved margins, pinkish on the adaxial surface and lighter on one side, light green abaxially and slightly pinkish laterally at the base. *Petals* free, 6.0 × 1.5, oblanceolate, apex acute, recurved, slightly asymmetrical, wavy, light pink basally and magenta to the apex, 12-veined. *Lip* oblong, 5.5 × 2.5 cm, obtuse, blade white with pinkish to purplish stripes at the apex, 13-veined, yellow along the center of the crest, lateral margins forming a tube around the column, blade longitudinally 2-crested, the first basal third of the crests with a common thickened 1.5 mm high base, the crests at the base of the blade 7 mm wide when spread, with recurved margins, the crests above the 2/3 of the blade 4 mm wide, forming multiple lamellae that progressively becomes irregular and warty towards near the apex. *Column* clavate, whitish, 3.4 cm long, 3 mm wide basally, 7 mm wide apically, the base with a pair of pear-shaped glands, clinandrium lacerate with the dorsal and lateral margin longer, the lateral ones forming acute teeth. *Anther* obtrapezoid, 9 × 8 mm, whitish, with a 5 mm wide loose mass of pollen which does not form a pollinia. Fruit cylindrical, glaucous, 4.5 cm long, 7 mm thick, with falling perianth. This description is based on the cited Costa Rican materials only.

SPECIMENS STUDIED: Costa Rica. San José: Pérez Zeledón, Paramo, La Ese, 9°26'33"N 83°42'50"W, 1340 m, sobre el corte de la carretera al costado de la Escuela La Ese, 29 Jul 2022, *A.P. Karremans 9342, I. Chinchilla & G. Rojas-Alvarado* (JBL-spirit, Fig. 1).

DISTRIBUTION AND HABITAT: The specimen here documented from Costa Rica is the northernmost in this species' range. It is also known to occur in Panama, Colombia, Venezuela, Ecuador, Peru, Trinidad, the Guianas and northern Brazil (Batista *et al.* 2023). In Costa Rica the species is only known from the southern Pacific range of the Talamanca mountains. It appears to be rather rare, we found a single small population on a road-cut in an open area dominated by grasses, fully exposed to the sun at 1340 m in elevation, in a premontane rain forest zone. However, photographs by locals suggest *C. rosea* plants occasionally sprout out in different locations flanking the El General valley in the south of the country, and there are probably a few isolated populations.

PHENOLOGY: In the field, plants have been document flowering and fruiting in July.

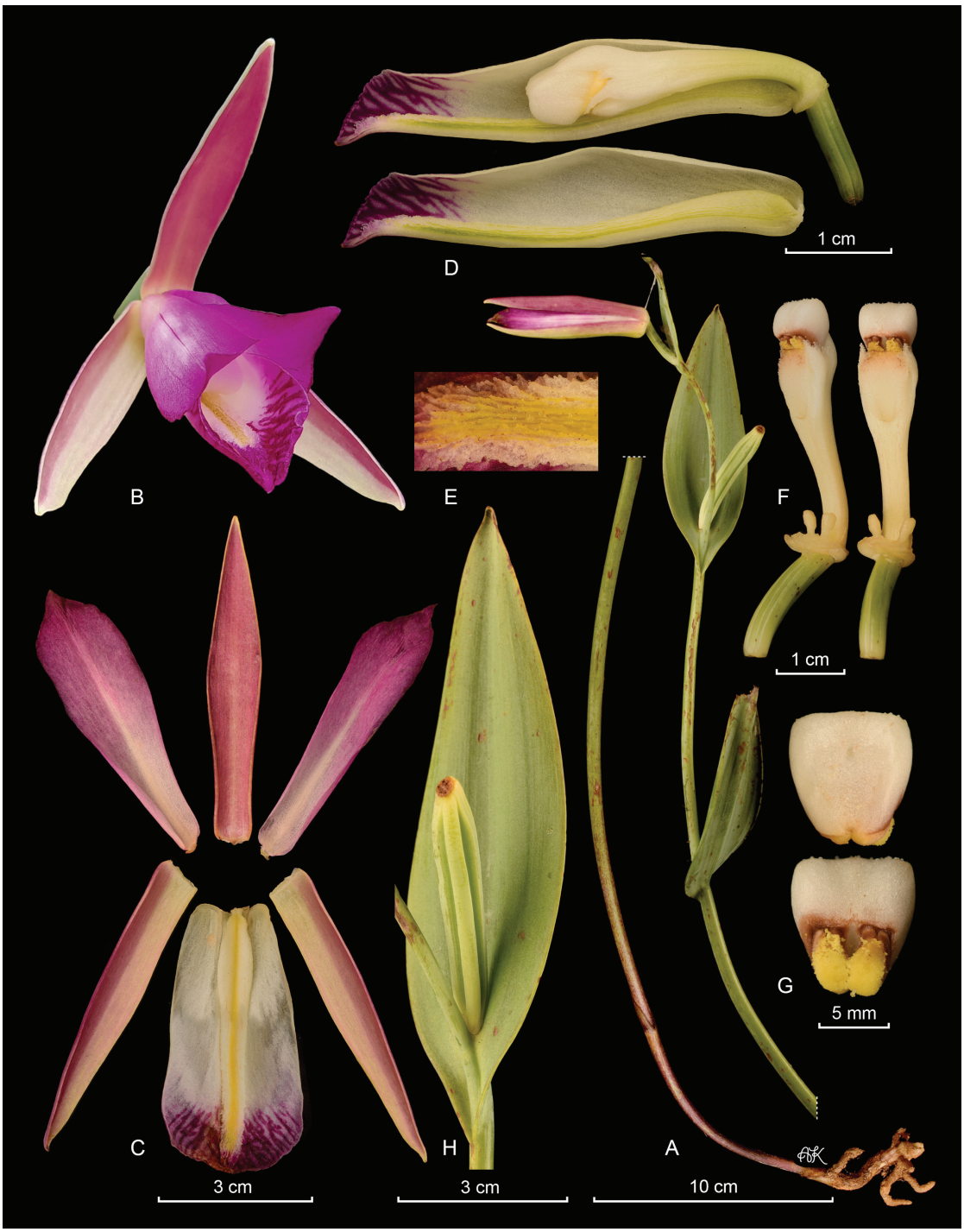

FIGURE 1. LCDP of *Cleistes rosea* Lindl. **A**. Habit. **B**. Flower. **C**. Dissected perianth, flattened. **D**. Lip in longitudinal section with column and ovary (top), lip in longitudinal section (bottom), lateral views. **E**. Close-up of the lamellae on the lip apex. **F**. Columns, ventral views. **G**. Anther and pollen. **H**. Fruit (including a portion of stem and leaf). Photographs and plate by A.P.Karremans based on *Karremans et al. 9342* (JBL-spirit).

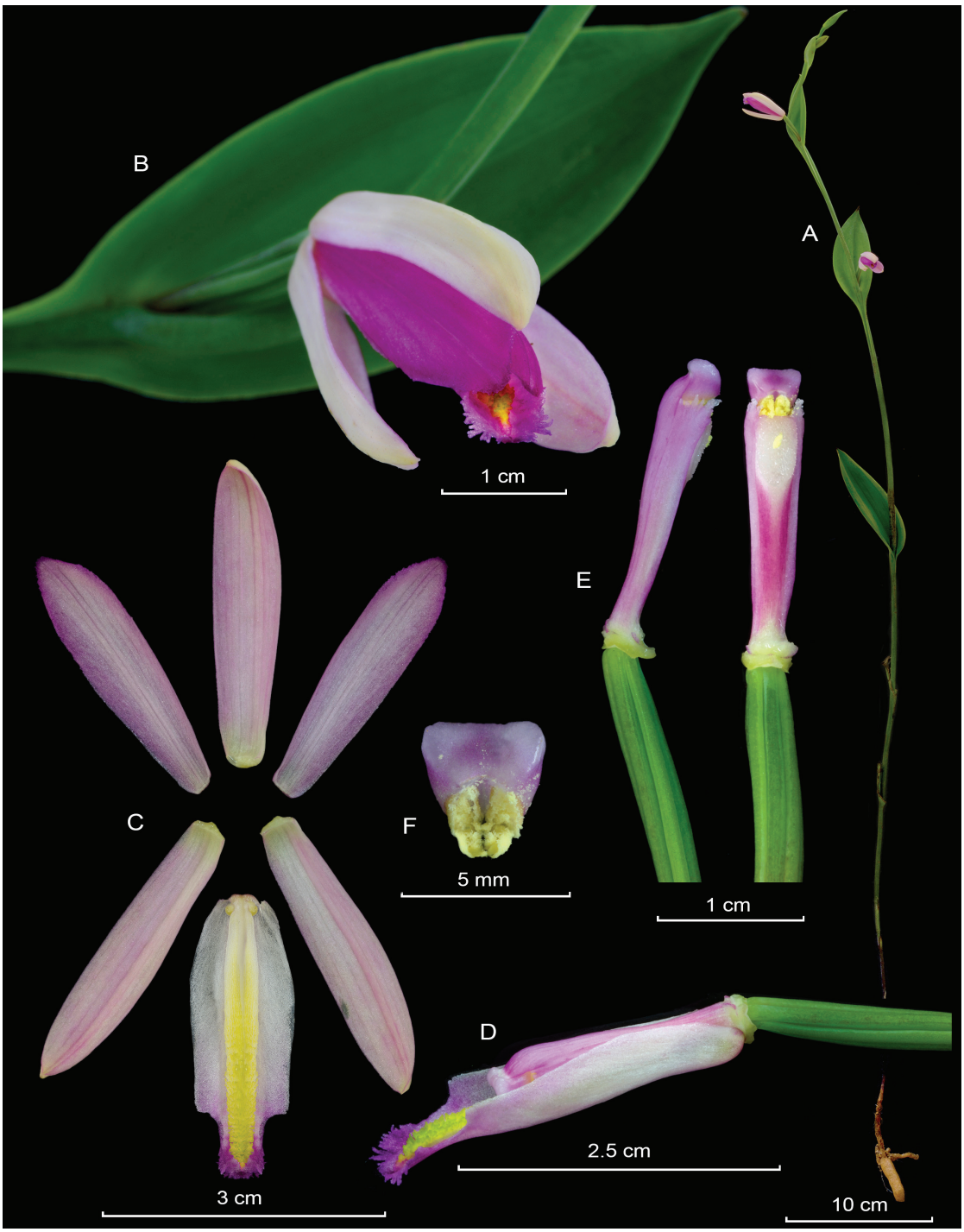

FIGURE 2. LCDP of *Cleistes costaricensis* Christenson. **A**. Habit. **B**. Flower. **C**. Dissected perianth flattened. **D**. Column and lip in natural position, lateral view. **E**. Ovary and column, lateral and ventral views. **F**. Anther cap and pollen. Photographs and plate by A.P.Karremans based on *Karremans et al. 6616* (JBL-spirit).

Etymology: From the Latin *roseus*, meaning rose-colored, referring to the color of the flowers.

Notes: The correct typification of *C. rosea* has been a matter of recent debate. Meneguzzo *et al*. (2020) selected a specimen in Lindley's herbarium at Kew (K-L barcode K000079712) as lectotype, but according to Batista *et al*. (2023) this is superfluous as a previous lectotypification was made, without explicitly stating it, by Garay (1978). We must agree with the latter that indeed Garay's unintended typification suffices the requirements. Nevertheless, we disagree with both teams that a lectotype is actually necessary. We argue there is no ambiguity about the status of this specimen as holotype given that it is the only specimen in Lindley's own herbarium which corresponds with the protologue, is accompanied by the typical floral sketches, and, most importantly, is clearly labeled (in the author's handwriting) as the species he is describing under "*Cleistes rosea m*.", in other words "my *Cleistes rosea*". We disagree with the interpretation that Schomburgk's specimen in Paris (barcode P00367101) represents an isotype or isolectotype (Batista *et al*. 2023, Meneguzzo *et al*. 2020). Lindley published *Cleistes rosea* in 1840 and Romero-González (2005) points out that the type specimen was probably collected by Schomburgk between 1836 and 1837, which is consistent with the date of publication. Both definitively exclude the possibility that type material of *C. rosea* could be collected in 1845, and therefore that the Paris specimen is, strictly speaking, part of the original materials. It is important to note that the 1845 date on the material at P is likely mistaken altogether given that Robert H. Schomburgk had already returned to England by then (Rivière 2006). Either way, it is not possible to link this specimen with the original materials of *C. rosea*.

Batista *et al*. (2023) thoroughly revised the *Cleistes rosea* complex and recognized three var ieties. Based on their classification, the material collected in Costa Rica corresponds to *Cleistes rosea* var. *rosea*. It is distinguished from *C. rosea* var. *guianensis* Sambin & J.A.N.Bat. and C. *rosea* var. *buenaventurae* (Szlach. & Kolan.) J.A.N.Bat. & C.Castro by having sepals internally vinaceous, pinkish-purple, pinkish-brown or magenta (*vs*. sepals internally light green, greenish-yellow, or greenish-brown in the other two varieties), petals purple, purplish-pink or magenta with the base sometimes slightly lighter (*vs*. petals mauve to dark mauve, base pale mauve; and petals white, base cream-colored to light green, respectively), the lip not depressed (*vs*. lip always suddenly depressed at the ¾ of its length in *C. rosea* var. *buenaventurae*).

Cleistes rosea var. *rosea* is widely distributed, occurring in Costa Rica, Panama, Colombia, Venezuela, Trinidad, Guyana, Ecuador and Peru. *Cleistes rosea* var. *guianensis* is restricted to French Guiana while *C. rosea* var. *buenaventurae* is restricted to the western side of the Cordillera Occidental in the Pacific/Chocó region of Colombia. The morphologically most similar species is *C. castaneoides* Hoehne. According to Batista *et al*. (2023), *C. rosea* is distinguished form the latter by having a concave leaf, invariable decurrent, the size as or larger than the floral bracts (*vs*. leaf convolute, clasping the stem, not decurrent, and shorter than or up to the same length as the floral bracts), sepals patent with at most only reflexed apex (*vs*. sepals markedly reflexed in fully open flowers), the anther white (*vs*. pale mauve to intense purplish-pink). In Costa Rica, *Cleistes rosea* is easily distinguished form the only other species of the genus, *C. costaricensis* Christenson (Fig. 2) by the flowers with spreading sepals (*vs*. sepals almost closed), petals acute to acuminate (*vs*. acute), lip oblong, the apex pinkish to purplish and obtuse (*vs*. lip shortly trilobate, with an oblong fimbriate purplish apex with out stripes), anther white (*vs*. purplish), column white (*vs*. purplish).

Epistephium ellipticum R.O. Williams & Summerh., Bull. Misc. Inform. Kew 1928(4): 145. 1928.

TYPE: Trinidad. Valencia Road, Mora forest end, Sept 1926, *Freeman*, *Williams & Cheesman s.n*. (holotype: TRIN-11324!; isotype: K (seen by McLeish *et al*. 1995 and Szlachetko *et al*. 2020, not found by us); drawing of type: AMES barcode 00099136!).

Heterotypic synonyms:

Epistephium tenuifolium Mansf. ex Hoehne, Flora Brasilica 8: 12: 2: 42. 1945, *nom. inval*.

TYPE: Brazil. Pará, Belém mata de terra firme entre Catú e Providência, 5 Nov 1914, *A. Ducke 15522* (RB-00542607!).

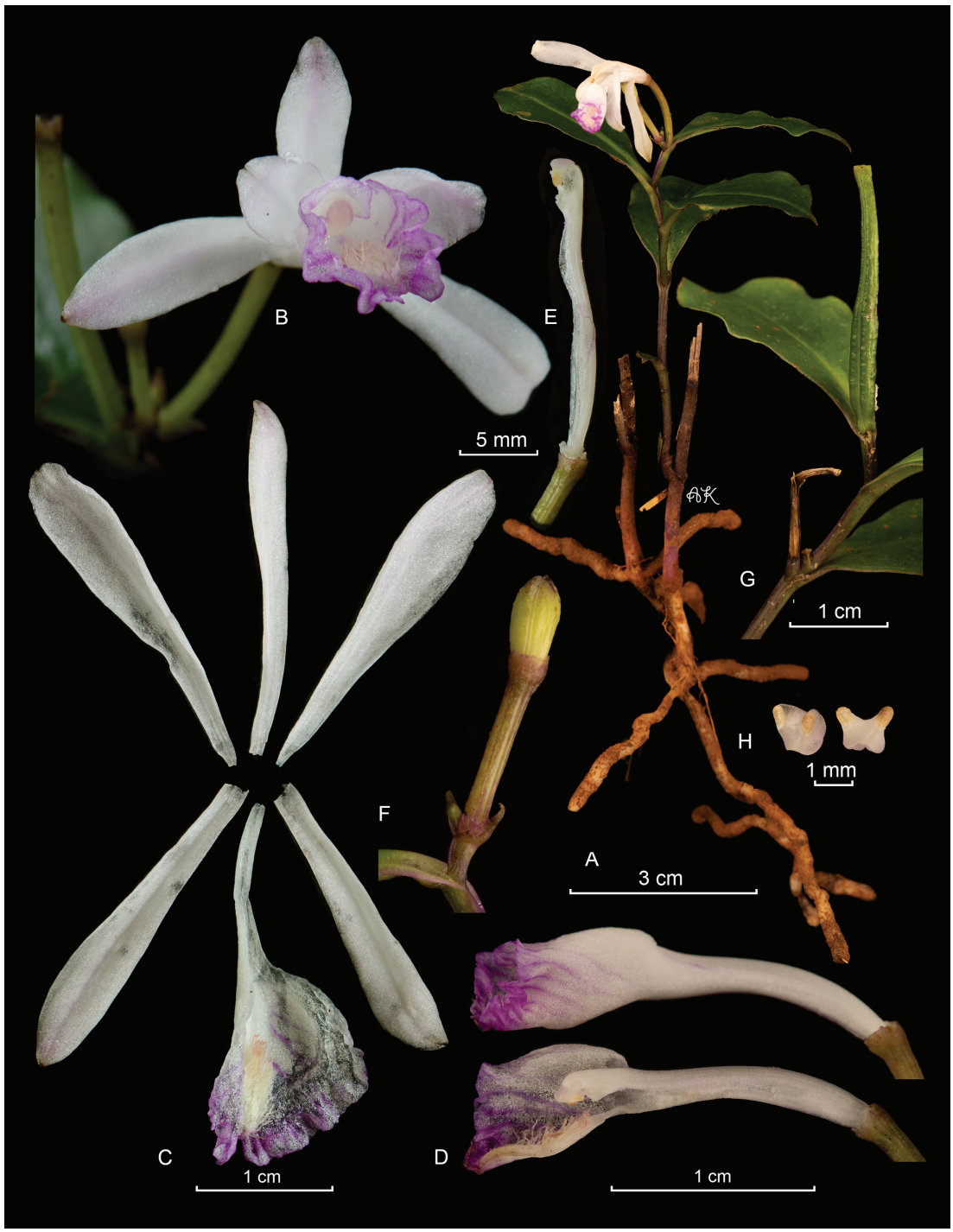

FIGURE 3. LCDP of *Epistephium ellipticum* R.O.Williams & Summerh. **A**. Habit. **B**. Flower. **C**. Dissected perianth, flattened. **D**. Lip, in natural position (top) and in longitudinal section (bottom), lateral views. **E**. Column, lateral view. **F**. Floral bud. **G**. Fruit (including a portion of stem and leaf). **H**. Anther cap and pollen, ventral views. Photographs and plate by A.P. Karremans. based on *Karremans et al. 9050* (JBL-spirit).

Epistephium minutum Barbosa-Rodrigues, Flora Brasilica 8: 12: 2: 42. 1945, *nom. nud*.

A terrestrial, sympodial *herb*, up to 30 cm tall. *Roots* elongate, up to 12.5 cm long, 3–4 mm in diameter, terete, fleshy. *Stem* simple or branched, erect, terete, fleshy; internodes 5–50 mm long, 1.5–2.0 mm in diameter. *Leaves* 2–9, short-petiolate, conduplicate, soft-textured; petiole canaliculate, fleshy, 1–5 mm long; blades elliptic to obovate, attenuate, acute to acuminate or caudate, longer than internodes, reticulate venation, 5–7-veined, 1.0–6.5 × 0.5–2.5 cm. *Inflorescence* a terminal or axillary raceme, abbreviated, with 2–5 successive flowers, 1 open at a time. *Floral bracts* sessile, short, ovate, acuminate, concave, coriaceous, green to reddish, 2.0–3.5 × 1.0–2.1 mm; rachis shortened. *Pedicellate ovary* straight to lightly arcuate, terete, papillose, green to reddish, 9–14 mm long, 1.0–1.5 mm in diameter, with a shortly dentate calyculus, ca. 1 mm long. *Flowers* resupinate, erect, spreading, showy, thin, soft-textured, with sepals, petals and column white, lip white, with adaxially and abaxially blade magenta on the veins and the all apical third, and pollen whitish. *Dorsal sepal* oblanceolate, attenuate, acute, lightly concave, margins flat, apically recurved in natural position, 3-veined, 26.8 × 3.0 mm. *Lateral sepals* oblanceolate, attenuate, acute, lightly concave, margins flat, apically recurved in natural position, 3-veined, 25.0 × 4.5 mm. *Petals* oblanceolate, attenuate, acute, lightly concave, porrect, apically lightly recurved in natural position, 3-veined, 26.3 × 5.5 mm. *Lip* free, spatulate, unguiculate, emarginate, concave, tubular, trumpet-shaped, porrect, when spread out 27 × 17 mm; the claw canaliculate, inconspicuously pubescent, 12.0 × 1.4 mm; the blade bilobed, subrhombic, rounded, emarginate, with a central vertical, raised, tapered, fleshy thickening, apically thickly villose, 15 × 17 mm, ca. 21-veined, the veins impressed; lobes subequal, semi-ovate, acute, margins overlapping, cover the column, basally entire, apically undulate, incurved, 15 × 8.5 mm. *Column* subterete, slender, slightly arcuate, lightly trilobed at apex, ventrally flattened, glabrous below the stigma, 16.5–20.0 × 1.5–2.0 mm. *Anther* incumbent, obovoid, attached to the clinandrium with entire margins, ca. 1.3 × 1.5 mm. *Pollen* a soft, sticky granular mass. *Stigma* simple, convex. *Rostellum* subquadrate, porrect, slightly concave, ca. 1.5 × 1.3 mm. *Fruits* a linear capsule, trilobed, trisulcate, apically tapering, 19–27 × 2–3 mm, with a shortly dentate calyculus, ca. 1.0 mm long. This description is based on the cited Costa Rican materials only.

Distribution and habitat: This broadly distributed species has been shown to occur in the following countries (earliest reference we could find is cited): Belize (McLeish *et al*. 1995), Guatemala (Archila Morales *et al*. 2018), Costa Rica (Karremans *et al*. 2012), Colombia (Betancur *et al*. 2015), Peru (Karremans *et al*. 2012), Venezuela (Schultes 1957), French Guiana (Sambin & Ravet 2021), Guyana (Funk *et al*. 2007), Brazil (Schultes 1957) and Trinidad (Schultes 1957). In Costa Rica, plants of *Epistephium ellipticum* grow in the understory of very humid lowland tropical forests of the Caribbean, between 50 and 100 m in elevation, in the Maquenque National Mixed Wildlife Refuge and Gandoca-Manzanillo Wildlife Refuge.

Phenology: In the field, plants have been document flowering and fruiting in March, April and September.

Etymology: From the Latin *ellipticus*, meaning elliptic, in allusion to the elliptical leaves typical of the species.

Specimens studied: Costa Rica. Alajuela: San Carlos, Pital, Boca Tapada, Refugio Nacional de Vida Silvestre Mixto Maquenque, reserva de La Laguna del Lagarto Eco-Lodge, a la orilla del sendero, 10°40’52.0”N 84°10’33.5”W, 65 m, 29 abr 2022, *A. P. Karremans et al. 9050* (JBL-spirit; Fig. 3). Limón. Talamanca, Sixaola, Gandoca, El Llano entre Filas Manzanillo y Río Mile Creek, 9°37’00.0”N 82°41’00.0”W, 50–100 m, 27 mar 1995, *G. Herrera & E. Sandoval McCarthy 7605* (CR, MO).

Notes: *Epistephium ellipticum* is the only species in the genus known to occur in Central America. Plants of this species are terrestrial herbs up to 30 cm long, erect, sympodial, with tubular, fleshy roots, short stems, covered by the sheaths of short-peciolate leaves, the blades elliptic, thin, with soft-texture and reticulate venation, showy, ephemeral, fragile, white flowers, with magenta lip on the veins and the apical third. Without flowers, *E. ellipticum* plants are difficult to spot and even recognize as an orchid. Due to

their lustrous leaves with channeled petiole and small stature, plants of this species can easily go unnoticed in the field by its similarity to young individuals of the families Costaceae, Commelinaceae, and even Primulaceae.

A collection by Ducke at RB bears a label with the name *Epistephium tenuifolium* Mansf. and another with the name *Epistephium minutum* Barb.Rodr., neither having been formally published by those authors. Hoehne (1945) accepted the name *E. tenuifolium* providing a description in Portuguese, and placing *E. minutum* in synonymy. However, by then, a Latin description was a requirement for formal validation and both names are therefore still invalid. We agree with Schultes (1957) in considering *E. tenuifolium* and *E. minutum* conspecific with *E. ellipticum*, but don't agree in ascribing *E. minutum* to Hoehne as ex author given he merely listed the name as a synonym.

The *Epistephium* material from Costa Rica agrees well with the protologue and type of *E. ellipticum*. However, Costa Rican plants have up to five flowers (vs. 12 flowers) per inflorescence, longer sepals and petals (25.0–26.8 × 3.0–5.5 mm vs. ca. 20 × 3–4 mm), white column (vs. pink), and produce fewer fruits (2 vs. 12). Assessing the variation of this broadly distributed and rare species is important to characterize it adequately. Furthermore, careful re-examination of prior works is key to the understanding of this species. We noticed that the scale bar added by Szlachetko *et al*. (2020) to a reproduction of the type illustration of *E. tenuifolium* is notoriously inconsistent with the scale bar on the type specimen. Also relevant is the inconsistency between the illustration by Hoehne, which suggests a glabrous lip, and the original illustration accompanying the specimen, which clearly depicts the characteristic villose apical callus.

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