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Three new species of *Epidendrum* (Orchidaceae: Laeliinae) from the cloud forests of Chota, northern Peru

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Abstract

Epidendrum acuntasiorum and *E. retrolobatum* belonging to the Ferreyrae group, and *E. bicornialpicola* member to the Alpicola group are described and illustrated as new species. The three new taxa were collected in the montane cloud forest of La Palma, located in the districts of Conchán and Chota, department of Cajamarca, Peru. Information concerning distribution, habitat, and phenology is provided for each taxon. A plate and description of *Epidendrum ferreyrae* are included for comparison.

Key words: Alpicola group, Ferreyrae group, La Palma

Resumen

Epidendrum acuntasiorum y *E. retrolobatum* pertenecientes al grupo Ferreyrae y *E. bicornialpicola* miembro del grupo Alpicola son descritas e ilustradas como nuevas especies. Las tres nuevas orquídeas fueron colectadas en el bosque montano nublado La Palma, localizado en los distritos de Conchán y Chota, departamento de Cajamarca. Se proporciona información sobre la distribución, el hábitat y la fenología de cada especie. Se incluye descripción y lámina de *Epidendrum ferreyrae* para comparación.

Introduction

Epidendrum Linnaeus (1763: 1347) is one of the most diverse and representative genera of the Americas, and in Peru is represented by 494 species (Quispe-Melgar *et al.* 2022), every year new *Epidendrum* species are discovered and described from Peru mainly in Icones Orchidacearum (Hágsater & Salazar 1993, Hágsater & Sánchez 1999, 2001, 2004, 2006, 2007, 2008, 2009, 2010, 2013, 2015, 2016, Hágsater & Santiago 2018a, b, 2019, 2020a, b, 2021, 2022, 2023).

In the department of Cajamarca, collections and discoveries of new species have been increasing, mainly in the provinces of Jaén, San Ignacio, Hualgayoc, Chota, Cajamarca, Cutervo and Celendín, further enriching the diversity of the orchid flora of northern Peru (Hágsater & Sánchez 2004, 2006, 2007, 2009, 2010, 2015, Hágsater & Santiago 2016, 2019, 2020, 2022, Bennett & Christenson 1993, 2001, Dodson & Bennett 1989a, b.). Research is scarce in the forest of La Palma, where Sagastegui *et al.* (1993) made preliminary field collections, but since then there has been a gap in research.

Presently La Palma (Figure 1) is reduced to cloud forest relicts, caused mainly by human intervention, reason that generated the interest to investigate it, due to the lack of information of the species that make it up and the little interest for its conservation. This ecosystem is of great importance for the water supply it represents for the districts of Chota and Conchán (Cuadrado *et al.* 2016). So we decided to proceed to the study of the family Orchidaceae to determine present state of the family and during a field trip to the sectors of Los Lanches and La Palma. Various specimens of different species of orchids were photographed and collected, with the genus *Epidendrum* being the genus with most species. After comparing the collected material with all published species of the Ferreyrae group (Hágsater & Fernández 2007, Hágsater & Edquen 2023), we concluded that there are two undescribed species, as well as another of the Alpicola group (Hágsater & Dodson 2001a) and propose them here as new.

Material and methods

A preliminary survey was carried out by James Chamaya and Gustavo Ibérico in the area that includes the cloud forest of La Palma. The areas visited include Colpa Tuapampa, La Palma, Los Lanches, Uñigan and Yantayo in the districts of Chota and Cochán. The visits were carried out on two occasions, the first during the dry season (June to September 2022), and the second during the rainy season (November 2022 to April 2023), as not all orchids flower during the same season.

Specimens in flower were collected, photographed and pressed. Photographs were taken in the field and in the lab at the CPUN herbarium, especially of the flowers with a Nikon P520 camera and Nikkor 42x lens and the dissected flowers were viewed on an Olympus SDF PLABO 2XPFC stereoscope with CPU, monitor and built-in camera. A Lankester Composite Dissection Plate (LCDP) was prepared according to the guidelines from the Lankester Gardens in Costa Rica. A distribution map of the newly described species was prepared using ArcMap 10.8 program.

Material was compared with specimens at CPUN and the Forestry Engineering Herbarium of the National University of Cajamarca. Material was shared with specialists of the genus *Epidendrum*. The various species were identified to group using the unpublished key to groups at AMO which is constantly being upgraded. They were placed due to the vegetative and floral characteristics in the Ferreyrae and Alpicola groups and compared with material published in the series Icones Orchidacearum. The result was that the material had important differences with the other known species of the groups. A detailed taxonomic description was prepared from pressed material and digital images, and the entities compared with others known from the Ferreyrae group and the Alpicola group. Voucher specimens were deposited at CPUN.

Taxonomy

Epidendrum acuntasiorum Hágsater, Chamaya, J. Duarte & Iberico, *sp. nov.* (Figures 1, 2)

Type:—PERU: Cajamarca: Chota: comunidad Los Lanches, 2810 m, 5 febrero 2022, *J. A. Chamaya G. 57* (holotype: CPUN!).

Epidendrum acuntasiorum is similar to *E. hutchisonii* Hágsater (1999: t. 366) but the flowers are yellow with the sepals dorsally pink (*vs.* flowers pale green), and the lip with the lateral lobes sub-rectangular, the mid-lobe rectangular to sub-triangular with an obtuse apex (*vs.* lip reniform to 3-lobed with the lateral lobes semi-orbicular, and the mid-lobe transversely rectangular with an emarginate apex).

Description:—Epiphytic, sympodial, caespitose, sub-erect *herb*, to 230 cm tall. *Roots* 2.5–4.0 mm in diameter, basal, dense, fleshy, white. *Stems* 116–230 × 0.5–1.6 cm, simple, cane-like, terete, thick; covered basally by tubular sheaths, non-foliar, dirty white or tinged wine-red, striated when dry, papyraceous. *Leaves* 8–14, distributed along apical half of stems, distichous, spreading, somewhat arched, coriaceous; sheaths tubular, smooth, tinged yellow-brown; blade 9.0–18.0 × 1.6–3.2 cm, lanceolate, acute, minutely apiculate, pale green on both sides, margin entire, spreading. *Spathe* 1, 7.0–10.0 cm long, prominent, conduplicate, elliptic-lanceolate, tubular at base, open towards apex, yellow-brown. *Inflorescence* ca. 24 cm long, apical, paniculate, flowering only once, racemes densely many-flowered, heavy, nutant; *peduncle* 5 cm long, terete, thick, with a large bract 7.5–8.5 × 1.7–2.5 cm subtending each raceme, similar to spathe; *rachis* 13.0–25.0 cm long, thick, terete, straight. *Floral bracts* 2.0–17.0 mm long, much longer to shorter than ovary at base, becoming shorter than ovary apically, linear-triangular, acute, embracing. *Flowers* ca. 50–100 on main raceme,

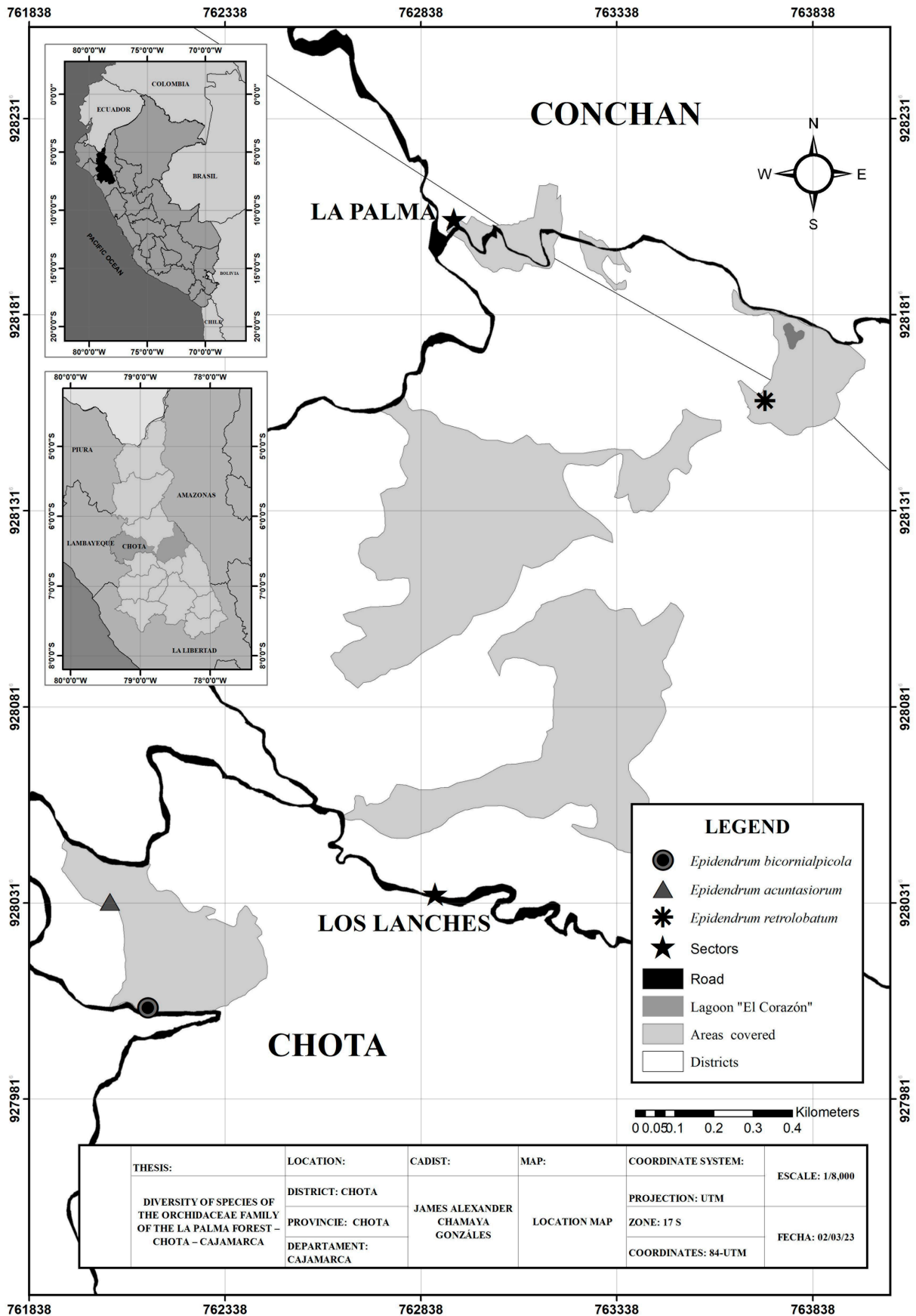


FIGURE 1. Distribution map of new species of *Epidendrum*. Prepared by James Chamaya.

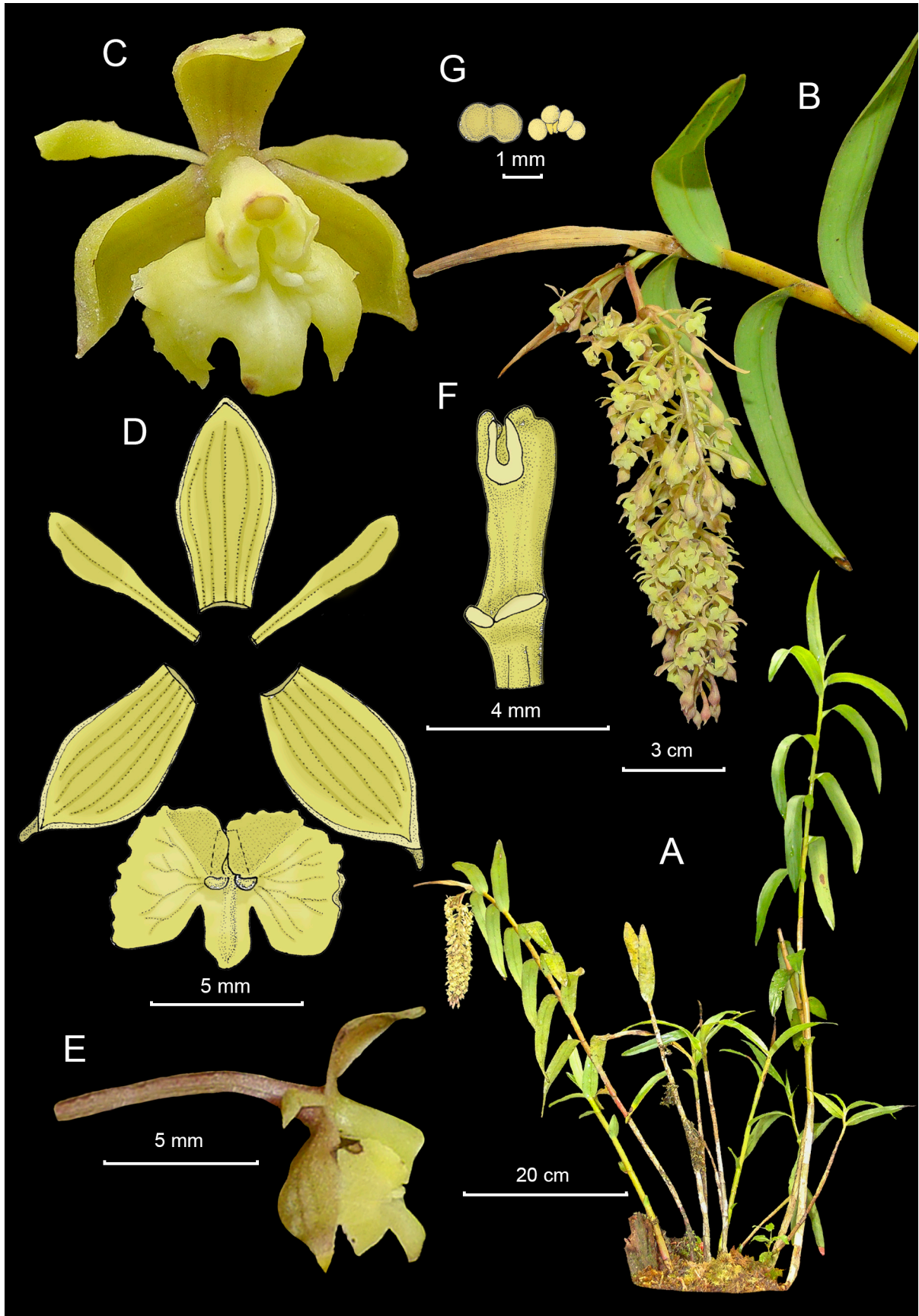


FIGURE 2. Lankester Composite Dissection Plate (LCDP) of *Epidendrum acuntasiorum* Hágsater, Chamaya, J. Duarte & Iberico. **A.** Plant habit. **B.** Inflorescence. **C.** Flower, lateral view. **D.** Dissected perianth. **E.** Ovary. **F.** Column, ventral view. **G.** Anther cap and pollinarium. Prepared by Anaís Cisneros from the images by J. A. Chamaya taken from the specimen that served as the holotype.

fewer on lateral racemes, nearly simultaneous, opening from base of raceme towards apex, resupinate, yellow, sepals tinged pink dorsally, ovary and buds clearly pink, calli yellow white; fragrance reminiscent of cinnamon throughout day and night. *Ovary* 8.5–9.0 mm long, terete, slightly inflated ventrally behind perianth arched, furrowed. *Sepals* 6.8–7.6 × 3.2–3.8 mm, partly spreading, free, fleshy, concave, elliptic-oblong, acute, short aristate, 5-veined, margin entire, spreading; lateral sepals elliptic, somewhat oblique. *Petals* 6.2–6.3 × 1.3–1.4 mm, spreading to partly spreading, free, oblanceolate, slightly oblique, apex obtuse to rounded, 1-veined, margins entire, spreading. *Lip* 5.4–5.6 × 7.5–7.6 mm, fused to column, 3-lobed, base cordate, strongly convex; bicallose, calli digitiform, divaricate, crescent-shaped, large, fleshy, disc with a mid-rib, fleshy, reaching apical sinus; lateral lobes 3.4–3.8 × 4.9–5.4 mm, sub-rectangular, margin erose-crenulate, basal margins embracing sides of column; mid-lobe 1.9–2.1 × 1.5 mm, short, rectangular to sub-triangular, obtuse, margin entire, slightly revolute apically. *Column* 4.6–5.0 mm long, short, thin basally, widening towards apex, with a pair of lateral truncate wings. *Clinandrium-hood* reduced, margin entire. *Rostellum* apical, slit; viscarium semi-liquid. *Lateral lobes of stigma* not seen. *Cuniculus* penetrating half of pedicellate ovary, unornamented. *Anther* 1.5 × 1.0 mm, reniform, 4-celled. *Pollinia* 4, obovoid, laterally compressed, caudicles granulate. *Capsule* 43 × 36 mm, ellipsoid, pedicel short and apical neck short.

Distribution and ecology:—Presently known from two collections from northern Peru, Cajamarca, from La Palma to the northeast of the city of Chota, epiphytic at 2810 m elevation. Flowering in February.

Etymology:—In honor of the Acuntas, a people who lived during the pre-Inca and Inca times who worshiped an idol since time immemorial and inhabited the plateau of the same name “Acunta”, a hill surrounded by three rivers and wide horizons that allowed the viewing of the land from the top, where the city of Chota is located today (Cadenillas Gálvez 1991).

Conservation status:—DD. Data deficient. Known presently from two collections from northern Peru, both from the same area.

Other records:—PERU. Cajamarca: Chota, *W. Tafur 59*, Digital images, AMO!

Taxonomic Discussion:—*Epidendrum acuntasiorum* belongs to the Ferreyrae Group, which is characterized by the sympodial, caespitose habit, the cane-like stems with numerous leaves, the apical inflorescence subtended by 1–2 large spathes, and the nutant, heavy, racemose to paniculate inflorescence with numerous, fleshy, attractive flowers. The new species is recognized by the long stems with a prominent spathe, the yellow flowers with the sepals dorsally pink, and the 3-lobed lip, strongly convex, the lateral lobes sub-rectangular, the basal margins embracing the column and the mid-lobe small, rectangular to sub-triangular, with a single mid-rib. It is similar to *Epidendrum hutchisonii* Hágsater, but that species has pale green flowers, the sepals 7.0–8.5 mm long, abruptly constricted and acuminate, the lip 3-lobed, the lateral lobes semi-orbicular, the mid-lobe transversely rectangular, emarginate, and the disc with 1–3 low, rounded mid-ribs. *Epidendrum baryanthum* Hágsater & Salas Guerr. (Hágsater & Salas 2016: t. 1572) has flowers pale green with dark purple dorsally, the sepals 12–16 mm long, and the petals oblanceolate, sub-acute, 2.2–3.0 mm wide, and a large lip, sub-orbicular in outline, the margins revolute, with the mid-lobe short, wide, and deeply emarginate, thus bi-lobed, formed by two semi-orbicular small lobes, strongly revolute though not evident in natural position. It is similar to *Epidendrum ferreyrae* Hágsater & Ric.Fernández (Hágsater & Fernández 2007: t. 936) which has sepals 15–18 mm long, the column 10 mm long, and a clearly 3-lobed lip with the lateral lobes dolabriform, the mid-lobe sub-triangular, narrow. *Epidendrum lesteri* Hágsater & Dodson (2004: t. 754) has sepals 16 mm long, rounded, and a 3-lobed lip, margin erose-crenate, the lateral lobes sub-reniform, the mid-lobe rectangular, comparatively large, the apex truncate, somewhat bilobed, short-apiculate. *Epidendrum orthoclinium* Hágsater & Dodson (2001b: t. 466) has sepals 11–12 mm long, a 3-lobed lip, the lateral lobes semi-circular, margin dentate, the mid-lobe spatulate, and the column arched upwards at the clinandrium-hood.

Epidendrum retrolobatum Hágsater, Chamaya, J.Duarte & Iberico, *sp. nov.* (Figures 1, 3)

Type:—PERU: Cajamarca: Prov. Chota: Distr. Chota: comunidad La Palma, 200 metros de la laguna El Corazón, 2976 m, 25 enero 2023, *J. A. Chamaya G. III* (holotype: CPUN!).

Epidendrum retrolobatum is similar to *Epidendrum ferreyrae* Hágsater & Ric.Fernández (2007: t. 936) in most characteristics, but the lip pale green at the base and mid-lobe (*vs.* lip entirely green), fragrance reminiscent of cinnamon (*vs.* fragrance strong of roses), and the lip in general form similar, however in natural position the lateral lobes are twice strongly revolute, the apex appearing narrow, and the base is first involute to be able to embrace the column, and then strongly revolute giving the column the appearance of being very thick towards the apex (*vs.* the overall shape of the spread lip very similar, with the apical half similarly strongly revolute, but more spreading in natural position, and the

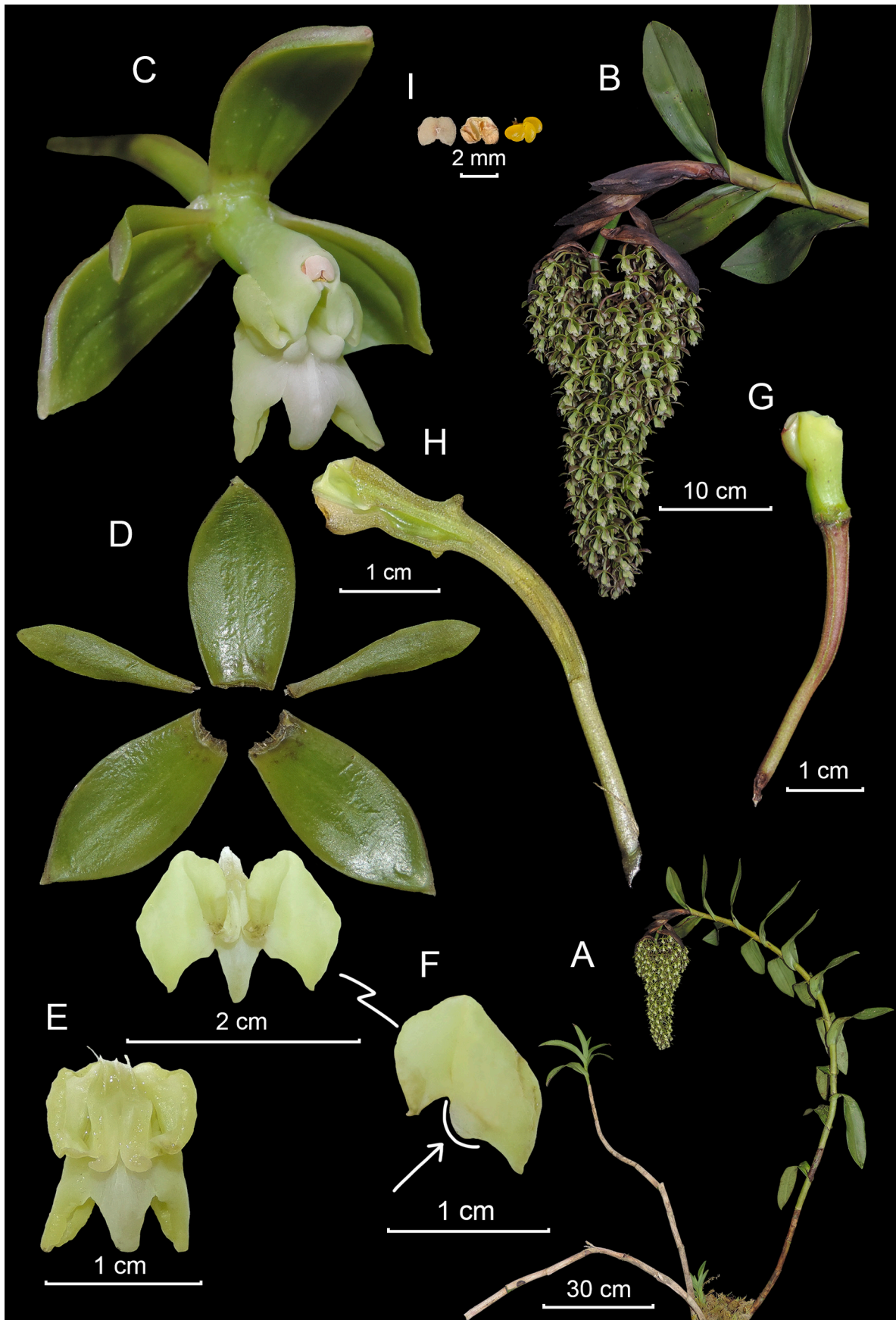


FIGURE 3. Lankester Composite Dissection Plate (LCDP) of *Epidendrum retrolobatum* Hágsater, Chamaya, J. Duarte & Iberico. **A.** Plant habit. **B.** Inflorescence. **C.** Flower, lateral view. **D.** Dissected perianth. **E.** Lip in natural position. **F.** Lateral lobe of lip spread. **G.** Ovary and column lateral view. **H.** Ovary and longitudinal section of column. **I.** Anther cap (top view and underside) and pollinarium. Prepared by Anaís Cisneros from the images by J. A. Chamaya taken from the specimen that served as the holotype.

basal part of the lobes only involute and embracing the column without thickening it), and the calli are arched outwards 90° (vs. calli only slightly arched).

Description:—Epiphytic to terrestrial, sympodial, caespitose, sub-erect *herb* to 340 cm tall. *Roots* 5–6 mm in diameter, basal dense, fleshy, white. *Stems* 340 × 1.6–1.8 cm, cane-like, simple, covered by tubular sheaths, striated, green turning red-brown when old and losing leaves. *Leaves* numerous, distributed throughout stems, distichous, spreading, coriaceous; sheaths to 6.5 × 1.6–1.8 cm, tubular, striated, green, with a narrow slit opposite leaf; blade 18.0–25.0 × 5.0 cm, lanceolate, obtuse, medium green, underside lighter green, margin entire, spreading. *Spathes* up to 4, 10.0–14.0 × 2.0–4.0 cm, covering peduncle of inflorescence, lanceolate, conduplicate, acute, imbricating, margins entire, dry and brown when in flower. *Inflorescence* ca. 50 cm long, apical, paniculate, arching-nutant, flowering only once; peduncle 14.0 × 1.4 cm, terete, thick, mostly covered by sheaths, deep green; inflorescence formed by a long mid-raceme 36 cm long, and 2–3 shorter basal racemes 15.0–23.0 cm long, densely flowered, each subtended by a large bract, 9.0–15.0 cm long, similar to spathes, dark brown when flowers open and persistent until fruits open. *Floral bract* 3 mm long, very small, triangular, embracing. *Flowers* ca. 200, simultaneous, ca. 120 on mid-raceme, progressively fewer on branches, resupinate, sepals and petals green ventrally, green-brown to purple dorsally, apex of column, calli and mid-lobe of lip white to pale green, anther cream colored; fragrance reminiscent to cinnamon during daytime, stronger at night. *Ovary* 37.0 × 3.0 mm, terete, slightly thicker in apical half without forming any vesicle, green to red-brown. *Sepals* 18.0–19.0 × 9.0 mm, elliptic, acute, fleshy, thick, partly spreading, slightly arched inwards along apical half, margins entire, spreading. *Petals* 15.0–16.0 × 3.3 mm, partly spreading and strongly arched inwards, narrowly oblanceolate, acute, margins entire, spreading. *Lip* 14.0 × 18.5 mm, fused to column, deeply 3-lobed, hexagonal in outline when spread out, apex with deep, wide sinuses in natural position; lateral lobes strongly revolute, apical half of lip in natural position 12.5 × 10.0 mm, apex 3-lobed and otherwise complicated and thick; bicallose, calli strongly curved 90° outward; lateral lobes very large, 8.0 × 12.4 mm, obliquely trapezoid, apical corner acute, posterior edge square with corners broadly rounded, it is mostly free and strongly revolute with only a small part of inner margin (an arch 3 mm long, marked with an arrow in LCDP) joined to base of lip, most of lateral lobes is retrorse, distal margin of apical portion is strongly revolute and clearly visible in wide apical sinuses, apical portion appears to be straight in natural position; posterior section of lateral lobes is folded up at a 90° angle forming a in long line from posterior lateral lobe corner running lateral to the calli, free portion is then strongly revolute forming a canal which embraces column making the column appear very wide at apex; mid-lobe triangular, fleshy, slightly reflexed at apex, apex narrowly rounded, with a mid-rib running down to about middle of mid-lobe. *Column* 15 mm long, straight, apex obliquely truncate, with lateral wings widely rounded. *Clinandrium-hood* short, margin entire. *Rostellum* apical, slit; viscarium semi-liquid. *Lateral lobes of stigma* small. *Cuniculus* short, barely penetrating ovary, smooth, narrow. *Anther* 2.0 × 1.5 mm, reniform, 4-celled. *Pollinia* 4, obovoid, laterally compressed. *Capsule* not seen.

Distribution and ecology:—Presently known from two collections both from northern Peru, Cajamarca, to the northeast of the city of Chota, some 20 km apart; epiphytic and terrestrial at 2976–3050 m elevation. Flowering in January–February.

Etymology:—From the Latin *retro*, backwards, and *lobatus*, lobed, in reference to the lateral lobes of the lip which are for the most part oriented backwards, only joined to the base of the lip for a small section. In addition, they are heavily revolute and must be boiled to be able to extend them flat to see the real shape.

Conservation status:—DD. Data deficient. Known presently from two collections from northern Peru, separated by some 20 km.

Other records:—PERU: Cajamarca: Prov. Hualgayoc: Distr. Chugur: Perlamayo Capilla, 3049 m, received 9 June 2020, *Dávila s.n.* Digital images, AMO!

Taxonomic Discussion:—*Epidendrum retrolobatum* belongs to the Ferreyrae Group, proposed here, which is characterized by the sympodial, caespitose habit, the tall cane-like stems with numerous leaves, the nutant inflorescence racemose or an open panicle with few branches, the 1–2 large spathes at the base of the inflorescence, the 3-lobed lip, and medium sized flowers. The new species is recognized by the tall stems, the prominent, conduplicate spathes with similar, though somewhat smaller bracts subtending the branches of the inflorescence; the calli are arched outwards 90°, the lip when extended is hexagonal, with the apex 3-lobed and wide sinuses separating the triangular mid-lobe from the apex of the lateral lobes; however in natural position the lateral lobes are strongly revolute, the apex appearing narrow, and the lateral lobes base is first folded to be involute to be able to embrace the column and then apically strongly revolute, giving the column the appearance of being very thick towards the apex. *Epidendrum ferreyrae* Hágsater & Ric. Fernández is easily confused as the overall shape of the spread lip is very similar, with the apical half similarly strongly revolute, but the lip is more spreading in natural position, the basal part of the lobes are only involute and embracing the column without making it appear thickened, the calli are only slightly arched outwards. There is a difference on

the shape of the lateral lobes of the type illustrated in the original description of *E. ferreyrae* where the lateral lobes are dolabriform, the margin forming a half circle, and the plate of a recent collection of José Edquén 829 (Hágsater & Edquén 2023: t. 1978), where the lateral lobes are more quadrate, with right-angle corners.

Epidendrum bicornialpicola Hágsater, Chamaya & Iberico, *sp. nov.* (Figures 1, 4)

Type:—PERU: Cajamarca: Chota: Bosque La Palma, 2778 m, 19 julio 2022, *J. A. Chamaya G. 104* (holotype: CPUN!).

Epidendrum bicornialpicola is similar to *E. delsyae* Hágsater & Cisneros (2020: t. 1809) but the leaves are half as long, (3.2–6.0 cm long vs. 7.4–13.4 cm long), pale yellow-green flowers with a lip ochre (vs. ochre flowers with a lip ochre-orange), smaller sepals (6.7–8.6 mm long vs. 10–12.8 mm long), and the lip with calli upright, acute, divergent (vs. calli non upright, rounded, slightly paralell).

Description:—Lithophytic and epiphytic, sympodial, caespitose *herb*, ca. 62 cm tall (including inflorescence). *Roots* 2–3 mm in diameter, basal, thick, white. *Stems* 44 × 0.3–0.5 cm, simple, cane-like, terete below, laterally compressed above, erect to arching; basal 1/3 covered by papyraceous sheaths ca. 4.0 × 0.4 cm, light brown. *Leaves* 7, articulate, alternate, sub-coriaceous and lower leaves smaller, spreading; sheaths 2.0–3.0 × 0.2–0.4 cm tubular, somewhat laterally compressed, glabrous; blades 3.2–6.0 × 0.8–1.2 cm, 5:1, linear-lanceolate, acuminate, sub-erect, margin entire, spreading, medium green. *Spathes* 1–2, 3.0–6.0 × 0.2–0.3 cm, tubular, acuminate, lower one leaf-like towards apex, slightly imbricating. *Inflorescence* 17 cm long, apical, a sub-densely flowered raceme, arching nutant; peduncle 8.5 cm long, erect, straight, nearly totally hidden by spathes, rachis 8 cm long, strongly arched and nutant at base, nearly straight thereafter. *Floral bracts* 4 mm long, prominent, nearly as long as ovary, linear-triangular, acuminate, embracing. *Flowers* ca. 24, simultaneous, resupinate, apical lip always pointing to axis of rachis, flowers pale yellow-green, lip ochre, column white; fragrance reminiscent of lavender during daytime. *Ovary* 4.5–9.0 × 1.0–1.1 mm, terete, thin, arching, not inflated, unornamented, furrowed, green. *Sepals* free, fleshy, 3-veined, margin entire, spreading; dorsal sepal 6.4–6.7 × 2.5–2.7 mm, somewhat concave, obovate-elliptic, acuminate; lateral sepals 8.4–8.6 × 2.7–2.9 mm, partly concave, ovate-elliptic, acuminate, oblique, aristate, with low dorsal keel that continues apically to form an aristate tip, margin of keel entire. *Petals* 4.5–5.0 × 0.5–0.6 mm, free, spreading, linear oblanceolate-oblong, acuminate, 1-veined, margin entire, spreading. *Lip* 4.3–4.5 × 3.6–3.8 mm (with spread lateral lobes), united to column, fleshy, 3-lobed, base cordate; bicallose, calli prominent, laminar, short, acute, upright, divergent; disc with a very short thick broad mid-rib, extending beyond calli to base of mid-lobe; lateral lobes ca. 1.0–1.2 × 2.0–2.2 mm, embracing apex of column without covering it, transversely elliptic, margin slightly erose; mid-lobe 2.0–2.3 × 1.5–1.6 mm, slightly arched upwards in natural position, triangular, acuminate, margin entire. *Column* 2.3 mm long including lateral wings, dorsally 1.3 mm to edge of clinandrium-hood, dorsally clinandrium hood somewhat upturned, thick, apex oblique, with pair of rounded wings that surpass clinandrium-hood. *Clinandrium-hood* short, slightly upturned, margin erose. *Rostellum* sub-apical, slit; viscarium semi-liquid. *Lateral lobes of stigma, cuniculus* not seen. *Anther* reniform, 4-celled. *Pollinia* 4, ovoid, laterally compressed, caudicles soft and granulose, short. *Capsule* not seen.

Distribution and ecology:—Presently known only from the type in northern Peru: Cajamarca, Chota; grows lithophytic and epiphytic at 2778 m elevation in well illuminated places. Flowering in July to November

Etymology:—From the Latin *bicorni-*, who horned, and *alpicola*, Alpine, found in mountains, the species has unusual calli which are triangular, upright and divergent, when all other species have the calli parallel to the lip and more or less finger-like.

Conservation status:—DD. Data deficient. Presently known only from the type.

Taxonomic Discussion:—*Epidendrum bicornialpicola* belongs to the Alpicola Group, which is characterized by the simple stems, the long, narrow spathes, numerous flowers, the fleshy lips, the triangular mid-lobe and roundish lateral lobes, and the lip with two laminar calli and a rounded process in between. The new species is recognized by the peduncle of the inflorescence, straight, erect, about as long as apical leaves, the spathes of the peduncle tubular, closely appressed, the rachis sharply arching nutant, nearly straight but nutant, the yellow-green flowers, ochre lip and white column, the lateral sepals 8.4–8.6 × 2.7–2.9 mm, the petals 4.5–5.0 × 0.5–0.6 mm, linear oblanceolate-oblong, acuminate, and the lip 4.3–4.5 × 3.6–3.8 mm when spread, bicallose, calli prominent, laminar, short, acute, upright, divergent; disc with a very short thick wide mid-rib, extending beyond calli to base of mid-lobe. *Epidendrum delsyae* is larger overall, the leaves 7.4–13.4 × 1.0–1.2 cm, the peduncle of the inflorescence shorter than the apical leaf, the flowers relatively large, the sepals and petals ochre, apex greenish orange, lip ochre-orange, column green, the sepals

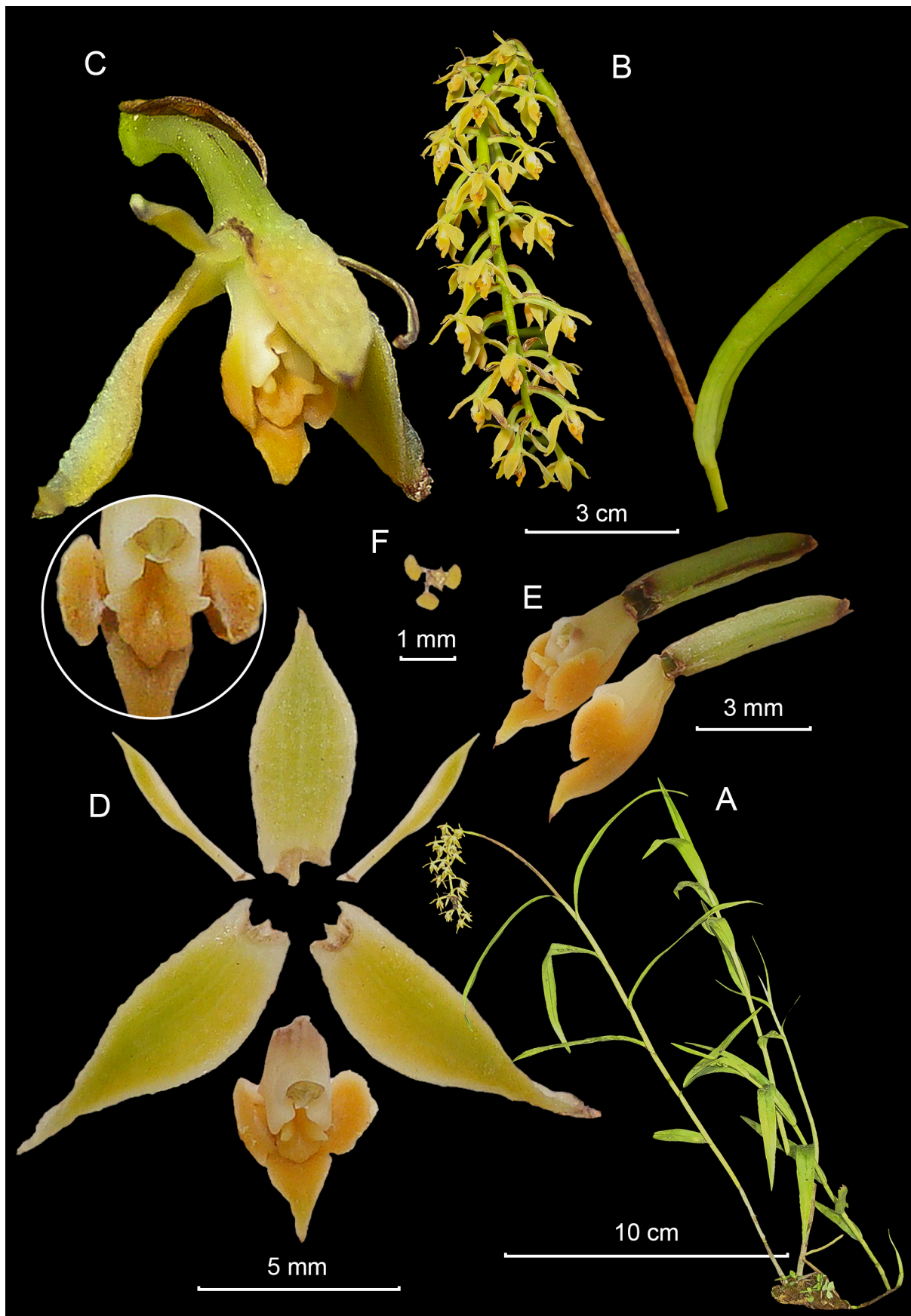


FIGURE 4. Lankester Composite Dissection Plate (LCDP) of *Epidendrum bicornialpicola* Hágsater, Chamaya & Iberico. **A.** Plant habit. **B.** Inflorescence. **C.** Flower, lateral view. **D.** Dissected perianth. **E.** Ovary with lip and column; upper and lateral views. **F.** Pollinarium. Prepared by Anaís Cisneros from the images by J. A. Chamaya taken from the specimen that served as the holotype.

10–12.8 mm long, , and the lip with a mid-lobe 3.8×1.8 mm, sub-trilobed in general form, acute, attenuate at the middle, the apical half ensiform.

The Ecuadorian *Epidendrum aenigmaticum* Hágsater & Dodson (2007: t. 902) is recognized by the leaves oblong-elliptic, obtuse, $9.5\text{--}15 \times 1.5\text{--}2.1$ cm, flowers brown-orange, the dorsal sepal 5.4–6.0 mm long, and the lip 3.6×3.5 mm, the calli laminar, rounded, with a thick, elliptic, short mid-keel, the lateral lobes transversely ovate-elliptic, the mid-lobe 1.7×1.2 mm.

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