

EPIDENDRUM AROMOENSE (ORCHIDACEAE, LAELIINAE),
A NEW SPECIES FROM THE
COASTAL DRY FORESTS IN WESTERN ECUADOR

XAVIER CORNEJO^{1,2} AND ERIC HÁGSATER³

Abstract. *Epidendrum aromoense*, a new epiphytic orchid found in very dry and seasonally foggy coastal forests, Manabí province, western Ecuador, is here described and illustrated. It is similar to *Epidendrum tulcanense*. It is characterized by the caespitose habit, simple stems, leaves oblong-lanceolate, coriaceous, bilobed and an elongate peduncle of the erect pluriracemose inflorescence, the flowers are red, the sepals about 9 mm long, the petals oblanceolate, the lip is square in outline, deeply 3-lobed, the lateral lobes dolabriform, the terminal lobe ending in a pair of divaricate, narrow, triangular acute, bifurcate teeth, the callus is orange, 5-tuberculate, ending in an acute, V-shape, keeled apex. This is the only red-flowered *Epidendrum* known from the lowlands of Ecuador. A conservation status of endangered, EN B1ab(iii), is provided for this species of great ornamental potential.

Resumen. Describimos e ilustramos *Epidendrum aromoense*, una nueva especie de orquídea epífita que habita en los bosques muy secos costeros y estacionalmente brumosos de la Provincia de Manabí, en el occidente de Ecuador. Es similar a *Epidendrum tulcanense*. Se caracteriza por poseer un hábito cespitoso, tallos simples, hojas oblongo-lanceoladas, coriáceas, bilobadas, y una inflorescencia erecta con un pedúnculo alargado que porta una inflorescencia pluriracemosa, las flores son rojas, los sépalos miden alrededor de 9 mm, los pétalos son oblanceolados, el labio posee un contorno cuadrado, es profundamente 3-lobulado, los lóbulos laterales son dolabriformes, el lóbulo terminal remata en un par de dientes divaricados, triangulares, agudos y bifurcados, el callo es naranja, posee 5 tubérculos y remata en un ápice agudo, en forma de V, quillado. Esta es la única especie conocida de *Epidendrum* de flores rojas que habita en las tierras bajas de Ecuador. Se provee el estatus de conservación en peligro, EN B1ab(iii), para esta especie de gran potencial ornamental.

Keywords: *Epidendrum aromoense*, Orchidaceae, coastal dry forest, Ecuador, endemic, IUCN Red List

Epidendrum L. is one of the largest genera among flowering plants, encompassing over 1500 species in the Neotropics (Hágsater, 1985). At present, ca. 400 species in the genus have been recorded as to occur in Ecuador, being 210 (= 52 %) of those endemic to the country (Dodson in Jørgensen & León, 1999; Valencia et al., 2011).

Red-flowered species in *Epidendrum* are known for having a distinctive distribution pattern in the Andes (e.g., the *Elongatum* subgroup; Hágsater, 2013); furthermore, no species of the genus bearing red flowers was previously known from lowland Ecuador. During field work in a foggy, very dry, and disturbed coastal forest in the lowlands of Manabí Province in western Ecuador, a red-flowered epiphytic *Epidendrum* with distinctive floral features called our attention, and it is here described and illustrated as a new species.

Epidendrum aromoense X. Cornejo & E. Hágsater, *sp. nov.*
TYPE: Ecuador. Manabí: El Aromo, a disturbed very dry coastal forest, ca. 200 m, 7 March 2014 (fl), X. Cornejo, M. Gallardo & V. Solórzano 8601 (holotype, GUAY; digital photos at AMO, GUAY). Fig. 1–3.

Diagnosis: Similar to *Epidendrum tulcanense* Hágsater & Dodson but the callus of the lip orange, concave within, 5-tuberculate, 2 globose processes, 2 outer, smaller flat growths, and an apical-V shaped protuberance like the bow

of a ship, the apex acute, versus the massive, white callus, formed by nine unequal tubercles, four basal ones and the main structure formed by five sub-equal tubercles.

Epiphytic, caespitose, sympodial, erect *herb*, ca. 60 cm tall. *Roots* 1–1.5 mm in diameter, fleshy. *Stems* ca. 25 × 0.5 cm, simple, cane-like, terete, thin, straight. *Leaves* 7–12, distributed throughout the stem, alternate, sub-erect; sheaths 1.5–2.1 × 0.4–0.5 cm, tubular, minutely striated when dry; blade 5.5–8.5 × 1.4–2 cm, coriaceous, smooth, the lower leaves lanceolate-oblong, the upper leaves oblong, about 3 to 5 times longer than wide, apex broadly obtuse at upper leaves, slightly bilobed, margin entire. *Spathes* lacking. *Inflorescence* ca. 36 cm long, apical, racemose; peduncle 28.5 cm long, elongate, terete, thin, straight, nearly totally covered by ca. 8 acute, tubular sheaths, 3.3–4.3 × 0.3 cm; rachis ca. 7.5 cm long, terete, thin. *Flowers* 30–40, successive, ca. 18 open at one time, non-resupinate, red (*lacquer red*), the callus orange (yellow in photos). *Floral bracts* 1.5–4.5 mm long, much shorter than the ovary, triangular-lanceolate, acuminate, gradually shorter towards the apex of the rachis. *Ovary* 13–17 mm long, terete, thin, arching towards the apex, smooth. *Sepals* ca. 9 × 3 mm, spreading, free, elliptic, sometimes oblique, minutely apiculate, 5-veined, margin entire, spreading. *Petals* 7–8 × 2 mm, spreading, free, oblanceolate, papillose, cuneate towards the base, obtuse towards the apex, 4- to 5-veined.

The senior author wishes to thank Natalie Pyrooz, an associate field researcher of the California Academy of Sciences, for the drawings of *E. aromoense*.

¹Herbarium GUAY, Facultad de Ciencias Naturales, Universidad de Guayaquil, Av. Juan Tanca Marengo y Las Aguas, Casilla 09-01-10634, Guayaquil, Ecuador; xcornejoquay@gmail.com

²Author for correspondence

³Herbario AMO, Montañas Calizas 490, México, D.F. 11000, México; herbamo@prodigy.net.mx



FIGURE 1. *Epidendrum aromaense*. A, epiphytic habit and disturbed habitat; B, stem and leaf bases; C, inflorescence. Photograph by X. Cornejo based on *Cornejo et al.* 8601 (GUAY), the holotype.

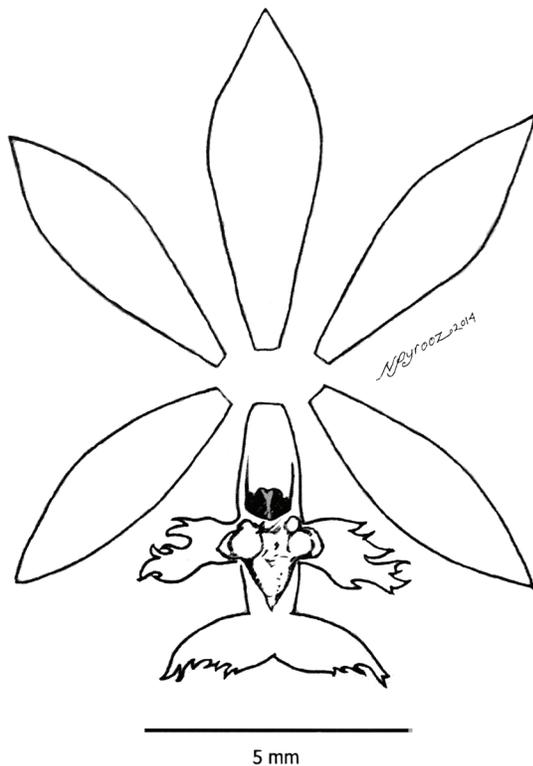


FIGURE 2. *Epidendrum aramoense*. Floral segments, adaxial view. Drawing by Natalie Pyrooz based on Cornejo *et al.* 8601 (GUAY), the holotype.

Lip 8–10 × 3–4 mm, united to the column, 3-lobed, base deeply cordate, distal margins lacinate; callus concave within, 5-tuberculate, 2 globose processes, 2 outer, smaller flat growths, and an apical-V shaped protuberance like the bow of a ship, the apex acute; lateral lobes ca. 2 × 2 mm, dolabriform; mid-lobe 3–4 × 4 mm, rather acutely dentate to somewhat flabellate, forming two divaricate lobes, apex emarginate. *Column* 5 mm long, straight, thin, without wings, papillose mainly towards the apex. *Clinandrium hood* reduced, margin minutely dentate. *Anther* obovoid, acute, 3-celled, densely papillose. *Pollinia* 3, ca. 0.8 × 0.2 mm, oblanceolate, elongate, laterally compressed, slightly unequal, papillose. *Rostellum* apical, slit. *Lateral lobes of the stigma* small. *Nectary* penetrating nearly 1/2 the ovary. *Capsule* not seen.

Habitat and distribution: Known only from the seasonally foggy very dry coastal forests of El Aromo and Montecristi, located ca. 20 km apart from each other in the Province of Manabí in western Ecuador, at ca. 200 m. The disturbed habitat in which *Epidendrum aramoense* occurs is characterized by an annual average temperature of 25°C, annual average relative humidity of 78%, average precipitation of 250 mm per year, and high exposure to sun's UV rays (Weatherbase, 2014). In these harsh weather conditions, the moisture provided by seasonal and nocturnal fog undoubtedly plays a critical role in those xerophytic areas allowing the establishment of populations of this

as well as other epiphytic endemics such as the recently described and sympatric *Anthurium aramoense* Croat (Araceae), also collected by the first author in the same area (Croat *et al.*, 2013).

Conservation status: The localities where *Epidendrum aramoense* does occur are threatened by the advance of agricultural frontier or forest conversion to cattle farms and other land use. Therefore, the status of endangered, EN B1ab(iii) (IUCN, 2001) is assigned to this species.

Uses: *Epidendrum aramoense* as well as another recently described species from the same habitat, *Anthurium aramoense*, become adapted in cultivation with little care within few weeks. These species have been successfully planted as ornamentals by the senior author in hot and humid cities such as Manta and Guayaquil.

Phenology: *Epidendrum aramoense* has been observed with flowers during February and March. It is unknown if flowers are also produced during some of the remaining months of the year.

Etymology: The specific epithet refers to El Aromo, the locality where the new species was found.

Paratypes: ECUADOR. Manabí: Slopes of Montecristi, *L. Besse 134* (QCA, SEL); same locality, *C. Luer 1472* (SEL). Specimens seen but not studied in detail.

The type specimen had only three pollinia, which is unusual for this group of species, the normal number being four. The authors were not able to study this character in the proposed paratypes.

Epidendrum aramoense belongs to the Secundum group, Elongatum subgroup which is recognized by the caespitose habit, simple stems, leaves oblong-lanceolate, coriaceous, bilobed and elongate peduncle of the erect, pluriracemose inflorescence, the flowers non-resupinate, the callus complicated, plurituberculate. The species is recognized by the successive, lacquer-red flowers, the orange callus, sepals about 9 mm long, the petals somewhat smaller than the sepals, oblanceolate, the lip square in outline, deeply 3-lobed, the lateral lobes dolabriform, terminating in a pair of divaricate, narrow, triangular, acute, bifurcate teeth, the lateral lobes clearly separate and never overlapping with the mid-lobe when spread, and the mid-lobe rather acutely dentate to somewhat flabellate, bilobed and distinctively divaricate; callus concave within, 5-tuberculate, 2 globose processes, 2 outer, smaller flat growths, and an apical-V shaped protuberance like the bow of a ship, the apex acute.

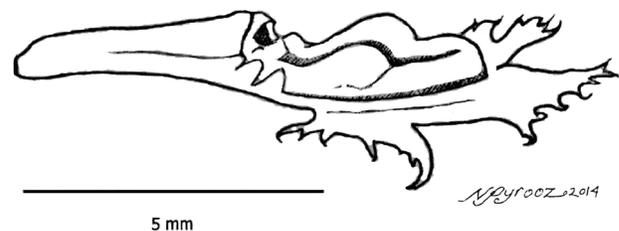


FIGURE 3. *Epidendrum aramoense*. Column, callus, and lip, lateral view (sepals and petals removed). Drawing by Natalie Pyrooz based on Cornejo *et al.* 8601 (GUAY), the holotype.

The distinctive pattern of distribution, that is, restricted to the lowlands of central-western Ecuador (versus Andean) makes an easy differentiation for *E. aromoense* in comparison to the remaining red-flowered species in the subgroup. Similar red-flowered species are: *Epidendrum tulcanense* Hágsater & Dodson has also red flowers but it is distinguished by the large white massive callus, formed by nine unequal tubercles: four basal ones and the main structure formed by five sub-equal tubercles. *Epidendrum laurelense* Hágsater & Dodson, that differ from *E. aromoense* by the carmine-red flowers on a much more open raceme, with a massive white callus formed by a semicircular sulcate, marginally plurilobulate fleshy plate, found between Tulcán and Maldonado, on the border between Ecuador and Colombia, on roadsides and rocks in wet forest between at around 2000 to 2500 m above sea level.

Epidendrum coroicoense Schltr. is another species similar to *E. aromoense* by the lacquer-red flowers; however, the former species is known from southern Peru and western Bolivia, along the upper Amazon slope of the Cordillera Oriental of the Andes, and differ from *E. aromoense* by the narrow leaves about 6–7 times longer than wide, the petals wider than the sepals, elliptic-sub-orbicular, the lip bearing lateral lobes overlapping with the mid-lobe when spread; and callus 5-tuberculate with two basal and three apical tubercles, and without keels. *Epidendrum portokalium* Hágsater & Dodson is another species with red flowers that resembles *E. aromoense*, but it is found on the Amazon slopes of the Andes in central Ecuador, and differs from *E. aromoense* by the callus unequally 7-tuberculed (with four basal tubercles and three apical ones).

LITERATURE CITED

- CROAT, T., A. GRACE AND C. KOSTELAC. 2013. New species of *Anthurium* (Araceae) from Andean Western South America. *Aroideana* 36: 56–72.
- DODSON, C. H. 1999. Orchidaceae, Pages 630–775 in P. M. JØRGENSEN AND S. LEÓN-YÁNEZ, EDS. *Catalogue of the Vascular Plants of Ecuador*. Monogr. Syst. Bot. Missouri Bot. Gard. Vol. 75.
- HÁGSATER, E. 1985. Towards an understanding of the genus *Epidendrum*. Pages 195–199 in K.W. TAN, ED. Proceedings of the 11th World Orchid Congress. American Orchid Society, Miami.
- . 2013. *Epidendrum tulcanense*, In E. HÁGSATER AND L. SÁNCHEZ S., EDS. The Genus *Epidendrum*, Part 10, Icon. Orchid. Volume 14, t.1491.
- IUCN. 2001. IUCN Red List Categories and Criteria Version 3.1. IUCN Species Survival Commission, Gland, Switzerland, and Cambridge, United Kingdom.
- LEÓN-YÁNEZ, S., R. VALENCIA, N. PITMAN, L. ENDARA, C. ULLOA ULLOA, AND H. NAVARRETE, EDS. 2011. Libro Rojo de las Plantas Endémicas del Ecuador, ed. 2. Publicaciones del Herbario QCA, Pontificia Universidad Católica del Ecuador, Quito.
- WEATHERBASE. 2014. <http://www.weatherbase.com/weather/weather.php3?s=11048&cityname=Manta-Manabi-Ecuador&units=metric> (consulted October 1, 2014).