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Dichaea filiarum

Text by Franco Pupulin/Watercolor by Sylvia Strigari

Tribe Cymbidieae
Sutribe Zygopetalinae
Genus Dichaea *Lindley*

Dichaea filiarum Pupulin, Vanishing Beauty 1: 206–207. 2005. Type: Costa Rica. Cartago: Turrialba, Monumento Nacional Guayabo, 09˚56'N, 83˚43'W, ca. 800 m, premontane wet forest, epiphytic in the understory forest, August 9, 2003, flowered in cultivation at Jardín Botánico Lankester, October 8, 2003, *F. Pupulin 4944, M. Pupulin, C. Pupulin & H. León-Páez* (Holotype: USJ).

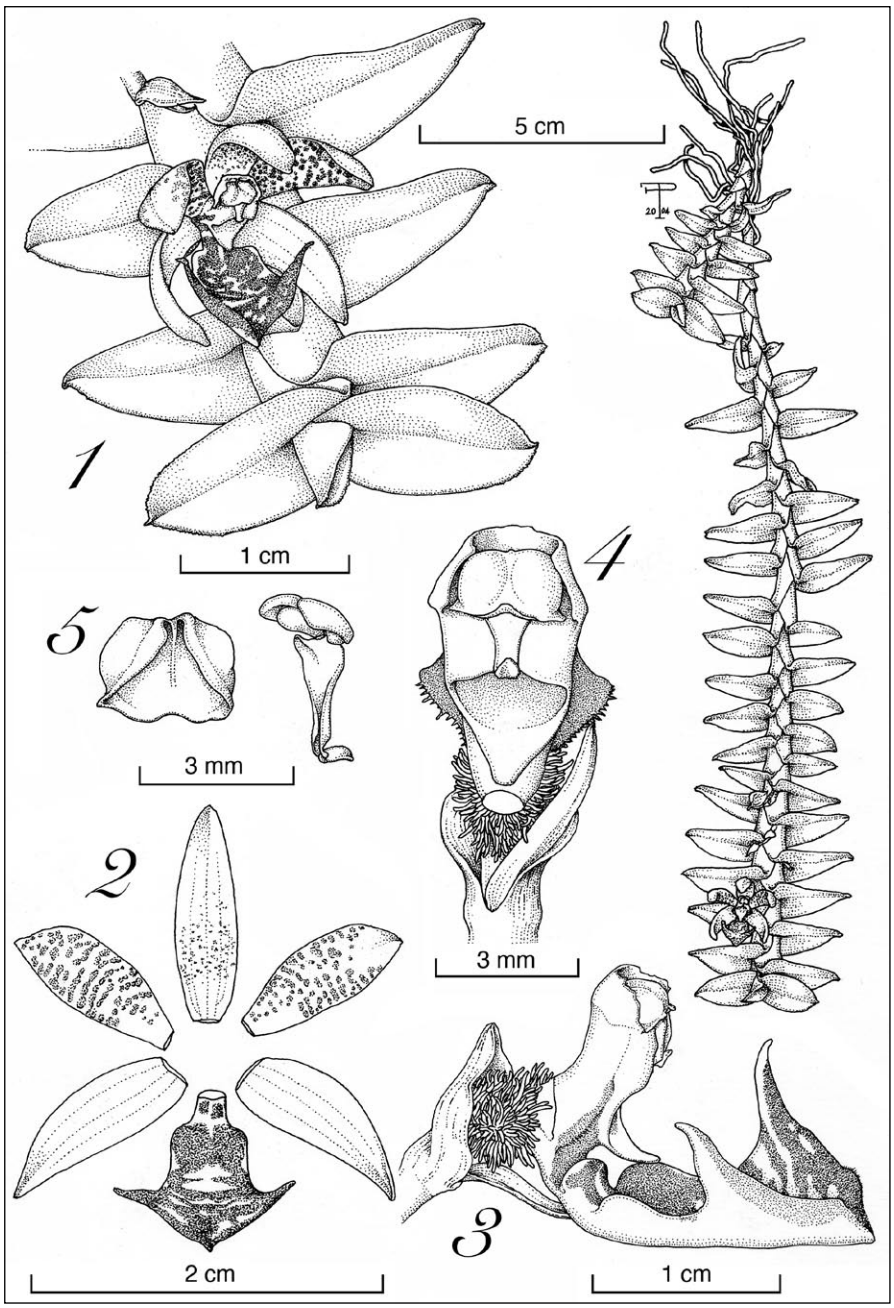
Epiphytic, caespitose, pendent *herb* to 60 cm long. *Roots* filiform, basal, 0.5–0.7 mm in diameter. *Stems* compressed, pendent, few from base, 20–60 cm long, 0.5–0.8 cm wide across conduplicate sheaths, rarely branching toward the apex. *Leaves* closely spaced along stem, spreading, thick-coriaceous, dark olive green, 12–18 × 6–8 mm, broadly lanceolate, the apex shortly acuminate, abaxially apiculate, the apical margins raggedly serrulate, somewhat curled backwards, with conspicuous crossveining, nonarticulate with the clasping sheaths, 6–8 × 5–8 mm. *Inflorescences* solitary, one-flowered, emerging above foliage, perpendicular to stem, to 13 mm long, provided with a basal, cylindrical bract, 4 mm long. *Floral bract* double, the outer bract widely ovate, 5.0 × 3.5 mm, the inner bract narrowly oblong, 7 mm long. *Pedicel* cylindric, 2 mm long. *Ovary* 2 mm long, muricate. *Flower* large for section *Dichaea*, usually not completely spreading, the sepals pearlescent creamish white, slightly tinged pale pink, abaxially cream, the dorsal sepal flecked pale purple-violet, the petals pale pearlescent cream, flecked violet, the lip white, heavily barred pale violet, the column white with violet wings; no fragrance detected. *Dorsal sepal* erect, concave, narrowly elliptic-lanceolate, acute, 12 × 4 mm. *Lateral sepals* obliquely lanceolate, concave, acute, 11 × 4 mm. *Petals* oblanceolate, incurved toward apex, subacute, 10 × 4 mm. *Lip* trilobed, anchoriform, clawed, 8.5 × 10.0 mm when spread, the claw 1.5 × 1.5 mm, the hypochile subquadrate, forming distinct shoulders, 4.0 × 4.5 mm, the epichile shortly acuminate, microscopically ciliate toward the apex, 3.5 × 6.0 mm, laterally producing spreading to recurved, triangular-acuminate lobes, 2.5 × 0.8 mm. *Column* erect, 5 mm long, with distinct foot, the clinandrium cucullate, irregularly crenulate, provided with widely triangular, ciliate wings; ligule oblong, glabrous, 1.5 × 0.8 mm. *Anther cap* subquadrate, retuse, two-celled. *Pollinia* 4 in two superposed pairs of different size, on a obtriangular, apiculate stipe with the margins incurved; viscidium elliptic. *Fruit* an elliptic capsule, densely muricate, 13 × 10 mm.

Notwithstanding the small size of the flowers of most species of *Dichaea*, and their often quite ephemeral nature, these plants have been featured relatively frequently during the early stages of the scientific exploration of the American tropics. To my knowledge, the first botanical illustration of a *Dichaea* was prepared by the French pharmacist, botanist and explorer, Jean Baptiste Christophore Fusée Aublet (1720–1778) during his exploration of French Guiana in 1762–1764. Even though the portrait of the flowers is somewhat a "monster" (Pupulin 2007), the plant of *Limodorum pendulum* illustrated by Aublet is indisputably the first *Dichaea* presented to science. A few years later, in 1785, Salvador Rizo Blanco (1762–1816), who was the director of the Botanical Painters School in Mariquita (Colombia) under the supervision of Celestino Mutis, prepared a beautiful illustration of a *Dichaea* species (González 1996) that likely depicts *Dichaea elliptica* (usually and erroneously known as *Dichaea brachypoda*). Contemporarily to the work of Rizo in Colombia, the Swedish botanist Olof Swartz studied *Dichaea* in Jamaica, and between 1784 and 1786 he illustrated his *Epidendrum graminoides* (= *Dichaea graminoides*), even though his drawing was published posthumously only in 1829 (Swartz 1829). Meanwhile, José (Joseph) Brunete Casto Dubua (1746–1787), first painter of the Spanish Expedition to the Viceroyalty of Peru, prepared in 1786 a beautiful tempera of a specimen of *Dichaea* collected in Muña, Peru, which Hipólito Ruiz and José Pavón (1798) later described as *Fernandezia laxa* (Pupulin 2012). Eduard Friedrich Poeppig painted the same species, collected at Pampayacu (not far from Muña), and described it in 1838 as *Dichaea maculata*. In the same publication, he also illustrated and described the unique *Dichaea caliculata*. At the beginning of the 19th century, two of the painters hired by Mutis to illustrate the flora of Colombia, José Camilo Quezada and Alejo Sáenz (no dates of birth or death known, González 1996), illustrated *Dichaea morrisii* (which will be formally described more than a century later) and Sáenz prepared a really impressive illustration of *Dichaea histrio* with six open flowers and two buds. And again, in 1827, William Jackson Hooker, in the third volume of *Exotic Flora*, illustrated another *Dichaea* under the name of *Isochilus graminoides* (correctly *Dichaea trinitensis*).

It is true that botanists and explorers who visit the American tropics could not escape a close encounter with some specimens of *Dichaea*. With over 120 species distributed from Mexico (North America) through Central America and the West Indies to Bolivia and Argentina (South America), *Dichaea* represents, in fact, a rather common element of the understory epiphytic vegetation, occupying a broad spectrum of different habitats ranging from the tropical wet forests near sea level to the montane cloud forests up to almost 8,200 feet (2,500 m) (Pupulin 2009). The frequency of *Dichaea* individuals is higher in pristine vegetation, probably because of the evenly shaded conditions preferred by most of the taxa, but plants are also commonly found as epiphytes in severely altered vegetation and on scattered trees, and only the driest regions with a drought season exceeding four months, can be considered inhospitable for the species of this otherwise ubiquitous genus (Pupulin 2007).

Dichaea filiarum was discovered during a visit that I made with my two daughters, Margherita and Carlotta (then respectively 13 and 12 years old), to the archaeological park of Guayabo near Turrialba. Settled in the Caribbean premontane forest of the Talamanca mountain range, the park protects a monumental indigenous settlement, which was occupied between 1000 BC and 1400 AD, before being mysteriously abandoned. The new species of *Dichaea* was dedicated to Margherita and Carlotta (*filiarum* is the Latin for "of the daughters"), who actively took part in the collection, standing on my shoulders to reach the plant hanging from a high branch.

Dichaea filiarum belongs to a group of species that have lost the cellular abscission layer that allows the leaves to break away from the stem when aged. In species of *Dichaea* section *Dichaea*, the leaves then rot



Dichaea filiarum, the plant
1. flower and apex of stem.
2. dissected perianth.
3. column and lip, lateral view.
4. column, abaxial view.
5. anther cap and pollinarium.
All drawn from *Pupulin et al. 4944* (USJ) by Franco Pupulin.

in place, to eventually dry out completely and dissolve with time. In other, more primitive species of *Dichaea* (belonging to Sect. *Dichaeopsis*), the leaf blade is articulate with the foliar sheath that clasps the stem and breaks away when old, such that the basal part of the stem is usually bare. As shown by molecular analyses, the leaf abscission layer was lost once during the evolution of the genus, occurring only in the derived groups of the genus (Neubig *et al.* 2009).

In most species of *Dichaea* section *Dichaea*, the flowers have a distinct temporal activity. When the climate is sunny, they open during the first hours of the day, producing a quite powerful scent to attract euglossine bees. The flowers then close in the afternoon, and repeat the succession of opening and closing for four to five days, before fading and detaching from the plant. When the days are cloudy, the flowers just slightly open in the morning and close soon thereafter, without producing any perfume.

Among species of Section *Dichaea*, *Dichaea filiarum* is recognized by the strictly pendent plant, rarely branching toward the apex, the dark green leaves, overcast with a dark bronze shadow, the pearly, almost shiny, nacreous color of the flowers, and the subquadrate hypochile, forming distinct shoulders and with the margins almost parallel. As most species of its genus, it is adapted to the suboptimal lighting conditions of the lower canopy, where it usually grows in dense shade. Known from Costa Rica and Panama, it has been recorded at elevations between 1,500 and 3,900 feet (450–1200 m), where populations are restricted to the Caribbean watershed of the continental divide.

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