

# A new species of *Dichaea* (Orchidaceae) for northern Brazil

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## ABSTRACT

*Dichaea* is the largest genus of the subtribe Zygopetalinae and holds its the highest species diversity in South America. Therefore, this study aims to describe a new species of *Dichaea*, which occurs in northern Brazil, *Dichaea braggae* Valsko, Krahl & Holanda. The new species was collected in the north of Manaus in an area of ombrophilous forest and flowered when cultivated. The epithet honors Dr. Pedro Ivo Soares Braga (*in memoriam*), orchidologist who conducted several studies in the Brazilian Amazon. This new species show a affinity with *Dichaea tenuis* C. Schweinf., however it is differentiated both vegetatively and on labellum morphology.

**KEYWORDS:** Taxonomy, Amazonas, epiphyte, dense ombrophilous forest.

# Uma nova espécie de *Dichaea* (Orchidaceae) para o norte do Brasil

## RESUMO

*Dichaea* é o maior gênero da subtribo Zygopetalinae e possui sua maior diversidade de espécies na América do Sul. Diante disto, este trabalho teve o objetivo de descrever uma nova espécie de *Dichaea* ocorrente na região norte do Brasil, *Dichaea braggae* Valsko, Krahl & Holanda. A nova espécie foi coletada ao norte de Manaus em área de floresta ombrófila e floresceu em cultivo. O epíteto é em homenagem ao Dr. Pedro Ivo Soares Braga (*in memoriam*), orquidólogo que realizou vários estudos na Amazônia brasileira. A nova espécie possui afinidade com espécies de *Dichaea* seção *Dichaeopsis*, contudo são diferenciadas vegetativamente e na morfologia do labelo.

**PALAVRAS CHAVE:** Taxonomia, Amazonas, epífita, floresta ombrófila densa.

The genus *Dichaea* was described by Lindley (1833) and holds the largest number of species belonging to the subtribe Zygopetalinae (Chase *et al.* 2003; Whitten *et al.* 2005) and comprises nearly 100 species (Pupulin 2007) distributed from Mexico to Bolivia and Argentina as well as the West Indies, presenting its highest diversity in South America (Dodson 2004). Ecuador presents 40 species recorded in the genus (Dodson 2004), Costa Rica hosts 29 species (Pupulin 2007) and Brazil 25 species, with 11 of them being endemic, as well as 18 documented species in the Brazilian Amazon (Barros *et al.* 2013). Fourteen of the latter are to be found in the state of Amazonas (Barros *et al.* 2013).

Since the original description of the genus, other taxonomic treatments including: e.g. Cogniaux (1904-1906); Folsom (1987); Folsom (1996). Presently, four sections are recognized for the genus *Dichaea* (Cogniaux 1904-1906): *Dichaea* section *Dichaea*, which presents pilous ovary and non-articulate leaves; *Dichaea* section *Dichaeastrum*, with glabrous ovary and non-articulate leaves; *Dichaea* section *Dichaeopsis*, which involves plants presenting glabrous ovary and articulate leaves; and finally, *Dichaea* section *Pseudodichaea*, characterized by the pilous ovary and articulate leaves. Pabst and Dungs (1977) divided the genus into five groups taking the leaves (articulation and deciduousness), ovary (glabrous or pilous) and labellum characteristics into account. Even though this genus treatments are limited to Brazilian species, its sections comprise all aforementioned authors combinations for the genus, as a whole. The present study aims to describe a new species of *Dichaea*: *Dichaea bragrae* Valsko, Krahl & Holanda. The terminology used to describe the characteristics is based on Radford *et al.* (1974) and Dressler (1993).

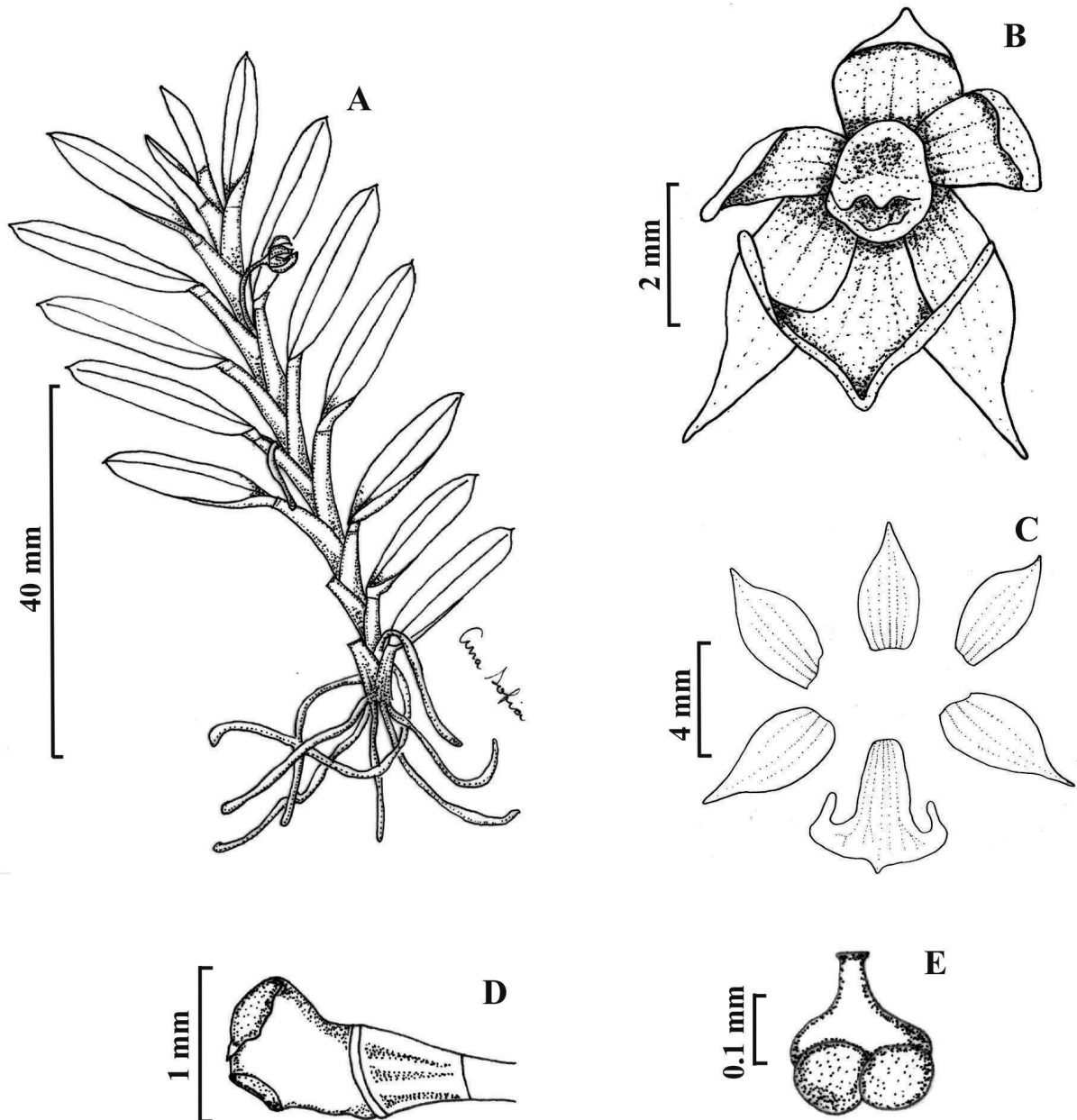
*Dichaea bragrae* Valsko, Krahl & Holanda, sp. nov. Type: BRASIL: Amazonas: Manaus, BR 174, KM 72, Projeto Dinâmica Biológica de Fragmentos Florestais (PDBFF), Fazenda Dimona, S 2°21' and W 59°57', 7/IV/2012, fl., flowered in cultivation in 7.IV.2013, J.J. Valsko 108 (Holotype INPA). (Figure 1A-E, Figure 2A-D).

*Dichaea bragrae* is similar to *D. tenuis* yet they differentiate by the fact that *D. bragrae* holds elliptical leaves with apiculate apex being wider than those of *D. tenuis* that presents aciculate and semiterete leaves. Furthermore, *D. bragrae* presents elliptical sepals and petals and the labellum lateral lobes show to be sharply curved, being that *D. tenuis* presents ovate sepals and petals and round labellum lobes. The labellum lateral lobes curvature is similar to that of *D. cornuta*, however, the latter presents larger floral parts.

The plant is epiphytic and caespitose. Its roots are between 1.5 and 1.8 mm in diameter and whitish, slightly fleshed and emerge from the stem base. The stem is from 4.3 to 20.6 cm long and nearly 3.3 mm in diameter and shows to be lengthy and not branched, cylindrical-shaped and to be covered by

leaf sheaths. These leaf sheaths are about 12.2 mm long and 3.6 mm in width, are glabrous with entire margin and light green coloring. Leaves are near 22 mm long and 5.6 mm in width, are elliptical-shaped with rounded base and apiculate apex. Leaf blades present articulate base with leaf sheaths and are spaced among one on other, in addition to presenting themselves as deciduous, glabrous, entire margin and light green colored. The inflorescence is one-flowered, solitary and with 6.8 mm long, in addition to emerging from in between the leaf sheaths. The pedicel is about 3.83 mm long and shows to be glabrous with two tubular bracts on its base. Both bracts have sharp apex, entire margin and are slightly greenish white-colored. The outer bract measures about 2.9 mm long and 1.1 mm in width and the inner one 2.8 mm long and 1.1 mm in width. The ovary and pedicel together measure about 1 mm long and 0.3 mm in width and are glabrous. Flowers are green-colored on the sepals and petals and the labellum is white. Flowers didn't put forth no aroma at all. The dorsal sepal measures about 3.6 mm long and 1.2 mm in width and is lanceolate-shaped, acute-apexed and round-based, in addition to being symmetrical and with entire margin. Lateral sepals have about 4.9 mm long and 1.9 mm in width and likewise shaped. Petals measure near 4.1 mm long and 1.7 mm in width, lanceolate-shaped, acute apex and round-based as well, in addition to being slightly asymmetrical and with entire margin. The labellum measures about 4.3 mm long and 3.7 mm in width and shows to be 3-lobed. Its base is unguiculate, oblong and measures nearly 2.3 mm long and 0.4 mm in width, in addition to being glabrous and with entire margin. The labellum blade have about 2.5 mm long and 3.7 mm in width, is triangular and apiculate-apexed. The labellum lateral lobes are linear and sharp-curved, round-apexed and with entire margin. The gynostemium is near 1 mm long and 0.6 mm in width, is erect and glabrous. The anther cap measures approximately 1.6 mm long and 1.4 mm in width, being round, symmetrical, glabrous, with entire margin and green-colored. The species presents four pollinia being two different pairs. The pollinia measures about 0.1 mm in diameter and are yellowish-colored and circular-shaped. The stipe is triangular in dorsal view and the viscidium is elliptical. The fruit is about 7.5 mm long and 2.5 mm in width, glabrous, ovate and light green-colored.

Etymology, phenology, distribution and habitat: the epithet honors Dr. Pedro Ivo Soares Braga (*in memoriam*), orchidologist who developed several studies with Orchidaceae in the Brazilian Amazon (Storti 2011). It flowered in cultivation between March and May. The flowers last approximately three days. *Dichaea bragrae* occurs in dense ombrophilous forest at an altitude of 90-100 meters in the Dimona farm belonging to the Biological Dynamics of Forest Fragments Project (PDBFF). The type specimen was found in an area where flooding occurs for a short period, resulting in

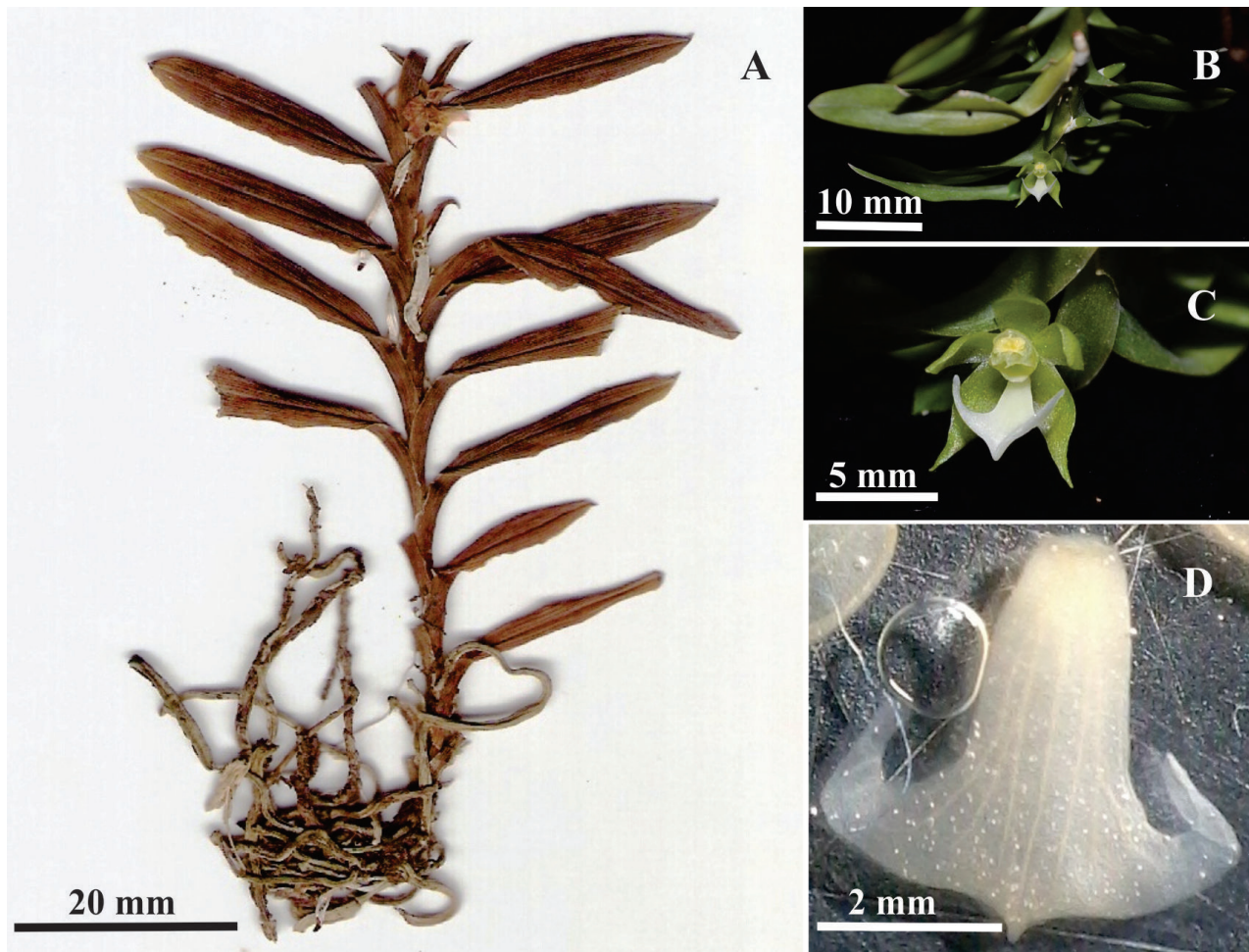


**Figure 1.** *Dichaea braggae* Valsko, Krahl & Holanda. A. General aspect of the plant. B. Flower. C. Floral parts. D. Gynostemium. E. Pollinia.

the formation of small ponds within the forest. It is observed attached to the phorophytes, about four to eight meters from the ground in low light environment.

Comments: *Dichaea braggae* presents morphological characteristics that fit within the *Dichaea* section *Dichaeopsis* (Cogniaux 1904-1906). The species fits in the *D. panamensis* group. According to Pabst and Dungs (1977), the plants of

which always hold articulated and deciduous leaves, glabrous ovary and a narrow and long labellum base. This species is related to *Dichaea tenuis* C. Schweinf., however it differs both in the vegetative aspect and floral morphology (labellum). *Dichaea braggae* presents apiculate-apexed, elliptical leaves, larger (ca. 5.64 mm) than those of *D. tenuis* which present 9-11 mm wide and acuminate-apexed semiterete acicular



**Figure 2.** *Dichaea bragae* Valsko, Krahl & Holanda. A. General aspect of holotype. B. Image of the plant. C. Flower. D. Labellum.

leaves, h. The floral parts (sepals and petals) of *D. bragae* are lanceolate while in *D. tenuis* they are ovate, in addition, the *D. bragae* labellum holds linear, sharp-curved, side lobes while the *D. tenuis* labellum is widely rounded (Schweinfurth 1961). In general, the curvature of the side lobes in *D. bragae* is the main characteristic distinguishing this species from all other she in the same genus. However, in addition to *D. bragae*, the species *Dichaea cornuta* S. Moore also presents sharp-curved lateral lobes, yet *D. bragae* holds smaller floral parts (sepals, petals and lip) (e.g. dorsal sepals = 3.6 mm, labellum = 4.3 mm) than those of *D. cornuta* by having larger floral parts (e.g. dorsal sepals = 8.5 mm, labellum = 6 mm). In the phylogenetic of Neubig *et al.* (2009) the *Dichaea* section *Dichaeopsis* is shown to form some clades bearing closely related species. *Dichaea trulla* Rchb. f. that resembles vegetatively with *D. bragae* being one Among them, and *Dichaea glauca* (Sw.) Lindl is mentioned to be among them as well. However the

sharp curve in *D. bragae* lateral lobes clearly differs from that present in *D. trulla* and *D. glauca*.

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