





Addition of *Epidendrum tridens* (Orchidaceae, Laeliinae) to the Brazilian flora

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ABSTRACT

Through this work the geographical distribution of *Epidendrum tridens* is enlarged, after its discovery in Brazil. Hitherto the species was recorded only in Bolivia, Ecuador, Peru and Venezuela. A brief description of the taxon is provided, together with photographs, notes on distribution, habitat and phenology. Finally, similarities and differences with the closest relatives present in the Amazon Basin are discussed.

Keywords: Amazon Basin; Amazonas; new record; Reserva Florestal Adolpho Ducke; taxonomy.

Adição de *Epidendrum tridens* (Orchidaceae, Laeliinae) para a flora brasileira

RESUMO

Este estudo amplia a distribuição geográfica de *Epidendrum tridens* após sua descoberta no Brasil. Até então possuía registro apenas para a Bolívia, Equador e Peru e Venezuela. É fornecida uma breve descrição da espécie, além de serem apresentadas fotografias e comentários relacionados à distribuição, habitat, fenologia e comparação com as espécies congêneres ocorrentes na Bacia Amazonica.

Palavras-chave: Amazonas, Bacia Amazonica, novo registro, Reserva Florestal Adolpho Ducke, taxonomia.

Among the existing plant families with flowers, Orchidaceae stands out due to its species richness and diversity; the family contains about 25 000 species in 850 genera which may be found in almost all the world regions, mostly in tropical belt (FAY; CHASE, 2009; CHRISTENHUIZ; BYNG, 2016). According to BFG (2020) the Brazilian territory houses about 2792 species distributed within 252 genera, 56% of these species given as endemic to the Brazilian territory. In this context, the Brazilian Amazon also stands out as it encompasses approximately 29% of Brazilian species (SILVA; SILVA, 2004; BFG, 2020). However, all these numbers can be underestimated due to the constant taxonomic changes and descriptions of new taxa, especially for the Brazilian Amazon (e.g. PESSOA; ALVES 2012a; 2012b; VALSKO et al., 2014a; 2014b; 2019; KRAHL et al., 2014; 2016a; 2016b; HAGSÁTER; KRAHL, 2020).

Epidendrum L. is considered as one of the largest genera in Orchidaceae with about 1500 species distributed in the Neotropical area, from Florida (USA) southward to northern Argentina occupying besides a large diversity of habitats (HÁGSATER, SOTO-ARENAS, 2005). In Brazil 130 species have hitherto be reported, of which 71 are endemic – corresponding to a 55% endemism rate (BFG, 2020; HÁGSATER; KRAHL, 2020). Among these *Epidendrum* species, 42% (55 spp.) are present in Brazilian Amazon (BFG, 2020), a biome that can still hide surprises regarding new species (e.g. HÁGSATER; KRAHL, 2020). So, this work aims to present a species not yet reported for Brazil, *Epidendrum tridens* Poepp. & Endl., a species belonging to the Hágsater's informal Nocturnum group (HÁGSATER, 1984).

Hitherto this species has been documented in the Amazon slope of the Cordillera de los Andes in Ecuador, Peru and Bolivia and up to the southern Guiana Shield in Venezuela, at 640-2900 m alt. (HÁGSATER; SANCHEZ, 2015). It is listed as “not

present in Brazil” by BFG (2020). The taxon was found and observed during the survey of the orchid flora of the Manaus region (State of Amazonas/AM) in various localities. Specimens were collected and herborized according to usual procedures described by Mori et al. (1989) and later incorporated in the collection of the herbarium INPA. Its identification was based on the original illustration and description given by Poeppig and Endlicher (1837) as well as on illustrations and photographs of exsiccatas available on <https://orchid.unibas.ch/index.php/en/>, website of the Swiss Foundation at the Herbarium Jany Renz, and in Hágsater and Sanchez (2015). The description of the species was based on the material from Manaus region and the morphological terminology follows Harris and Harris (2001) and Stearn (1995).

Epidendrum tridens Poepp. & Endl., Nov. Gen. Sp. Pl. 2: 2, t. 103. 1837. (Figure 1).

Plant epiphytic caespitose. Stem not widened into a pseudobulb, 4.8-16.1 × 0.5-0.7 cm, elongated, laterally compressed, 4-5 foliate. Leaves 6.6-12.3 × 1.9-3.5 cm, oblong to elliptic, distichous along the stem, apically retuse. Inflorescence 12.3-13.2 cm long, terminal, a 1-2-flowered raceme; floral bract ca. 0.5-0.6 × 0.5 cm, triangular, apically acute. Flower yellowish cream with a white lip, pedicelled; pedicel + ovary 8-8.7 cm long; dorsal sepal 5.3-5.9 × 0.4-0.5 cm, narrowly elliptic, apically acuminate; lateral sepals 5.5-6 × 0.4-0.7 cm, narrowly elliptic, apically acuminate; petals 5.3-5.9 × 0.1-0.2 cm, linear, apically acuminate; lip ca. 5-5.9 × 1.5-2.4 cm, trilobed, disc with two lamellar calli at base, calli 0.3-0.6 cm long; lateral lobes 2.2-2.5 × 0.5-0.8 cm, lanceolate, subfalcate, apically acuminate; terminal lobe 3.4-3.7 × 0.1-0.2 cm, linear, apically acuminate; column ca. 2-2.2 cm long; pollinia 4. Fruit not seen.

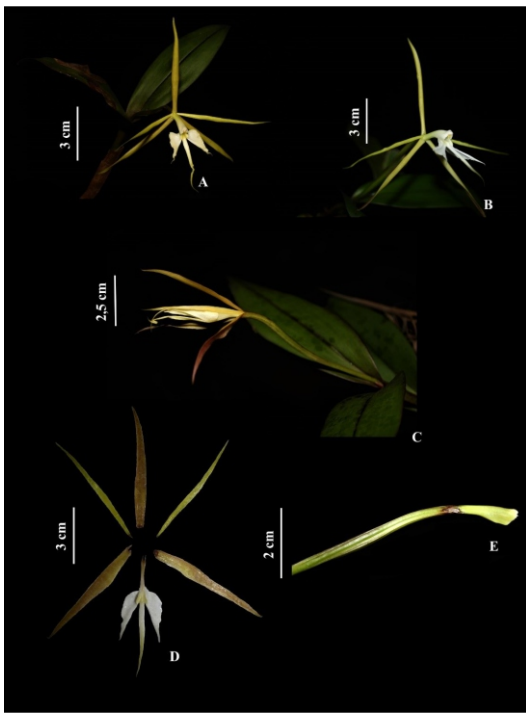


Figure 1. *Epidendrum tridens*. A) Specimen photographed in the Reserva Florestal Adolpho Ducke, B) Specimen photographed in the Reserva Biológica de Campina, C) Specimen photographed in the branch of the Vale do Novo Amanhecer, D) Floral segments, E) Column and part of the pedicelled ovary. / **Figura 1.** *Epidendrum tridens*. A) Indivíduo proveniente da Reserva Florestal Adolpho Ducke, B) Indivíduo proveniente da Reserva Biológica de Campina, C) Indivíduo proveniente do ramal do Vale do Novo Amanhecer, D) Peças florais, E) Coluna + parte do pedicelo + ovário.

Material examined: BRAZIL. Amazonas: Manaus, Ramal Vale do Novo Amanhecer, próximo ao lote 627 (Sítio Toca da Onça), 16/IV/2017, A. H. Krahl 577 (INPA); Reserva Biológica de Campina, 23/VI/2019, A. H. Krahl & D. R. P. Krahl 696 (INPA); *ibid.*, 23/VI/2019, D. R. P. Krahl & A. H. Krahl 557 (INPA); Reserva Florestal Adolpho Ducke, 07/VII/2020, A.H. Krahl & D.R.P. Krahl 1487 (INPA).

Distribution and habitat: Hitherto the species has been recorded only from Bolivia, Ecuador, Peru (GOVAERTS et al., 2020) and Venezuela (HÁGSATER; SANCHEZ, 2015). Here its occurrence in Brazil is added. It has been collected in three localities in the Manaus region, in the State of Amazonas, of which two are conservation units (Reserva Biológica de Campina and Reserva Florestal Adolpho Ducke). Besides these three places the species has also been observed in other localities near the BR 174 road running from Manaus to Boa Vista and in the city of Iranduba in the Reserva de Desenvolvimento Sustentável do Rio Negro. Basically, it can be observed in two distinct environments: (1) areas of vegetation that develop on sandy soils (“campina” and “campinarana”); (2) areas of “terra firme” forests (non-floodable forests) (Figure 2).

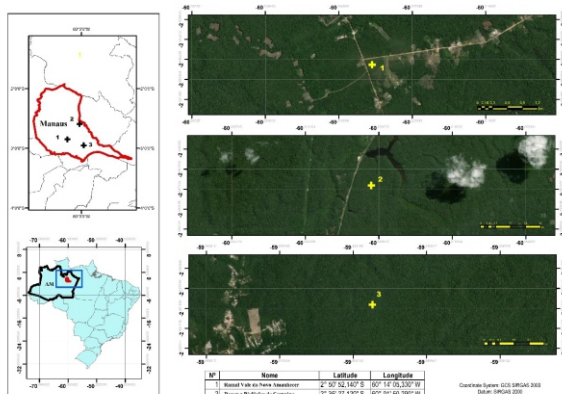


Figure 2. Location of *Epidendrum tridens* collections. / **Figura 2.** Localização das coletas de *Epidendrum tridens*.

Phenology: The plants were observed in bloom between April and June. Flowers also present a strong pleasant and sweet fragrance at night.

Notes: *Epidendrum tridens* belongs to the informal group *Nocturnum* that presents star-shaped flowers usually pollinated by butterflies (HÁGSATER; SOTO-ARENAS, 2005; MOOSBURG et al., 2014). It is widespread from Florida to Brazil and Bolivia. It produces sympodial, cespitose plants with stems cane-like; the flowers are borne in succession by short racemes on the same stem during several years (HÁGSATER et al., 1999).

Epidendrum tridens it is a species characterized by relatively medium sized plants, stems laterally compressed and tinged with purple, leaves oblong to elliptic with the adaxial side greenish, sometimes slightly purplish and the abaxial side purplish, inflorescences short first 1-flowered, a second flower appearing sometimes over time. Moreover, the flowers have a rather long pedicelled ovary (ca. 8-8.7 cm long).

Among the *Epidendrum* belonging to the *Nocturnum* group we can find in the Amazonian region *Epidendrum longicolle* Lindl. reported from the upper Amazon Basin in Venezuela and Guyana to Peru, *Epidendrum nocturnum* Jacq., widely distributed from Florida to Bolivia, *Epidendrum ramiro-medinae* Hagsater & L.Sanchez, restricted to southern Colombia. Another species of this group, *Epidendrum carpophorum* Barb. Rodr., is found along the Atlantic slope from Venezuela to southeastern Brazil, but also in the Brazilian state of Roraima, near the Venezuelan border.

Epidendrum tridens differs from *E. carpophorum* by its leaves tinged with purple underneath and somewhat narrower, its floral segments relatively bigger, its pedicelled ovary longer (8-8.7 cm long vs. ≤ 6,5 cm long) and a longer column (2-2.2 cm vs. 1.3-2 cm).

Compared to *E. longicolle* (the stems of which are also laterally compressed towards the apex), *E. tridens* is basically different by presenting a shorter stem (up to 35 cm in *E. longicolle*), wider leaves (elliptic to oblong, length/width ratio up to 5, vs. narrowly elliptic, ratio 10-20) and a longer pedicelled ovary (8-8.7 cm long vs ca. 3-4 cm long).

Epidendrum tridens differs from *E. nocturnum* in having laterally compressed stems (vs. terete), rather bigger leaves, longer floral segments and longer pedicelled ovary (8-8.7 cm long vs. ≤ 7 cm long).

Finally, *E. ramiro-mediane*, the leaves of which are of the same colour, presents ancipitose stems, narrower leaves, much larger flowers (with sepals and petals ca. 9 cm long) and a shot column (up to 1.3 cm).

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REFERENCE

BRAZILIAN FLORA GROUP (BFG). 2020. Orchidaceae. Jardim Botânico do Rio de Janeiro, Brasil. Disponível em: <http://floradobrasil.jbrj.gov.br/> (Acessada em 25/09/2020).

- CHRISTENHUSZ, J. M.; BYNG, J. W. The number of known plant species in the world and its annual increase. *Phytotaxa*, v. 261, p. 201–217, 2016.
- FAY, M. F.; CHASE, M. W. Orchid biology: from Linnaeus via Darwin to the 21st century. *Annals of Botany*, v. 104, p. 259–364, 2009.
- GOVAERTS, R.; DRANSFIELD, J.; ZONA, S.; HODEL, D. R.; HENDERSON, A. 2019. World Checklist of Orchidaceae. Facilitated by the Royal Botanic Gardens, Kew. Disponível em: <http://apps.kew.org/wcsp/> (Acessada em 25/09/2020)
- HÁGSATER, E.; SOTO-ARENAS, M. A. *Epidendrum*. In: PRIDGEON, A. M.; CRIBB, P.J.; CHASE, M.W.; RASSMUSSEN, F. N. (Eds.) *Genera orchidacearum*, vol. 4, Epidendroideae (part one). Oxford: Oxford University Press, 2005, p. 236–251.
- HAGSÁTER, E.; KRAHL, A. H. *Epidendrum deditae*, a new species of Orchidaceae (Laeliinae) from northern Brazil. *Phytotaxa*, v. 440, p. 225–231, 2020.
- HÁGSATER, E.; SÁNCHEZ S. L. The genus *Epidendrum*, Part 11. Species new & old in *Epidendrum*. *Icones Orchidacearum*, v. 15, pl. 1501–1568, 2015.
- HÁGSATER, E.; SÁNCHEZ-SALDAÑA, L.; GARCÍA-CRUZ, J. The genus *Epidendrum*, Part 2, A second century of new species in *Epidendrum*. *Icones Orchidacearum*, v. 3, pl. 301–400, 1999.
- HÁGSATER, E. Towards an Understanding of the Genus *Epidendrum*. In: TAN, K.W. (Ed.) *Proceedings of the Eleventh World Orchid Conference*. Miami, U.S.A., p. 195–201, 1984.
- HARRIS, J.; HARRIS, M. *Plant identification terminology - An illustrated glossary*. Payson: Spring Lake Publishing, 2001.
- KRAHL, A. H.; VALSKO, J. J.; HOLANDA, A. S. S. Uma nova espécie de *Dichaea* Lindl. (Orchidaceae) para a Amazônia brasileira. *Boletim do Museu Paraense Emílio Goeldi, Série Ciências Naturais*, v. 9, p. 677–683, 2014.
- KRAHL, A. H.; VALSKO, J. J.; HOLANDA, A. S. S.; CHIRON, G. *Anathallis manaussensis* (Orchidaceae, Pleurothallidinae), a new species from the Brazilian Amazon. *Phytotaxa*, v. 245, p. 229–233, 2016a.
- KRAHL, A. H.; VALSKO, J. J.; HOLANDA, A. S. S.; CHIRON, G. A new species of *Dichaea* (Orchidaceae) from Brazil with special reference to its foliar anatomy. *Phytotaxa*, v. 265, p. 145–150, 2016b.
- MOOSBURG, M.; HÁGSATER, E.; OCHSE, M. Ökologische Zusammenhänge anhand von Sammlungsexemplaren erkennen: *Adhemarius sexoculata* Grote, 1867, als Bestäuber bei der Orchideengattung *Epidendrum* Linnaeus, 1753 (Lepidoptera: Sphingidae). *Entomologische Zeitschrift, Stuttgart*, v. 124, p. 2013–2014, 2014.
- MORI, S. A.; SILVA, L. A. LISBOA, G.; CORADIN, L. *Manual de Manejo do Herbário Fanerogâmico*. Ilhéus: Ceplac, 1989.
- PESSOA, E.; ALVES, M. *Lockhartia viruensis* (Orchidaceae-Oncidiinae), a new species from Roraima state, Brazilian Amazonia region. *Brittonia*, v. 64, p. 162–164, 2012a.
- PESSOA, E.; ALVES, M. A new *Anathallis* (Orchidaceae: Pleurothallidinae) from the Brazilian Amazon. *Phytotaxa*, v. 73, p. 13–16, 2012b.
- POEPPIG, E. F.; ENDLICHER, S. F. L. *Epidendrum tridens*. *Nova Genera ac Species Plantarum*, v. 2, p. 2, t. 103, 1837.
- SILVA, M. F. F.; SILVA, J. B. F. *Orquídeas nativas da Amazônia Brasileira II*. Belém: Universidade Federal Rural do Pará, Museu Paraense Emílio Goeldi, Belém, 2004.
- STEARNS, W. T. *Botanical Latin*. Portland: Timber Press, 1995.
- VALSKO, J. J.; KRAHL, A. H.; HOLANDA, A. S. S.; BOLSANELLO, R. X. A new species of *Dichaea* (Orchidaceae) from the Amazon Region of Brasil. *Richardiana*, v. 14, p. 131–139, 2014a.
- VALSKO, J. J.; KRAHL, A. H.; HOLANDA, A. S. S.; ZARTMAN, C. E. A new species of *Dichaea* (Orchidaceae) from northern Brazil. *Acta Amazonica*, v. 44, p. 397–402, 2014b.
- VALSKO, J. J.; KRAHL, A. H.; PETINI-BENELLI, A.; CHIRON, G. *CATASETUM sophiae*, a new species of Orchidaceae (Catasetinae) from northern Brazil. *Phytotaxa*, v. 402, p. 104–120, 2019.