



## First record of *Coryanthes mystax* (Orchidaceae) for the Amazonas State, Brazil

Dayse Raiane Passos Krahl<sup>1\*</sup>, Amauri Herbert Krahl<sup>1</sup>, Guy R. Chiron<sup>2</sup>  
& Mario Henrique Terra-Araújo<sup>1</sup>

<sup>1</sup> Programa de Pós-Graduação em Botânica, Departamento de Botânica, Instituto Nacional de Pesquisas da Amazônia, Av. André Araújo, 2936, CEP: 69.060-001, Manaus, Amazonas, Brazil.

<sup>2</sup> Université de Lyon 1, Herbiers, F-69622, Villeurbanne Cedex, France.

\* Corresponding author [dayseraiane@hotmail.com](mailto:dayseraiane@hotmail.com)

### Abstract

Through this work we extend the geographical distribution of *Coryanthes mystax*, an orchid hitherto considered as endemic to the State of Para (Brazil). We provide a brief morphological description, together with a photographic analytic plate, notes on geographical distribution, habitat, phenology and a discussion of the closest relatives. A tentative evaluation of its conservation status is proposed.

### Résumé

Cette étude élargit la distribution géographique de *Coryanthes mystax*, une orchidée considérée jusqu'ici comme endémique de l'état de Para (Brésil). Une courte description de l'espèce est proposée, accompagnée d'une planche photographique analytique, de notes sur la distribution géographique, l'habitat, la phénologie et d'une discussion des espèces morphologiquement proches. Une évaluation préliminaire de son statut de conservation est également proposée.

### Resumo

Este estudo amplia a distribuição geográfica de *Coryanthes mystax*, da qual é dada até então como endêmica do Estado do Pará, Brasil. É fornecida uma breve

descrição da espécie, além de ser apresentada uma prancha fotografica e comentários relacionados a distribuição, habitat, fenologia e comparação com as espécies congêneres relacionadas. Uma avaliação provisória de seu estado de conservação é proposta.

**Keywords:** Amazon Basin, Amazonas, new record, Stanhopeinae, taxonomy.

**Mots-clés :** Amazonas, bassin amazonien, nouvel enregistrement, Stanhopeinae, taxinomie.

**Palavras-chave:** Amazonas, bacia amazonica, novo registro, Stanhopeinae, taxonomia.

## Introduction

*Coryanthes* Hooker (1831: t. 3102) is a genus belonging to the subtribe Stanhopeinae Bentham (1881: 288) established to separate a set of species from the genus *Gongora* Ruiz & Pavón (1794: 117). It contains about 60 species distributed through the Neotropics, from Mexico to southeastern Brazil (Marçal & Chiron, 2013; 2018a; 2018b; Govaerts *et al.*, 2020). In Brazil the genus is represented by 24 species, of which 13 are given as endemic to the country and 18 species (ca. 75%) are present in Brazilian Amazon (BFG, 2020). Besides in the state of Amazonas only we find over 50% (10 spp.) of the Amazonian species (BFG, 2020).

*Coryanthes* constitutes a monophyletic group with *Sievekingia* Reichenbach f. (1871: 3) as the most closely related genus (Whitten *et al.*, 2000). It is usually divided into two sections, sect. *Coryanthes*, characterized by a smooth mesochile not adorned with calli and sect. *Lamellungis* Schlechter (1916: 67), in which the mesochile is adorned with transverse lamellar calli. According to Gerlach (2011) this division is supported by molecular phylogenetic studies based on nrITS.

The members of the genus present a very particular morphology compared to other Orchidaceae: the lip is divided into three distinctive parts (Pabst & Dungs, 1975; Silva & Oliveira, 1998; Gerlach, 2011). Although it is possible to mention various genera in the subtribe Stanhopeinae with a complex lip, *Coryanthes* is characterized by a column provided with a pair of glands secreting a sweet liquid, called pleuridies (Gerlach, 2009). Besides, the flowers are showy and ephemeral, and the plants are growing in an ant garden, by which they often become dependent on this mutualistic relation (Gerlach, 2009). Thus, these two factors, associated with the fact that the plants of *Coryanthes* are uncommon in the wild, result in rarity of

collections by botanists, often making samples of this genus scarce in herbaria (Gerlach, 2011). Moreover it is very difficult to maintain healthy *Coryanthes* plants in cultivation due to this dependence on ants, in particular *Azteca*, *Camponotus* and *Crematogaster* (Gerlach, 2009; 2011).

In this article, we report the new occurrence of *Coryanthes mystax* Gerlach & J.B.F. Silva (in Gerlach 2010: 30) in the state of Amazonas (Brazil, AM) and we provide a morphological description as well as information on distribution, habitat, phenology and closely related species.

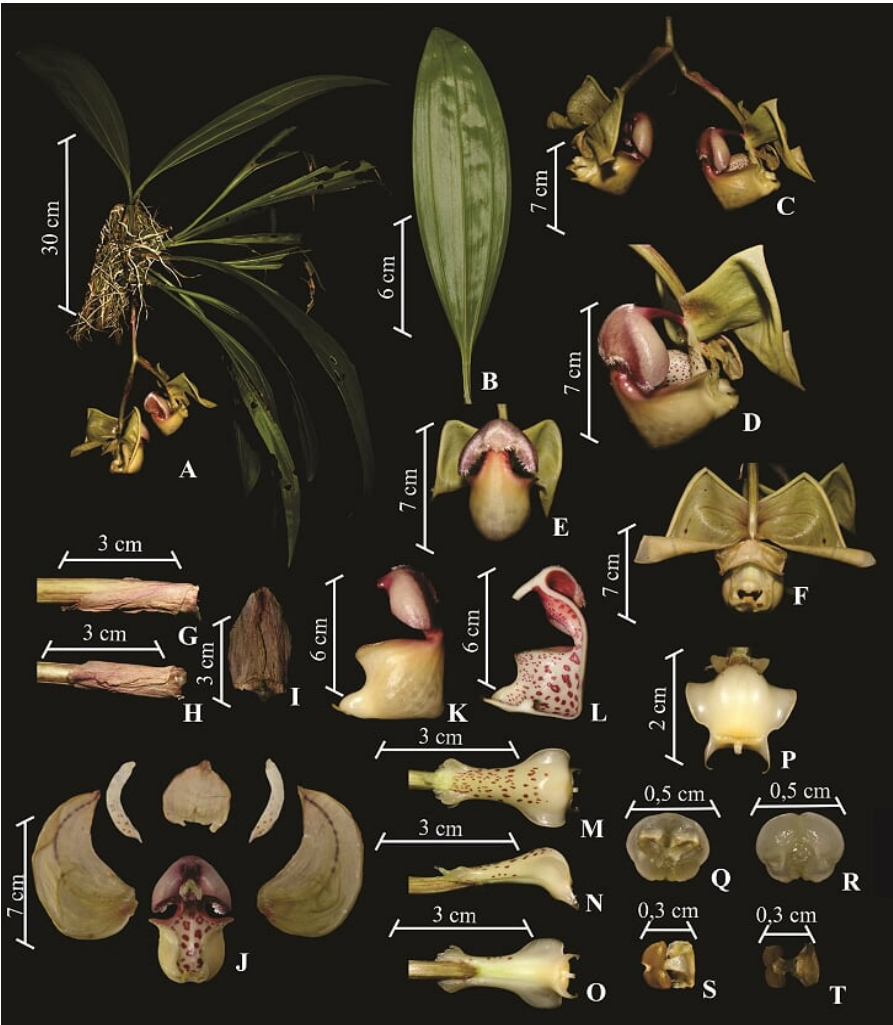
## Material and methods

Individuals of the species have been found during the survey of the orchid flora in the *Reserva Florestal Adolpho Ducke* (RFAD), Manaus (AM). Only one specimen has been collected; it was herborized according to usual procedures described in Mori *et al.* (1989) and later incorporated into the herbarium collection of INPA (acronym according to Thiers, 2020). The identification of the taxon was based on the original description and illustration published in Gerlach (2010). The description and the illustration proposed here are based on the material collected in the RFAD and the terminology adopted follows Harris & Harris (2001) and Stearn (1995).

## Taxonomic treatment

*Coryanthes mystax* G.Gerlach & J.B.F.Silva, *OrchideenJournal* 17: 30, 2010.

Plant epiphytic in ant gardens, caespitose; pseudobulbs 4.9-6.8 × 1-1.8 cm, ovate, 2-leaved; leaves 26.9-42.4 × 5.8-7.2 cm, elliptic, plicate, apically acute; inflorescence a lateral, ca. 27.5 cm long, pendulous, 2-flowered raceme; floral bract ca. 3.5 × 2 cm, ovate, apically obtuse; flowers yellowish with a reddish hypochile and an epichile with red spots inside, pedicelled; pedicelled ovary ca. 8.5 cm long; dorsal sepal ca. 4 × 4 cm, ovate, apically obtuse; lateral sepals ca. 8.3 × 4.4 cm, ovate, subfalcate, apically acute; petals ca. 4.5 × 0.9 cm, linear, subfalcate, apically obtuse; lip ca. 7 cm high, 4.1 cm wide and 5 cm deep, subdivided into hypochile, mesochile and epichile; hypochile ca. 3.3 cm high, 4.3 cm wide and 2.3 cm deep, conical, clawed, claw 2 cm long, deeply emarginate, densely pilose; mesochile ca. 2.2 cm long, cylindrical, ca. 1.1 cm diam., semicanaliculate, with ca. 3 discreet lamellar calli on each side; epichile ca. 5 cm high, 4.1 cm wide and 5 cm deep, deeply concave, with 3 apicules at the apex, apicules ca. 1 × 0.8 cm; column ca. 3 cm long; pollinia 2; fruit not seen. Figure 1.



**Fig. 1.** *Coryanthes mystax*

A – habit. B – Leaf. C – Inflorescence. D – Flower, side view. E – Flower, front view. F – Flower, back view. G-H – Floral bract at the pedicel base. I – Floral bract flattened. J – Floral segments. K – Lip, side view. L – Lip, transverse section. M – Column, back view. N – Column, side view. O – Column, ventral view. P – Column, front view. Q – Anther cap, ventral view. R – Anther cap, top view. S – Pollinarium, back view. T – Pollinarium, ventral view.

Material examined. Brazil, Amazonas, Manaus, *Reserva Florestal Adolpho Ducke*, 02/XII/2019, A.H.Krahl & D.R.P.Krahl 1365 (INPA).

Distribution and habitat. *Coryanthes mystax* is a species endemic to Brazil and hitherto reported only from the State of Pará (Gerlach, 2010; Govaerts *et al.*, 2020) from an unknown locality. The presently reported observation extends its distribution to the State of Amazonas, where it has been collected in the RFAD, a conservation unit located in the north of Manaus. The biotope where it has been found is a zone of *baixio* – a place with small elevation near streams, such as sandbank – in the *terra firme* forest – non-floodable forest.

Conservation status. The species is represented by only two apparently very small Brazilian populations. From what we could observe in the Manaus population, we may infer that the total number of individuals is under 50. In this way, the species can be considered as “Critically Endangered” according to criterion D of IUCN (2012). Looking at the criterion B2, we note an occupation area less than 500 km<sup>2</sup> (probably) and a number of locations = 2, but it was not possible to evaluate a possible reduction (condition b) nor any fluctuation (condition c), due to the extreme rarity of the taxon (2 small populations found in just 10 years). Thus our evaluation is based only on criterion D.

Phenology. The plant has been observed in bloom during December.

Notes. According to Gerlach (2010) *Coryanthes mystax* belongs to the section *Lamellungis* and is characterized by a wide and deeply emarginate hypochile. It is closely related to *C. verrucolineata* Gerlach (1989: 52) and *C. leferenziorum* Gerlach (1990: 49) with which it shares a pilose hypochile margin as well as rather obscure lamellae on the mesochile.

*Coryanthes mystax* also has a fragrance similar to that of *C. verrucolineata* – hitherto endemic to Peru, in the Amazonian rain forest of Loreto – with a predominance of 2-(4-Methoxyphenyl)ethyl acetate [89%] (Gerlach, 2010). Beyond the similarities between both species, we can observe a few differences, that distinctly separate them. They differ at first by the flower colour, uniformly pale yellow in the latter excepted the hypochile but the inside of epichile included, bright yellow with red hue on the hypochile, the margins of mesochile, the upper margins of the epichile that has many red spots inside, in the former. They also differ by the hypochile shape (semiglobose in the latter, distinctly wider than high in the former); by the hypochile apex (folded in the length in the latter whereas it is deeply emarginate in the former); by the mesochile length (in the former the bottom of hypochile almost touches the upper margin of the epichile

whereas in the latter this distance is about equal to the epichile height); by the number of lamellar calli on the mesochile (several in *C. verrucolineata* along the mesochile and merging into the epichil margins); and by the epichile depth (only 3.2 cm in this last).

Compared to *C. leferenziorum*, we must note that the fragrance is different – predominant scent: Benzil acetate, 92% (Gerlach, 2010) – and that the plants grow in a different biotope: *C. leferenziorum* is hitherto endemic to Bolivia, La Paz, where it is found in a rather dry mountain. The main morphological difference is the hypochile apex, abruptly truncate and much less pilose in *C. leferenziorum*; we may add the hypochile colour, dull yellow in the latter, the claw and column lengths (respectively 1.5 cm and 4 cm in the latter); as for the mesochile calli, they are much more discreet in the latter.

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