



## *Catasetum* × *louisiae* (Orchidaceae: Catasetinae), a new natural hybrid for the Brazilian Amazon

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### Abstract

In the present article a new nothospecies is described, from the Brazilian Amazon, more precisely from the city of Careiro da Várzea in the state of Amazonas (Central Amazon). A detailed description of this natural hybrid is proposed together with a photographic plate and a few notes on the habitat, distribution, ecology and phenology. The hybrid is then compared to its parents, *Catasetum discolor* and *Catasetum macrocarpum*, which are also found in the region.

### Résumé

Dans cet article, nous décrivons une nouvelle nothoespèce, originaire d'Amazonie brésilienne, et plus précisément de la ville de Careiro da Várzea située dans l'état d'Amazonas (Amazonie centrale). Une description morphologique détaillée de cet hybride naturel est proposée, accompagnée d'une planche photographique et de notes relatives à l'habitat, la distribution, l'écologie et la phénologie. L'hybride est comparé aux espèces parentes, *Catasetum discolor* et *Catasetum macrocarpum*, que l'on peut observer dans la région.

## Resumo

Este estudo descreve uma nova notoespécie para a Amazônia brasileira, mais especificamente para o município de Careiro da Várzea localizado no estado do Amazonas (Amazonia Central). É fornecida uma descrição detalhada do novo híbrido natural, bem como uma prancha fotográfica e comentários referentes ao habitat, distribuição, ecologia e fenologia. É comparado também com as espécies parentais simpátrica, sendo elas, *Catasetum discolor* e *Catasetum macrocarpum*.

**Key words:** Amazonas, Amazon basin, *Attalea*, epiphyte, taxonomy.

**Mots clés:** Amazonas, bassin amazonien, *Attalea*, épiphyte, taxinomie.

**Palavras-chave:** Amazonas, bacia amazônica, *Attalea*, epífita, taxonomia.

## Introduction

*Catasetum* Richard *ex* Kunth (1822: 330) is the largest genus of the subtribe Catasetinae (Miranda & Lacerda, 1992; Romero & Carnevali, 2009) and contains about 170 species and some tens natural hybrids (Pridgeon *et al.*, 2009; Govaerts *et al.*, 2020), distributed from Mexico southward to Southern Brazil and Argentina (Miranda & Lacerda, 1992; Romero & Carnevali, 2009). It is also known that the Amazon region is considered as the diversity center of the genus (Romero & Carnevali, 2009).

The genus can be characterized by the following features: its pseudobulbs are fusiform, elliptic, ovate or conical; its leaves are deciduous, plicate, usually elliptic, with sheathing bases that entirely cover the pseudobulb; its inflorescence is lateral and racemose, and the flowers are usually unisexual (and then staminate or pistillate) or, rarely, hermaphrodite (Holst, 1999). The male flowers are characterized by two modified staminodes (antennae) on the column (Walker-Larsen & Harder, 2000). Only characters of the staminate flowers are used to separate the species, because their floral morphology is very variable, whereas the pistillate flowers are nearly similar in the entire genus. In Brazil the genus is represented by 127 species of which 95 are considered as endemic to the country (Flora do Brasil 2020, under construction). And the Brazilian Amazon is particularly distinguished in housing 89 species (Flora do Brasil 2020, under construction). In the state of Amazonas 40 species are registered (Flora do Brasil 2020, under construction; Blind, 2020) and this species richness has been continuously growing due to new discoveries made in the region in

the last years. Among the recent additions we can cite *Catasetum ivaneae* Petini-Benelli (2016: 27), *Catasetum sophiae* Valsko, Krahl & Benelli (in Valsko *et al.*, 2019: 117) and *Catasetum lendarium* Blind (2020: 135).

Thus the present work aims to describe a new natural hybrid in the genus, discovered in the Brazilian Amazon, in the city of Careiro da Várzea (Central Amazon). The morphological description of the nothospecies, completed by a photographic plate, is provided together with data on phenology, geographical distribution and habitat. Finally, we shortly discuss the differences and similarities with the parents of the hybrid, *Catasetum discolor* (Lindley, 1835: t. 1735) Lindley (1844: Misc. 34) and *Catasetum macrocarpum* Richard ex Kunth (1822: 331).

## Material and methods

The nothospecies was found during field trips aiming to record orchid species in the frame of a long-term project called “Flora of Amazonas: Orchidaceae”. One specimen has been treated according to the usual process as described in Mori *et al.* (1989) and later integrated in the collections of INPA (acronym according to Thiers, 2020). The identification of the hybrid nature and of its parent species was based on the comparison of the characters of the hybrid and those of the species growing in the area. Finally the terminology adopted here follows Harris & Harris (2001) and Stearn (1995).

## Taxonomic treatment

*Catasetum* × *louisiae* D.R.P. Krahl, Krahl & Chiron, *nothosp. nov.*

Type: Brazil, Amazonas, Careiro da Várzea, BR 3019, km 24, pasto de criação de búfalos, 3°23'25,9"S, 59°53'27,6"W, 02/2019, A.H. Krahl 1419 (Holotype INPA!).

*Haec nothospecies naturalis hybrida inter Catasetum discolor (Lindley) Lindley et Catasetum macrocarpum Richard ex Kunth est.*

Etymology: the specific epithet is given in honor of Louise Passos Krahl, the daughter of the first two authors and a small young woman who appreciates orchids, in particular of the genus *Catasetum*.

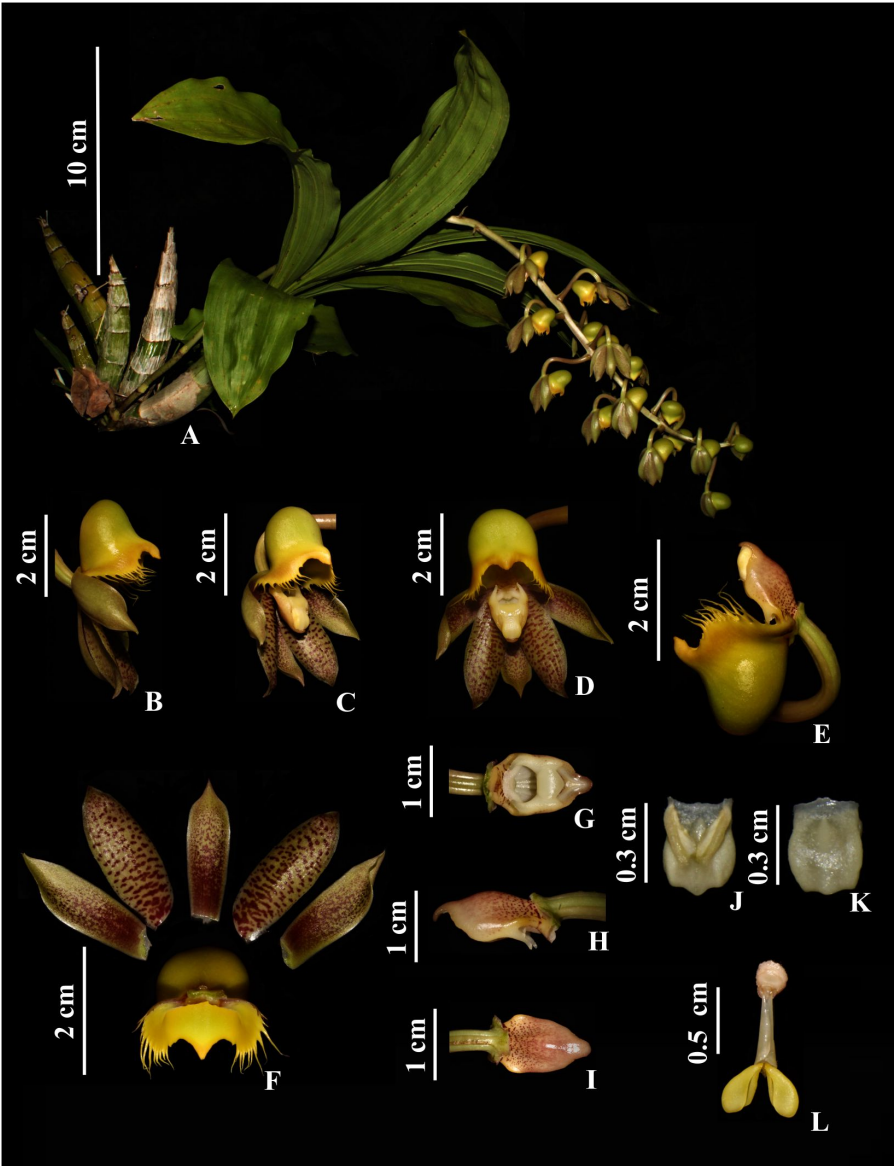
Plant growing as an epiphyte on *Attalea* Kunth (1816: 248) *sp.*, cespitose; pseudobulbs fusiform, 15.4-23.5 × 2.5-3 cm, 5-8-leaved; leaves elliptic, 11.9-33.1 × 5.3-6.4 cm, plicate, membranous, with an entire and slightly undulate

margin, abaxially with 3-5 prominent nerves, apically acute; sheathing leaf-base 5-8 cm long, covering the pseudobulb; inflorescence lateral, ca. 68 cm long, racemose, arching with the flower weight, ca. 20-flowered; peduncle greenish brown, floral bract triangular,  $1 \times 0.35$  cm, amplexicaul, apically acute. Male flowers: petals and sepals brownish with dark points, lip yellowish green; pedicelled ovary ca. 4.3 cm, first brownish becoming yellowish green on the abaxial part, near the ovary; sepals oblong linear, with entire and revolute margin and an acute apex, the dorsal symmetrical, ca.  $2.7 \times 0.8$  cm, the lateral ones ca.  $2.7 \times 0.9$  cm, asymmetric; petals oblong, ca.  $2.7 \times 1$  cm, slightly asymmetric, apically acute; lip helmet-shaped, oval, ca.  $2.1 \times 2.3$  cm, ca. 1.8 cm deep, fleshy, slightly trilobed; lateral lobes rounded, margins fimbriate, median cilia long; median lobe inconspicuous, triangular, apically acute; antennae absent or underdeveloped; anther cap ca.  $0.4 \times 0.2$  cm, whitish; column semi-cylindrical, ca. 1.5 cm long, fleshy, apically shortly rostrate; pollinia 2, obovate, ca.  $0.4 \times 0.1$  cm, yellow. Female flower and fruit not seen. Fig. 1.

Distribution and habitat: the taxon was found growing as an epiphyte on a palm tree *Attalea* species commonly observed on pastures used for buffalo farming in the area of Careiro da Várzea (Fig. 2). In this place there are also occurrences of the two sympatric species (*Catasetum discolor* and *C. macrocarpum*). We should also note that *Catasetum*  $\times$  *louisiae* is not the only *Catasetum* hybrid in the region. A few meters farther we found also *Catasetum*  $\times$  *rosealbum* (Hooker, 1840: t. 3796) Lindley (1840: misc 61) (= *C. discolor*  $\times$  *C. longifolium* Lindley [1839: misc 94]), which indicates the intense hybridization of *C. discolor* with other species present in the place.

Phenology: individuals were observed in bloom during February and May.

Notes: this new natural hybrid shares some characters with its parents, *C. discolor* and *C. macrocarpum* (Fig. 3). The vegetative parts is mostly similar to those of *C. macrocarpum*, where we observe pseudobulbs long and fusiform and leaves elliptic and prominently 3-5-nerved on the abaxial face. As for the flowers it is possible to note features similar to both parent species. The yellowish green colour with brownish points reminds *C. macrocarpum* rather *C. discolor* which presents entirely yellowish green or brownish flowers. Strikingly we can also mention the lip discreetly trilobed – whereas it is entire in *C. discolor* and trilobed in *C. macrocarpum* – where lateral lobes have a ciliate margin as in the former, whereas the latter



**Fig. 1.** *Catasetum* × *louisiae*

A – habit. B-D – Flower. E – Lip and column in side view. F – Floral segments. G – Column in ventral view. H – Column in side view. I – Column in dorsal view. J – Anther cap in ventral view. K – Anther cap in dorsal view. L – Pollinarium.

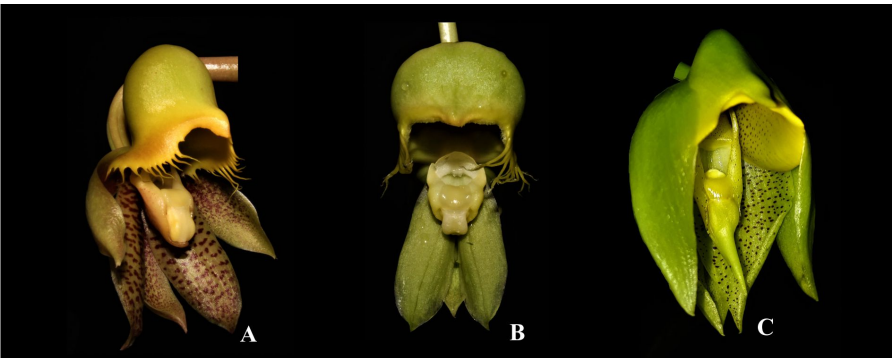
presents undulate and crenulate, sometimes finely serrate, margins; the median lobe is also similar to that of *C. macrocarpum*, inconspicuous triangular acute. The column is semiterete as in *C. discolor* (versus subtriangular in *C. macrocarpum*) and the antennae are absent or underdeveloped whereas they are absent in *C. discolor* and long and crossed in *C. macrocarpum*.

Other comparative characters are given in Tab. 1.



**Fig. 2: Pastures used for buffalo farming**

with the predominance of palm trees *Attalea* where *Catasetum × louisiae* can be found.



**Fig. 3: Flower comparison**

in *Catasetum × louisiae* (A), *Catasetum discolor* (B) and *Catasetum macrocarpum* (C).

**Table 1: Comparison between *Catasetum* × *louisiae*,**

<b>Characters</b>	<b>Species</b>	<i>C. × louisiae</i>
Pseudobulb		Fusiform, 15-23 × 2.5-3 cm
Leaves		Elliptic, 12-33 × 5.3-6.4 cm, abaxially prominently 3-5 nerved
Inflorescence		Arching, ca. 68 cm long, ca. 20-flowered
Floral bract		1 × 0.35 cm, triangular, greenish brown, apically acute
Flowers		Brownish with dark points and lip yellowish green
Pedicle + ovary		ca. 4.3 cm long, sinuous
Dorsal sepal		Oblong-linear, ca. 2.7 × 0.8 cm, acute
Lateral sepals		Oblong-linear, ca. 2.7 × 0.9 cm, acute
Petals		Oblong, ca. 2.7 × 1 cm, slightly asymmetric, acute.
Lip		Helmet-shaped, oval, ca. 2.1 × 2.3 cm, ca. 1.8 cm deep, fleshy, discreetly trilobed lateral lobes rounded, margin fimbriate, median cilia long midlobe inconspicuous, triangular, acute
Column		Semi-terete, ca. 1.5 cm, fleshy, apex shortly rostrate
Antennae		Absent or underdeveloped

*Catasetum discolor* and *Catasetum macrocarpum*

<i>C. discolor</i>	<i>C. macrocarpum</i>
Fusiform, 6-20 × 2.5-4 cm	Fusiform, 10-22 × 2.5 cm
Oblong-lanceolate, 20-40 × 2.5-3 cm, abaxially prominently 3 nerved	Elliptic, 25-45 × 4-7 cm, abaxially prominently 3-5 nerved
Erect or sometimes slightly arching, 30-70 cm long, 10-25-flowered	Erect or slightly arching, 18-30 cm long, 5-10-flowered
0.3-0.5 cm long, ovate-triangular, obtuse	0.8 cm long, triangular, apically acute
Yellowish green or brownish	Yellowish green with brownish points on sepals and petals
2.5-3.5 cm long, horizontally spreading and abruptly curved downwards in the apical part	3.5-3.8 × 0.1-0.2 cm, sinuous
Oblong-linear, 0.9-1.2 × 0.4-0.5 cm, obtuse, reflexed	Obovate-lanceolate, 4.8-5.0 × 1.4-1.6 cm, acuminate acute
Oblong-linear, 1.1-1.5 × 0.5 cm, obtuse, reflexed	Obovate-lanceolate, 4.8-5.1 × 1.6-1.9 cm, acuminate
Oblong, 1.2-1.4 × 0.6 cm, slightly falcate, reflexed	Linear-lanceolate, 4.7-5.0 × 0.6-1.6 cm, erect, oblique
Helmet-shaped, oval, 1.4 × 1.2 cm, 0.6-1.2 cm deep, fleshy lateral lobes not very visible, margin fimbriate, median cilia long (longer on the lower margins, null or reduced to teeth in some forms).	Helmet-shaped, 2.5-2.7 × 2.4-2.5 cm, ca. 2.5 cm deep, fleshy, trilobed margins undulate and crenulate, sometimes finely serrate
Semi-terete, 0.6-1 cm, fleshy, angular, apex shortly rostrate	Subtriangular, 1.9-2.2 cm, fleshy, erect, apex rostrate, thread-like and long
Absent	Long



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