

Rhynchostylis cymifera (Orchidaceae), a New Species from South Western Ghats, India

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Abstract

Rhynchostylis cymifera Yohannan, J.Mathew and Szlach., a new orchid species from Nilambur Forests, part of the southern Western Ghats, India, is here described and illustrated. Taxonomic descriptions, morphological differences to their allied taxa and colour photographs are provided to facilitate identification in the field.

Keywords: New species, Orchidaceae, *Rhynchostylis cymifera*, Western Ghats

1. Introduction

Rhynchostylis Bl. (Orchidaceae, Vandaeae) is a genus of epiphytic orchids which comprises only four species distributed in the Indian subcontinent, China, Indochina, Malaysia, Indonesia and the Philippines (Seidenfaden, 1988; Higgins, 2013). All species of the genus are large or medium-sized monopodial plants characterized by thick, stiff, leathery leaves, stout, thick roots and many-flowered inflorescence, either pendulous or erect. The attractive flowers emit a pleasant sweet scent. The simple lip is stiffly connate with the prominent column foot. Basally the lip is elongate into rather spacious, erect spur, more or less laterally compressed. Sepals differ in form and are broadly opened. The gynostemium is rather stout, erect, with elongate rostellum, apical anther is incumbent, operculate with beak-like apex. Two pollinia are subglobose, more or less cleft and are attached to linear, lamellate tegula. The single viscidium is elongate, lamellate, and somewhat sticky on the ventral surface. The species of the genus are rather easily separated from other Vandaceous genera.

Recent floristic exploration in the evergreen forests of Nilambur has yielded several interesting additional specimens of *Rhynchostylis*. The evaluation of these specimens in the literature and in herbaria revealed that some accessions do not belong to any as yet described species (Sasidharan, 2013; Nayar *et al.*, 2014). This has resulted in the recognition of a distinct novel species, which is described here as *Rhynchostylis cymifera*.

2. Methodology

An unusual specimen of *Rhynchostylis* was collected by RY and JM in May of 2012 during a botanical survey of Nilambur forests (Malappuram District, Kerala) of South Western Ghats. Here, the climate is moderately cold and elevation is 1200 m from sea level. The specimen considered here was morphologically compared to all known *Rhynchostylis* species with available herbarium materials in K (Royal Botanical Garden, Kew), CAL (Central National Herbarium, Howrah, India), KFRI (Kerala Forest Research Institute Herbarium, India), TBGT (Jawaharlal Nehru Tropical Botanical Garden Herbarium, Keala, India), JCB (Indian Institute of Sciences Herbarium, Bangalore, India) and an in-depth literature survey conducted during the period 2012-2016. Photographs of the new species are provided for better understanding of the morphological diversity. Its material stored in the MSSRF (M.S. Swaminathan Research Foundation Herbarium, Kerala, India)

3. Taxonomic Treatment

Rhynchostylis cymifera Yohannan, J.Mathew and Szlach., *sp. nov.* (Figure 1 and 2)

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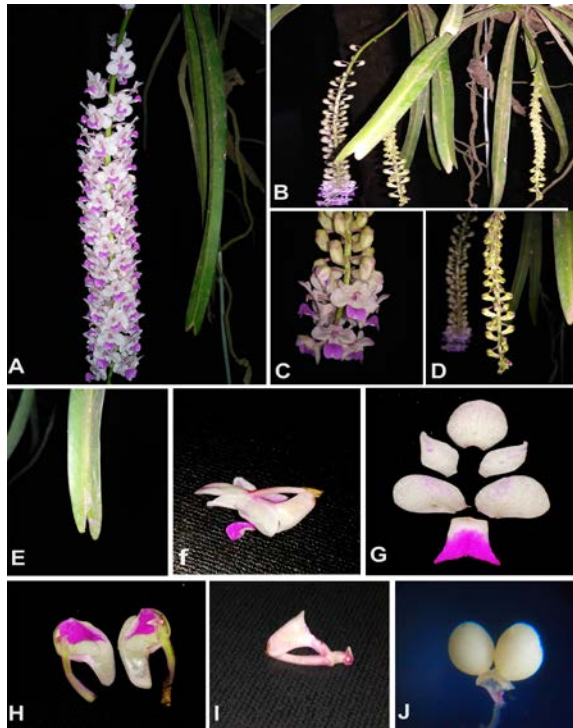


Figure 1. *Rhynchosstylis cymifera*: A. Inflorescence, B. Habit, C & D. Cymose inflorescence, E. Leaf tip, F. Flower, G. Sepals, petals and lip, H. LS of the unopened flower, I. lip's spur, J. Pollinia.

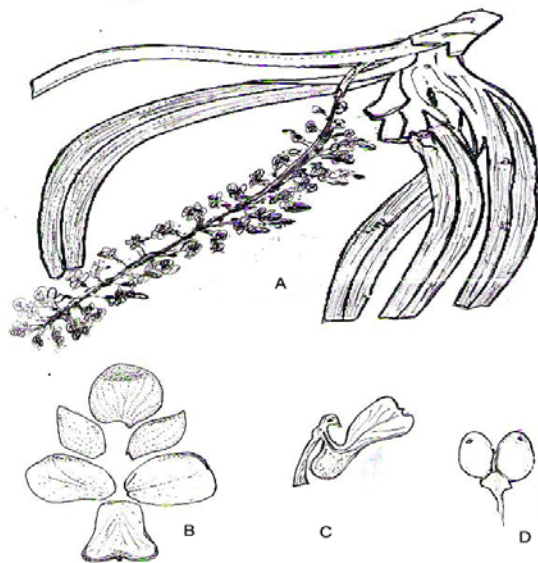


Figure 2. *Rhynchosstylis cymifera*: A. A flowering twig, B. Sepals, petals and lip, C. Column with spur, D. Pollinia.

3.1. Diagnosis:

Similar to *Rhynchosstylis retusa* (L.) Bl. but differing by its odourless cymose inflorescence, rectangular-obovate lip with emarginated apex, obliquely rhombic petals, long pointed rostellum and poratepollinia. Prominent morphological differences distinguishing *Rhynchosstylis cymifera* from the allied species are indicated in taxonomic discussion.

TYPE: INDIA: KERALA: Malappuram District, Nilambur, Vaniyampuzha Estate, altitude 1200 m a. s. l., 20 May 2012, *Yohannan 4417* (holotype: TBGT, isotype: MSSRF!, UGDA-DLSz! - photos)- since the herbarium of the M.S. Swaminathan Research Foundation (Kalpatta, Wayanad, Kerala, India) has not been formally registered with Index Herbariorum(Thiers, 2017), it is here referred to as "MSSRF".

3.2. Etymology:

The specific epithet (viz. *cymifera*) refers to the cymose inflorescence, a clear peculiarity of this species.

Herbs epiphytic, monopodial. Stems short, stout, ascending, enclosed in leaf sheaths with thick roots ca30-40 cm long. Leaves 7-10, 20-25 x 1.6-2 cm, alternate, long and narrow, thickly fleshy, channeled, sheathing and articulate at base, very unequally bilobed or toothed. Inflorescences 1-3, 30-34 cm long, lateral, pendulous, cymose, basipetal, densely many flowered; peduncle and rachis stout and thick, peduncle 7-9 cm long, bracts 3-4, obovate to lanceolate, Floral bracts lanceolate, not reflexed, membranous, persistent. Pedicel with ovary 7-10 mm long. Flowers non-resupinate, medium-sized, broadly opened, odorless, white with pink suffusion, lip purple in apical half. Dorsal sepal 7-9 x 5-6 mm, elliptic-ovate, rounded at apex. Lateral sepals 8-10 x 7-8 mm, oblong obovate, rounded at the apex, oblique at base. Petals 4-6 x 3-4 mm, obliquely rhombic, acute at the apex. Lip 9-13 x 6-9 mm, stiffly connate with the column foot, rectangular-obovate in general outline, apex emarginate, spurred at base; spur 5-6 x 3-4 mm, broadly cylindrical, laterally compressed, obtuse and backward-pointing. Gynostemium ca 3-4 mm long, short, with a prominent foot; anther cap long pointed; rostellum long pointed; pollinia 2, globose, porate; stipe long and narrow, apex slightly dilated; viscidium oblong ovate. Stigma deep-seated. Fruit not seen.

3.3. Phenology:

Flowering recorded in May-June

3.4. Additional Specimen Examined:

INDIA: KERALA: Malappuram District, Nilambur, Punchakolli Estate, altitude 1300 m a. s. l., 22 May 2016, *Yohannan 4419, 4420 & 4421*(MSSRF!).

3.5. Distribution and Ecology:

Rhynchosstylis cymifera grows in the deciduous forests (altitude \pm 1200 m) of the Nilambur Forests, Malappuram, Western Ghats, Kerala, India. It grows on the trunks of *Xylia xylocarpa* (Roxb.) Taub.in association with some bryophytes. This host species is an Asiatic element, occupying a very restricted area in the forests of Nilambur.

3.6. Conservation Status:

Field surveys have located about nine individuals within the Punchakolli and Vaniyampuzha Estates Hills covering an area of 50 km². The threat status of this species has been assigned as 'Critically Endangered' as per the guidelines of IUCN (2001). Based on the above observations, adequate measures should be adopted to ensure the protection of this species in its natural habitat. Moreover, further surveys of this species are required. Apart from habitat destruction caused by anthropogenic

intervention and wild fires during the summer, no other specific threats were determined during the field studies.

4. Taxonomic Discussion

Rhynchostylis cymifera can be easily distinguished from all other species of the genus by cymose, basipetal inflorescence, the character rarely found in orchids. In habit, it is similar to both *R. retusa* (L.) Bl. and *R. coelestis* Rchb.f. and share with them narrow, linear and long leaves. It can be easily separated from Indochinese *R. coelestis* by numerous morphological characters from which pendulous inflorescence (vs erect inflorescence) is the most eye-catching. It appears that *R. cymifera* can be related to *R. retusa*. Despite the latter, however, the lip of our new species is emarginated (vs shortly acute), petals are obliquely rhombic with acute apex (vs oblong, rounded at apex), dorsal sepal is rounded (vs acute), tepals are evenly-white with pink suffusion (vs white or pink but with few purple spots) and pollinia are porate (vs cleft). According to our records, the spur of *R. cymifera* is broadly cylindrical and in *R. retusa* – conical – cylindrical with much higher orifice. Moreover, the lip lamina of the new entity is longer than spur, whereas in *R. retusa* lip lamina is shorter than spur. It is noteworthy that *R. cymifera* is the only species of the genus with odorless flowers. In our opinion all these characters give good premises for describing *R. cymifera* as separate species.

4.1. Key to the genus *Rhynchostylis*

1. Inflorescence upright ascending, tip of spur distinctly bent downwards.....*R. coelestis*
- 1: Inflorescence drooping, spur not bent2
2. Lip apex distinctly 3- lobed, column foot absent.....*R. gigantea*
- 2: Lip apex not distinctly 3- lobed, column foot present.....3
3. Lip's apex upwards and hook like, spur's tip truncate.....*R. rieferii*
- 3: Lip's apex downwards, spur's tip rounded.....4

4. Racemose inflorescence, lip lamina is shorter than spur..... *R. retusa*
- 4: Cymose inflorescence, lip lamina is higher than spur..... *R. cymifera*

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