

# *Balanophora subcupularis* P. C. Tam (Balanophoraceae): New Record Species for Flora of Vietnam

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## Abstract

*Balanophora subcupularis* P.C.Tam, a new record species from Nui Ba forest (Lam Dong prov., Vietnam), is described, illustrated and compared to some species in the same genus *Balanophora*, together with a species with similar morphological features. The results were database to identify the species of *Balanophora subcupularis* P.C.Tam.

**Keywords:** *Balanophora subcupularis*, Lam Dong prov.; Morphological features

## Introduction

Genus *Balanophora* is a small genus which belongs to family Balanophoraceae. There were about 19 *Balanophora* species which mainly distributed in tropical Africa and Australia, temperate to tropical Asia, and the Pacific Islands. In Vietnam, there were records of 6 species of genus *Balanophora*. Species in genus *Balanophora* have some biological activities such as radical scavenging activity; inhibit HIV effects, hypoglycemic effects, analgesic effects and anti-inflammatory effects [1-4].

In order to determine the number and distribution of *Balanophora* species in Lam Dong prov., an investigation was carried out in November 2016. In hill range of Nui Ba mountain (Lac Duong distr. – Lam Dong prov.), wild population of *Balanophora subcupularis* P.C.Tam was discovered. This was a new record species for Flora of Vietnam. In this paper, the morphologic features of new record species was described and illustrated with pictures and drawing, compared to some species of the same genus with similar morphologic features.

## Discussion

## Description

Sample of *Balanophora* species was collected at Nui Ba forest (Lac Duong district, Lam Dong province, Vietnam) in November 2016.

## Scientific name

*Balanophora subcupularis* P.C.Tam (Balanophoraceae)

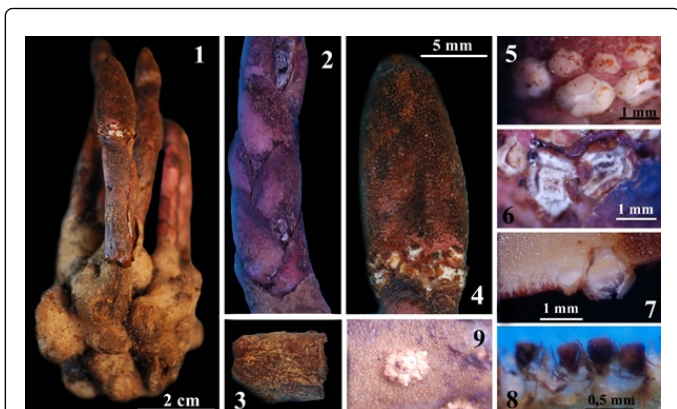
## Morphologic features

Herbs monoecious, yellowish brown rhizome unbranched or in a small mass, branches sub-globose, surface with granular warts and scattered yellow stellate lenticels. Scapes reddish, 3-7 cm. Leaves 5-8, spirally arranged, broadly ovate, apex obtuse. Elliptical inflorescences, 1-2 cm. Male flowers: at basal of androgynous inflorescences, nearly

actinomorphic. Pedicel ca. 0.8 mm. Perianth lobes usually 4, widely ovate, apex truncate, less than 1.5 mm. Spadicles subclavate, ½ ellipsoid. Female flowers: yellowish, at basal of spadicles and main axis of inflorescences. Flowers in October to November check Figure 1, 2.



**Figure 1:** Drawing of *Balanophora subcupularis* P.C.Tam: 1. Plants; 2. Male flower; 3. Female flowers and spadicle.



**Figure 2:** Morphologic features of *Balanophora subcupularis* P.C.Tam: 1. Flowering plant; 2. Scape with spirally arranged; 3. Leaves; 4. Androgynous inflorescences; 5,6. Male flowers; 7. Vertical male flowers; 8. Female flowers and spadicles; 9. Rhizome surface with granular warts and scattered yellow stellate lenticels.

### Distribution and habitat

The samples of *Balanophora subcupularis* was found in Nui Nui Ba forest which is located in Lac Duong district of Lam Dong province, Vietnam at altitudes of about 1500 m. In the world, this species was found in China (Guangdong, Guangxi, Guizhou, Jiangxi, Hunan, Yunnan), Myanmar and Japan [1-3].

### Conclusion

### Conservation

*Balanophora subcupularis* P.C.Tam was monoecious plant with male flowers basally on androgynous inflorescences. This characteristic was similar to some species of the same genus. Table 1 showed the comparison of some monoecious species of genus *Balanophora*.

Features	<i>B. subcupularis</i>	<i>B. fungosa</i>	<i>B. abbreviate</i>	<i>B. fargesii</i>
Colour	Yellowish brown rhizome. Scapes reddish	Yellowish brown rhizome. Scapes pink, reddish orange, or occasionally yellowish	Plant creamy white to grayish	Yellowish brown rhizome. Scapes yellow to orange

Leaves	leaves 5-8, spirally arranged	leaves 15-30, spirally arranged or rarely opposite, imbricate	leaves 4-7, oblong to ovate	connate into a single sheathlike whorl, surrounding middle of scape
Inflorescences	ellipsoid	ellipsoid, ovoid, or conically ovoid	globose to ellipsoid, apex obtuse to rounded	ovoid to subglobose
Male flowers	nearly actinomorphic	actinomorphic	zygomorphic	-
Perianth lobes of male flowers	usually widely ovate, apex acute or truncate	4 or 5, ovate-elliptic, apex acute	4 or 5, imbricate, rounded	3, broadly deltoid
Female flowers	at basal of spadicles and main axis of inflorescences	at basal of spadicles and main axis of inflorescence	mostly on basal stipe of spadicles	only on main axis of inflorescences

**Table 1:** Morphologic features comparison of some species of genus *Balanophora*.

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