Balanophora dioica (Balanophoraceae) - a new record for South India from Western Ghats

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ABSTRACT

Balanophora dioica R.Br. is reported and described here as a new record for South India from Western Ghats.

Keywords: Balanophora dioica, Balanophoraceae, India, Karnataka, New Record, Root Parasite, Western Ghats

INTRODUCTION

The genus Balanophora J. R. & G. R. Forst. is one of the most curiously shaped root holoparasitic herbs belonging to the family Balanophoraceae, a biologically specialized family. It is mainly tropical and subtropical with distinct preference for moist shaded forests. The members of the family are root parasitic herbs, curiously shaped with peculiar morphological features and superficially resembling mushrooms. They are highly distinct from all other flowering plants in their obligate root parasitism, total absence of chlorophyll and stomata. The genus Balanophora is characterized by the absence of perianth in female flowers, which are made up of archegonia-like gynoecia each with a single style. The tuber and other parts of the plant contain a sticky wax called balanophorin, which is used for illumination and as candles. It comprises about 15 species distributed throughout temperate and tropical Asia (Hansen, 1972). In India it is represented by 5 species viz., B. abbreviata Bl., B. dioica R.Br., B. fungosa subsp. indica (Arn.) Hans., B. involucrata Hook. f. and B. polyandra Griff. (Balakrishnan, 2012).

During the floristic survey, an interesting root holoparasite was collected from the coffee plantations, in and around Abbe falls of Mercara of Kodagu District. The specimen was also collected from shola forests of
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Balehonnur of Chikkmagaluru District. After critical examination of the specimen, it has been identified as *Balanophora dioica* R.Br. ex Royle. So far it has not been reported from Western Ghats of South India. There is no mention of this species in any of the South Indian Floras. Earlier the taxon was known only from the Eastern parts of Himalaya (Kipgen & Singh, 2010). A detailed description of the taxon along with its illustration (Fig. 1A-E) and key to identification of allied species are given here.


Fleshy, aichlorophyllous, holoparasitic, dioecious herb, pale yellow to brown or reddish purple. Tubers single or sometimes a few together in a mass, subspherical or slightly longer than wide, single tuber 0.5-2.5 cm and branched. The surface of the tuber is granular with stellate warts. Leaves 5-10, distichous, rarely spirally arranged and much appressed, obtuse or emarginated. Male inflorescence 7 cm long and 2-3 cm wide, ellipsoid when flowering. Male flowers actinomorphic, pedicellate, subtended

**Fig -1:** *Balanophora dioica* R. Br ex Royle A. Male plant; B. Female plant; C. Male flower; D. Part of female inflorescence with spadicles and female flowers; E. Female flower.
Fig. 2: *Balanophora dioica* R. Br ex Royle A. Representative habitat of the species in Western Ghats. B. Male plant; C. Female plant.
by bracts. Pedicel 5-9 mm, tepals 4-5, ovate, apex acute, 0.8-1 cm, reflexed at anthesis. Synandrium hemispherical, 1-2 mm long and 1-1.5 mm wide, sometimes elevated on a torus up to 1 mm long. Anthers 4-5, horse-shoe shaped with bend near the top of the synandrium and the two halves folded towards each other, the ends of the anther thus pointing downwards in proximal direction. Due to this arrangement, the synandrium is apparently 16-locular in a tetramerous flower and 20-locular in a pentameric flower. Anther locules opens longitudinally. Pollen grains 3, porate, suboblate-spheroidal, circular in polar view. Female inflorescence ellipsoid or cylindrical, 4-7 cm long and 2-3 cm wide. Female flowers smaller, archegonia like, 0.8-1.2 mm in length, usually on main axis of inflorescence as well as on the lower part of spadicles. Spadicles 1-1.05 mm long with the lower two third cylindrical, 150-200 µ wide and the upper one third portion obovate-truncate, 4.2-0.47 mm wide. These spadicles closely abut each other when young, and become lax as they mature. The stylar part of the female flowers project out between the large spadicles giving a velvety appearance to the inflorescence. Flat top-part papillate. Largest flowers with pistils about 1.2 mm, venter like basal part. The female flowers are highly reduced in size and structure. They are archegonia like without even the vasculature. They are developmentally nucellus without integuments but functionally a gynoecium consisting of a stalk, swollen venter like region and upper part elongated, stylar part about 0.4 mm by 0.2 mm, ellipsoid. The upper part of the style is receptive and functions as stigmatic surface (Fig. 2 A-C).

Flowering: October to December.


Distribution: Nepal, West Bengal, Arunachal Pradesh, Meghalaya (Khasia), Manipur, Karnataka (Mercara, Chikkmagaluru).

Habitat: Moist Evergreen Tropical Forests.

Specimen examined: INDIA, Karnataka, Abbe falls, Mercara, Kodagu District and Balehonnur, Chikkmagaluru Dist., M. C. Thriveni, G. R. Shivamurthy & K. N. Amruthesh 212. (Botany Department Herbarium, University of Mysore, Mysuru).

Notes: This species was previously known only from Eastern Himalayas and NE, India. Its occurrence from Western Ghats of Karnataka is a remarkable disjunct extension of its distribution to South India.

KEY TO THE ALLIED SPECIES

1a. Plants monoecious; ♂ and ♀ flowers on the same inflorescence 2

1b. Plants dioecious; ♂ and ♀ flowers on different inflorescence 3

2a. Leaves distichous, ♂ flowers sessile, usually 6-merous

2b. Leaves verticillate, ♂ flowers pedicellate, usually 3-merous

3a. Leaves opposite and decussate, ♂ flowers sessile, zygomorphic

3b. Leaves not opposite, ♂ flowers pedicellate, actinomorphic

4a. Leaves 10-20, spirally arranged, imbricate, ♂ inflorescence globose; ♀ inflorescence sub-spherical or obovoid

4b. Leaves 5-10, distichous, rarely spiral, ♂ inflorescence obovate; ♀ inflorescence ellipsoid

ACKNOWLEDGEMENTS

First author (MCT) is grateful to CSIR, New Delhi for providing the Financial Assistance in the form of Research Associate (RA) fellowship. The authors are thankful to University of Mysore, Mysuru for the facilities.

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