

IDENTITY OF *DENDROPHTHOE GLABRESCENS* (LORANTHACEAE) AND ITS NEW DISTRIBUTIONAL RANGE IN INDIA

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ABSTRACT

The present study gives identification and distribution of *Dendrophthoe glabrescens* (Loranthaceae) and inventory of host species in India. The delimitation of species is based on inflorescence and morphology of vegetative and floral characters. In general, the genus shows nonspecific relationship with host species.

Keywords : *Dendrophthoe*, Host species, India, Loranthaceae, Parasitization,

सारांश

प्रस्तुतशोध में डेन्ड्रोफ्थोइ ग्लैबरेसेन्स (लोरेन्थेसी) की भारत में पहचान एवं फैलाव तथा इसके होस्ट प्रजातियों की सूची का अध्ययन किया गया है। इस प्रजाति की पहचान तथा परिसीमन पुष्पक्रम तथा कायिक एवं पुष्पीय भागों के आकारिकी के आधार पर किया जाता है। सामान्यतया भारत में इस जीनस की अपनी होस्ट प्रजाति के साथ अविशिष्ट संबंध है।

Introduction

Genus *Dendrophthoe* Mart. (hemiparasitic shrub: Loranthaceae) comprises c. 38 species, spread across tropical Africa, Asia and Australia (Calder 1983, Barlow 1983, 1984, 1995, 1997, 2002, Hawksworth 1983, Wilson & Calvin 2006b, Mabberley 2008, Vidal-Russel & Nickrent 2008b, Angus *et al.* 2009, Watson 2011, Parker 2012, Rajsekaran 2012, Singh & Murugan 2013). Of these, 6 species are reported from India (Rajsekaran 2012, Singh & Murugan 2013). According to Barlow (2002) identification of *Dendrophthoe* is principally based on inflorescence and other

floral characters. However, *Dendrophthoe* and other Indian mistletoes show considerable variability in morphology of vegetative and floral characters which are important for delimitation of taxa (Singh 2013a & b, 2015, Singh & Murugan 2013). *Dendrophthoe* of Andaman and Nicobar Islands has been revised by Singh & Murugan (2013). All the specimens at DD, BSD, CAL and PBL were examined by authors and found that many specimens are misidentified and are kept under different species of *Dendrophthoe* and *Loranthus*. After critical examination, these have been identified as *Dendrophthoe glabrescens* which is recently reported by

Singh & Murugan (2013) from Little Andaman for India and later Singh & Ranjan (2013) for *Flora of Tamil Nadu*. On the basis of review of literature (Rajsekaran 2012, Singh & Murugan 2013, Singh & Ranjan 2013), it confirms that *Dendrophthoe glabrescens* is not hitherto reported from states of Himachal Pradesh, Punjab, Uttar Pradesh, Uttarakhand and Sikkim, hence, here it is reported and described as new record for flora of these states. Hence, all the specimens housed in Indian herbaria need more systematic validation in light of present observation to know the correct identity and extended distribution of species.

Material and Methods

Present study is the outcome of floristic explorations from different phytogeographical regions and study of herbarium specimens housed at CAL, BSD, DD and PBL. All the specimens were critically examined and found that some specimens were wrongly identified and kept under different species or even under different genus. On the basis of relevant literature (Roxburgh 1832, Hooker 1890, Engler 1897, Fischer 1926, Danser 1929, Duthie 1960, Barlow 1983, 1995, 1997, 2002, Johari & Bhatnagar 1972, Polhill & Weins 1998, Wilson & Calvin 2006b, Mabberley 2008, Watson 2011, Parker 2012, Rajsekaran 2012 and Singh & Murugan 2013, 2014), the specimens have been identified as *Dendrophthoe glabrescens* (Blakely) Barlow. After the scrutiny of literature (Rajsekaran 2012, Singh & Murugan 2013, Singh & Ranjan 2013), it revealed that the species is hitherto not recorded from states of Himachal Pradesh, Punjab, Uttar Pradesh, Uttarakhand and Sikkim. Hence, it is reported and described here as new record for these states.

Taxonomic Description

Dendrophthoe glabrescens (Blakely) Barlow in Proc. Linn. Soc. New South Wales 87: 55 1962; L.J. Singh & Murugan in Geophytology

43(1): 45. 2013. *Loranthusvitellinus* var. *glabrescens* Blakely in Proc. Linn. Soc. New South Wales 50:19.1925. (Plate 1, Fig. 1)

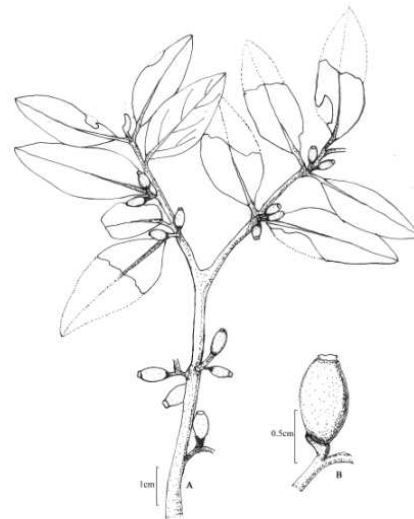
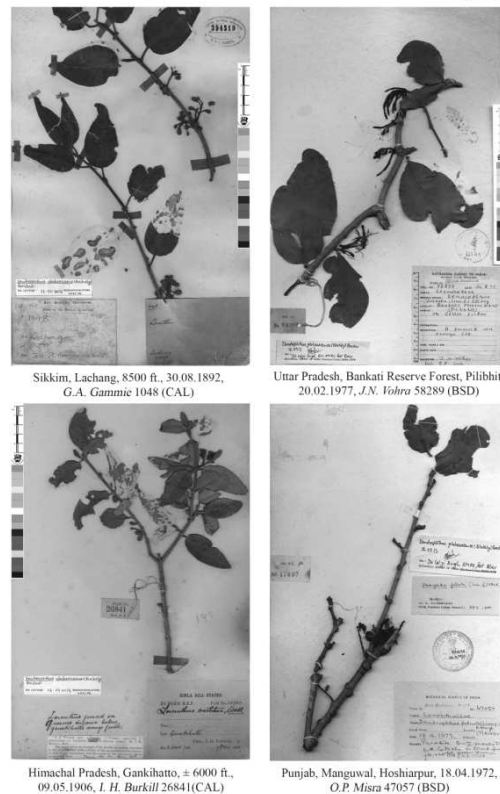


Fig. 1: *Dendrophthoe glabrescens* (Blakely) Barlow: A. Twig with fruits, B. Fruit

PLATE-1



Semi-parasitic, glabrous bushes. Leaves alternate or subopposite, petiolate; lamina narrowly-lanceolate to elliptic or obovate, widest above the middle, 5-8(-20) x 1.5-4 cm, thick, often grey, attenuate at base, rounded at apex, midrib distinct, lateral veins sharply divergent; petioles (3-)8-25 mm long. Inflorescences (3-) 5-10(-20)-flowered racemes at leafless nodes; peduncles (5-)30-60mm long; bracts spreading, broadly-ovate, acute at apex. Flowers glabrous; pedicels slender, 4-6 mm long. Calyx narrow, cylindrical, 2-3 mm long; limb entire or weakly toothed above. Corolla cylindrical, yellow, sometimes red especially in the upper part, 30-45(-50) mm long; tube curved, 20-35mm long; lobes-5, unequal, reflexed, acute at apex. Stamens 5; anthers 3-5mm long, obtuse, equal to free part of the filament. Ovary 1-celled; style slender; stigma capitate. Drupes elliptic-oblong, 9-16 mm long, greenish-yellow, turning reddish-pink when ripe; pedicels 3-6mm long.

Flowering & Fruiting: February-May

Distribution: INDIA: Andaman and Nicobar Islands, (Hut Bay, Little Andaman), Tamil Nadu (South Arcot, Ootacamund), Himachal Pradesh, Punjab, Uttar Pradesh, Uttarakhand and Sikkim (present study); AUSTRALIA, MALAYSIA: Lesser Sunda Islands (Lombok, Timor Alor), PAPUA NEW GUINEA (Western Province).

Specimens examined: India, Uttar Pradesh, Lalitpur, 10.03.1959, *T.A. Rao* 8408 (BSD); Bankati Reserve Forest, Pilibhit, 20.02.1977, *J.N. Vohra* 58289 (BSD); Mirzapur, 09.02.1961, *U.C. Bhattacharya* 13278 (BSD); Ghazipur, 12.02.1961, *U.C. Bhattacharya* 13701 (BSD); Punjab Manguwal, Hoshiarpur, 18.04.1972, *O.P. Misra* 47057 (BSD); Himachal Pradesh Gankihatto, 09.05.1906, *I. H. Burkill* 26841 (CAL); and 08.01.1899, *J.H. Lace* 1904 (CAL); Ranuka Lake, 02.02.2002, *S.K. Srivastava* 96717 (BSD); Uttarakhand, Rishikesh

23.02.1959, *M.A. Rau* 1841 (BSD); Corbett National Park, 11.11.1970, *P. C. Pant* 43136 (BSD); Corbett National Park, 21.11.1970, *P. C. Pant* 43391 (BSD); Rajpura, Dehradun, 10.12.1962, *N. C. Nair* 19073 (BSD); Rampur Road, Haldwani, 29.12.1987, *J. Singh & A. K. Sharma* 379 (BSD); Sikkim Lachung 30.08.1892, *G.A. Gammie* 1048 (CAL).

Parasitization and Host Inventory

One of us (L J S) has extensively surveyed host tree species for *Dendrophthoe* in various parts of India including Andaman and Nicobar Islands, Andhra Pradesh, Bihar, Himachal Pradesh, Panjab, Uttarakhand, Uttar Pradesh and West Bengal and found that host preference varies widely at the species level. *Dendrophthoe* prefers to grow on multiple host species like *Aegle marmelos*, *Albizialebeck*, *Atrocarpusheterophyllous*, *Callistemon lanceolatus*, *Citrus aurantifolia*, *Ficus religosa*, *Ficus rumphii*, *Gmelina arborea*, *Grewiacalohylla*, *Mangifera indica*, *Punicagranatum*, *Psidium guajava* and *Syzygium kumunii*.

Discussion

Dendrophthoe is often treated as congeneric with *Scurrula* and *Taxillus* (Barlow 1964, 1983, 1984, 1987, 1995, 1997, 2002) but it differs from allied genera in inflorescences, strongly zygomorphic, 4-merous flowers and fruits. In India, it shows nonspecific relationship with host species and has specific haustoria for each host as epicortical roots. It indicates that it has most successful haustorial parasitism for diversified host species. The heterotrophic nutritional system has evolved independently in angiosperms (Barlow 1997, Fineran 2001, Wilson & Calvin 2006a, Vidal-Russell & Nickrent 2008a & b). Apart from taxonomic explorations, the inventory of host species for mistletoes in India did not receive much attention (Davidar 1980, Thriveni *et al* 2010, Singh 2013a, b, Singh and Murugan 2013). However, several attempts have been

made in various phytogeographical regions (Singh 2015). The species of mistletoes exhibit a high degree of mimicry and sometimes it is so close that they are almost impossible to detect (Barlow & Weins 1977). It may be physiological interaction between host and mistletoes. More recently Singh (2015) stated that the parasitization and selection of host species is either an opportunistic phenomenon or an availability of host through time and space.

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