

# Lectotypification of *Dipterocarpus bourdillonii* (Dipterocarpaceae)

Sanil M.S.<sup>1</sup>, Manudev K.M.<sup>2</sup> & V.B. Sreekumar<sup>1\*</sup>

<sup>1</sup>Forest Ecology and Biodiversity Conservation Division, Kerala Forest Research Institute, Peechi, Kerala – 680 653, India

<sup>2</sup>Postgraduate & Research Department of Botany, St. Joseph's College (Autonomous), Devagiri, Kozhikode District, Kerala – 673 008, India

\*E-mail: sreekumar@kfri.res.in

**Abstract:** During a taxonomic study on the family Dipterocarpaceae in India, it was found that the name *Dipterocarpus bourdillonii* Brandis lacks a proper typification. Hence a lectotype is designated here conforming to the latest ICN code.

**Keywords:** Kerala, Lectotype, Typification, Western Ghats.

## Introduction

*Dipterocarpus* C.F.Gaertn., consisting of *c.* 69 species, is the third largest genus in the family Dipterocarpaceae (POWO, 2023). It is distributed in Sri Lanka, Thailand, Myanmar, Indochina, India, Malaysia, Sumatra, Java, Yunnan, Borneo, Bali and the Philippines (Ashton, 1982; Ghazoul, 2016; Mabberley, 2017). Eleven species were reported from India (Janardhanan & Tewary, 1982; Tewary, 1984; Janardhanan, 1993), of which *D. bourdillonii* Brandis and *D. indicus* Bedd. are found in the Western Ghats (Nayar *et al.*, 2014; Sasidharan, 2017). *Dipterocarpus bourdillonii* is an endemic and critically endangered species mostly confined to southern parts of the Western Ghats (Swarupanandan *et al.*, 2013; Deepu *et al.*, 2021). The number of populations was found to be more in Kerala than in other states, yet very few mature individuals were found in Karnataka and Tamil Nadu (Puttaswamy *et al.*, 2010; Page *et al.*, 2022). As part of the ongoing taxonomic study of Dipterocarpaceae in India, the authors found that the type of *D. bourdillonii* has not yet been designated. Following a scrutiny of the protologue and other relevant literature, a lectotype is designated here according to the Shenzhen Code (Turland *et al.*, 2018).

## Typification

*Dipterocarpus bourdillonii* Brandis in Hooker's Ic. Pl. 25: t. 2403. 1895, '*bourdillonii*'; Brandis, Ind. Trees 66. 1906; Ram Rao, Fl. Travancore 34. 1914; Gamble, Fl. Madras 1: 81. 1915; K.P.Janardh. in B.D.Sharma & Sanjappa, Fl. India 3: 210. 1993; Sasidh., Biodiv. Doc. Kerala Fl. Pl. 44. 2004; Anil Kumar *et al.*, Fl. Pathanamthitta 74. 2005; K.P.Janardh. & Arisdason in P.Daniel, Fl. Kerala 1: 360. 2005; T.S.Nayar *et al.*, Fl. Pl. Kerala 217. 2006, Fl. Pl. Western Ghats 1: 325. 2014; Page *et al.*, J. Threat. Taxa 14(8): 21654. 2022. *Lectotype* (designated here): INDIA, Kerala, Travancore, *s.d.*, TF Bourdillon 900 (HBG [HBG507277 digital image!]; residual syntypes K [K000671017 digital image!], HBG [HBG507275, HBG507276 digital images!]).

Fig. 1

*Notes:* Brandis (1895) in the protologue of *Dipterocarpus bourdillonii* Brandis cited "HAB. Evergreen forests on the Periyar river, in North Travancore, at 200–500 ft. above sea-level, *Bourdillon*." but did not cite any collection number of Bourdillon. In addition, Brandis (1895) stated his own collections of 1868 from Carcoor Ghats in Malabar to have morphological similarity to collections of Bourdillon. The majority of Brandis herbarium and types were acquired by the Hamburg Senate and integrated into the Institute for Plant Sciences and Microbiology of the University of Hamburg (Mann, 2020), and much Brandis material is also in A, BONN and K (Stafleu & Cowan, 1976). The authors could trace four relevant sheets of this species collected by Bourdillon from Travancore, three at the University of Hamburg Herbarium (HBG507275, HBG507276, HBG507277 digital images!) and one at Kew (K000671017 digital image!). However, no specimen collected from Carcoor Ghats by Brandis could be located. All the three sheets at

Received: 04.09.2022; Revised & Accepted: 24.03.2023;

Published Online: 31.03.2023



**Fig. 1.** Lectotype of *Dipterocarpus bourdillonii* Brandis (HBG507277)  
© Herbarium Hamburgense, University of Hamburg. Reproduced with permission.

HBG are part of the original Herbarium of Brandis indicated by the field tickets were collected from Travancore. All three sheets have a single leaf and one or few fruits mounted on it. The sheet HBG507276 and HBG507277 are labeled as “*Dipterocarpus bourdillonii*, Brandis, Bourdillon No 900, Travancore” in the handwriting of Brandis (see Bandyopadhyay et al., 2008). The sheet HBG507275 has a label in the lower left-hand corner [written in an unknown handwriting with pencil] indicating the collection locality as “evergreen forests of the North Travancore [N. Travancore]”, collection number 623, and the year of collection to be 1895. Another field ticket is also attached to the sheet which is labelled in an unknown handwriting as “*Dipterocarpus bourdillonii* Brandis, India, Travancore”. A sheet MH00001810 located at MH which is a badly preserved specimen from Travancore and labeled as “*Dipterocarpus* n.s.? Travancore, no. 534, Bourdillon iii.90” in an unknown handwriting and cannot be confirmed that it was seen or examined by Brandis. The sheet from Kew (K000671017 digital image!) has parts of two

branches with a leaf each and peduncles and is labeled “Ic. Pl. 2403, Travancore, South India, *Dipterocarpus* sp. n., Coll. F. Comm. T.F. Bourdillon F.L.S., 1894”. This sheets at K (K000671017) and HBG (HBG507275, HBG507276, HBG507277 digital images!) are part of the original material and can be considered as syntypes (Art. 9.6 of the ICN; Turland et al., 2018). Among these, HBG507277, bears a single leaf with peduncles and a fruit and labelled by Brandis in his own handwriting is designated here as the lectotype according to Art. 9.3 and 9.12 of the ICN (Turland et al., 2018).

### Acknowledgements

Authors are thankful to the Director, Kerala Forest Research Institute, Peechi, Thrissur and the Principal, St. Joseph’s College (Autonomous), Devagiri for providing necessary facilities. We express our sincere gratitude to the Director/Curators of BM, CAL, G, K, MPU, P, and JSTOR Global Plant Sciences for putting the image of the type specimens online and for invaluable help in locating type specimens. Authors are also thankful to Science and Engineering Research Board for financial assistance.

### Literature Cited

- ASHTON P.S. 1982. Dipterocarpaceae. In: VAN STEENIS C.G.G.J. (ed.), *Flora Malesiana*, Series 1. Volume 9(2). Martinus Nijhoff, Dr. W. Junk Publishers, The Hague, Boston or London. pp. 237–552.
- BANDYOPADHYAY S., PRASANNA P.V. & V. RANJAN 2008. Samples of facsimile handwritings and signatures of some eminent contributors to the field of Indian plant taxonomy. *Bulletin of the Botanical Survey of India* 50(1–4): 163–166.
- BRANDIS 1895. *Dipterocarpus bourdillonii* Brandis. In: DANIEL O. (eds.), *Hooker’s Icones Plantarum; or figures, with brief descriptive characters and remarks of new or rare plants*. Volume 4. Dulau & Co., London, t. 2403.
- DEEPU S., SANIL M.S. & V.B. SREEKUMAR 2021. *Dipterocarpus bourdillonii*. *The IUCN Red List of threatened species 2021*: e.T33009A169589049. (Accessed on 03.06.2022).
- GHAZOUL J. 2016. *Dipterocarps biology, ecology and conservation*. Oxford University Press, Oxford.
- JANARDHANAN K.P. 1993. Dipterocarpaceae. In: SHARMA B.D. & M. SANJAPPA (eds.), *Flora of India*, Volume 3 (Portulacaceae – Ixonanthaceae).

- Botanical Survey of India, Kolkata. pp. 206–251.
- JANARDHANAN K.P. & P.K. TEWARY 1982. a note on endemism in Dipterocarpaceae with special reference to the Indian flora. *Journal of Economic and Taxonomic Botany* 3: 487–490.
- MABBERLEY D.J. 2017. *Mabberley's plant-book: A portable dictionary of plants, their classification and uses*. Fourth edition. Cambridge University Press, Cambridge.
- MANN M. 2020. Dietrich Brandis (1824–1907) – Botanist and founder of the Science of Tropical Forestry. In: BAJPAI A. & H. LIEBAU (eds.), *MIDA Archival Reflexicon*. Volume 2020. Max Weber Forum for South Asian Studies, New Delhi. pp. 1–6.
- NAYAR T.S., BEEGAM A.R. & M. SIBI 2014. *Flowering plants of the Western Ghats - Volume 1*. JNTBGRI, Thiruvananthapuram.
- PAGE N., KASINATHAN S., BHAT K., MOORTHY G., SUNDARRAJ T., MUDAPPA D. & T.R.S. RAMAN 2022. A new population record of the Critically Endangered *Dipterocarpus bourdillonii* Brandis from the Anamalai Tiger Reserve, India. *Journal of Threatened Taxa* 14(8): 21651–21659. <https://doi.org/10.11609/jott.7860.14.8.21651-21659>
- POWO 2023. *Plants of the World Online*. Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet; <http://www.plants of the world online.org/> (Accessed on 20.03.2023).
- PUTTASWAMY H., KUSHALAPPA C.G., AJAYAN K.V. & B.N. SATHISH 2010. Distribution and population status of a critically endangered tree species *Dipterocarpus bourdillonii* Brandis in central Western Ghats. Proceedings of the 15th International Forestry and Environment Symposium, 26–27 November 2010. Department of forestry and Environmental Science, University of Sri Jayewardenepura, Sri Lanka. pp. 150–154.
- SASIDHARAN N. 2017. *A handbook on the red list species and their conservation status in Kerala*. Kerala Forest Research Institute, Peechi.
- STAFLEU F.A. & R.S. COWAN 1976. *Taxonomic literature*. Second edition. Volume 1: A–G. Bohn, Scheltema & Holkema, Utrecht.
- SWARUPANANDAN K., INDIRA E.P., MURALIDHARAN E.M., PANDALAI R.C., JOSE P.A. & M. SANJAPPA 2013. Species recovery of *Dipterocarpus bourdillonii* and *Humboldtia bourdillonii*, two critically endangered endemic trees of Western Ghats. KFRI Research Report No. 463, Kerala Forest Research Institute, Peechi.
- TEWARY P.K. 1984. Revision of Indian Dipterocarpaceae. PhD. Thesis (Unpublished), University of Kalyani, West Bengal.
- TURLAND N.J., WIERSEMA J.H., BARRIE F.R., GREUTER W., HAWKSWORTH D.L., HERENDEEN P.S., KNAPP S., KUSBER W.H., LI D.Z., MARHOLD K., MAY T.W., MCNEILL J., MONRO A.M., PRADO J., PRICE M.J. & G.F. SMITH (eds.) 2018. *International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code) adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017*. Regnum Vegetabile 159. Koeltz Botanical Books, Glashütten. <https://doi.org/10.12705/Code.2018>.