

Ilex fargesii sub sp. *melanotricha* (Aquifoliaceae), a new addition to the Flora of India

Dhatchanamoorthy N.^{1*}, Devanathan K.², Raja P.³ & Noorunnisa Begum S¹

¹National Herbarium of Medicinal Plants and Repository of Raw, Centre for Conservation of Natural Resources (CCNR), University of Trans-Disciplinary Health Sciences and Technology, Yelahanka, Bengaluru, Karnataka – 560 064, India.

²Plant Biology and Systematics lab, Plant Breeding and Genetic Resource Conservation division, CSIR-Central Institute of Medicinal and Aromatic Plants, Research Centre, Bengaluru, Karnataka – 560 064, India

³The Rapinat Herbarium and Centre for Molecular Systematics, St. Joseph's College (Autonomous), Tiruchirappalli, Tamil Nadu – 620 002, India.

*E-mail: ndhatcha@tdu.edu.in

Abstract: The botanical survey conducted in the northeastern state of Manipur, India has resulted in the collection of *Ilex fargesii* Franch. subsp. *melanotricha* (Merr.) S. Andrews of (Aquifoliaceae), a current distribution of China, East Tibet, and Myanmar, is recorded for the first time from India. A detailed information is presented here with botanical descriptions, types, distribution, habitat notes, and photographs for easy identification. A dichotomous key including the nine species of *Ilex* found in the northeastern states is provided.

Keywords: Aquifoliaceae, *Ilex fargesii* subsp. *melanotricha*, KoziiirKorii, Manipur, New record

Introduction

Ilex Tourn. ex L. is the monotypic genus of the Aquifoliaceae family, represented by 574 species and mainly distributed in tropical and subtropical regions of the world (Loizeau *et al.*, 2016; Jiang, 2017; POWO, 2024). Southeast Asia and South America are the main distribution centers of *Ilex* (Loizeau *et al.*, 2005). In India, the genus represents c. 28 species (Basu, 2000). Among these, nine species have been recorded from the northeastern states (Kanjilal & Bor, 1997; Chowdhery *et al.*, 1996; Basu, 2000). *Ilex* is characterized by a leathery, papery, or membranous leaf blade with a margin that is entire, serrate, or spinose; stipules are minute, persistent or caducous, with a callose scar. Male flowers have a 4–8-lobed calyx; 4–8

petals; and isomerous stamens. Female flowers have a 4–8-lobed calyx; 4–8 petals; and sagittate or cordate staminodes that are isomerous. The flowers are unisexual and borne in axillary, pedunculate, or sessile cymose inflorescences. The fruits contain 1–6 (–23) pyrenes, which are striate-sulcate or rugose and pitted (Loizeau *et al.*, 2016; Jiang, 2017).

During 2017, extensive field exploration was carried out in various locations in Manipur State, resulting in the collection of 267 taxa. The first author collected interesting specimens of *Ilex* species from moist evergreen forests along the forest edges of Koziiir Korii, Punanamai village, Senapati district. Among the collected specimens, a single species that could not be identified was further examined using authentic literature (Chen *et al.*, 2008; Hong, 2015). A critical examination of the fruiting material revealed its identity as *Ilex fargesii* Franch. subsp. *melanotricha* (Merr.) S. Andrews. A taxonomic evaluation of the specimens, scrutiny of relevant literature (Hooker, 1875; Deb, 1981; Haridasan & Rao, 1987; Chowdhery *et al.*, 1996; Kanjilal & Bor, 1997; Basu, 2000), and consultation of herbaria (ARUN, CAL, ASSAM) as well as online digital herbarium specimens (K, PE, BM, E, GBIF) were conducted. The voucher specimens were collected and deposited at the FRLH National Herbarium, Bangalore. Further scrutiny in India revealed that the representation of this species in literature and

Received: 11.09.2023; Revised & Accepted: 17.03.2025

Published Online: 31.03.2025

herbaria had not yet been recorded. Therefore, this paper presents the first authentic record with detailed descriptions and colour photographs for easy identification.

Taxonomic Treatment

Ilex fargesii Franch. subsp. ***melanotricha*** (Merr.) S.Andrews, Bot. Mag. (Kew Mag.) 3(3): 134. 1986. *Ilex melanotricha* Merrill, Brittonia 4: 101. 1941. *Lectotype* (designated by Hu, 1950): MYANMAR, Adung Valley, 2400 m, 31.03.1932, F. Kingdon-Ward 9331 (A [A00049576] digital image!; islecto BM, E).

Ilex chartaceifolia C.Y.Wu ex Y.R.Li, Bull. Bot. Res., Harbin 5(1): 11. 1985. *Ilex chartaceifolia* var. *glabra* C.Y.Wu ex Y.R.Li, Bull. Bot. Res., Harbin 5(1): 12. 1985.

Ilex micropyrena C.Y.Wu ex Y.R.Li, Bull. Bot. Res., Harbin 5(1): 20. 1985.

Ilex punctatilimba C.Y.Wu ex Y.R.Li, Bull. Bot. Res., Harbin 5(1): 21. 1985.

Fig. 1 & 2

Shrubs or small trees, 3–5 m tall. Young branches longitudinally ridged and slightly angled, brownish, glabrous; mature branches with raised rounded leaf scars, lenticels absent. Leaves alternate, oblanceolate

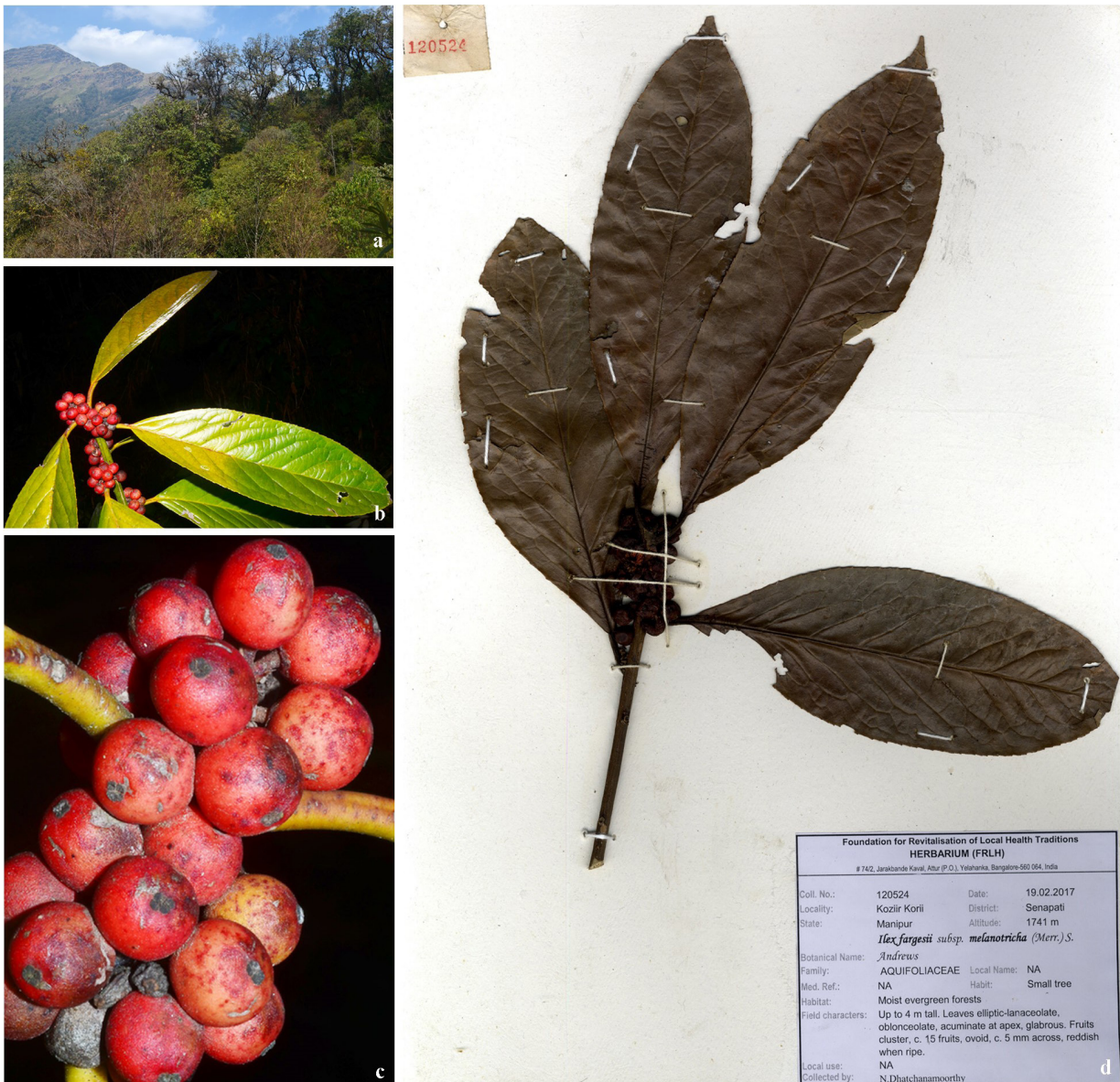


Fig. 1. *Ilex fargesii* Franch. subsp. *melanotricha* (Merr.) S. Andrews: **a.** Habitat; **b.** Habit; **c.** Solitary, axillary infructescence; **d.** Close up of the fruits.

to elliptic-lanceolate; lower leaf 11–17.5 × 5.5–6.5; upper leaves 20.5–21.5 × 6.5–7.0 cm, cuneate at base, serrate-serrulate at margin, acuminate at apex, leathery, adaxial and abaxial, glabrous, central veins strongly impressed, lateral veins 11–13 pairs, reticulate veins evident abaxially. Petiole 1.5–2.0 cm long, angled, or sub-flattened, thick, glabrous. Inflorescence a 1-fruited cyme, pseudoracemose or fascicles, axillary, peduncles angled, 8–10 mm long; pedicels 2–5(–7) mm long, minutely hairy; bracts ovate, deciduous, minutely ciliate at margins; bracteoles deciduous. Flowers not seen. Fruiting calyx persistent, 4-lobed, lobes ovoid-obovoid, minutely ciliate at margins. Stigma persistent, flat, discoid, minutely 4-lobed. Fruit circular-globose, c. 7 mm long, bright red. pyrenes c. 4, oblong-ellipsoidal, c. 3–4 × 2–3 mm long, angled, longitudinally ridged.

Flowering and fruiting: Flowering not observed; Fruiting from February.

Habitat: The plants were growing inside the moist evergreen forests along with *Hedygium* spp.,

Phlogacanthus thyrsiformis Mabb., *Stauntonia latifolia* (Wall.) R.Br. ex Wall. and *Toona ciliata* M.Roem.

Distribution: It is native to China South-Central, Myanmar and Tibet (POWO, 2024) and now recorded from Senapati District of Manipur, India (Fig.).

Specimens examined: INDIA, **Manipur**, Senapati district, KoziirKorii forest, 1741 m, 19.02.2017, N. Dhatchanamoorthy 120524 (FRLH). CHINA, **Yunnan**, Gongshan, Changputung, 1700 m, 28.09.1940, K.M. Feng 8070. MYANMAR, **Adung** Valley, 1678 m, 09.09.1924, George Forrest 25069 (E [E00120343] digital image).

Notes: The present collection is from a dense, moist evergreen forest in KoziirKorii at 1741 m above sea level, Senapati district, Manipur and the authors observed only three fruiting individuals at 10 km sq. range, there is a possibility that the species may present in nearby areas. So, currently this species is categorized as regionally Data Deficient (DD) by IUCN (2024) threatened categories.

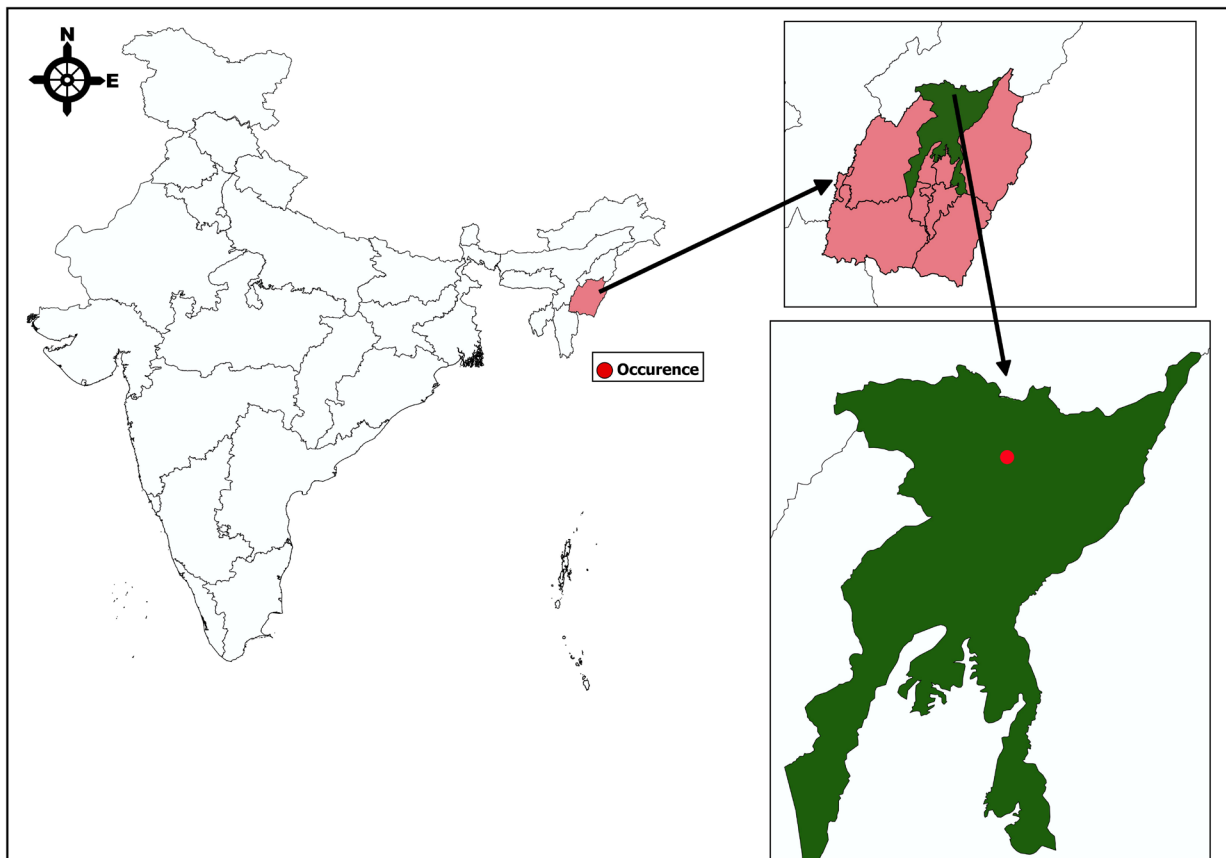


Fig. 2. Distribution map of *Ilex fargesii* Franch. subsp. *melanotricha* (Merr.) S. Andrews.

Key to the species of *Ilex* from Northeast India

1. Leaves fairly entire 2
1. Leaves serrate or serrulate 5
2. Branchlets glabrous; flowers 4–6-merous *I. venulosa*
2. Branchlets other than glabrous; flowers 4–5-merous 3
3. Calyx-lobes ovate *I. doniana*
3. Calyx-lobes orbicular 4
4. Calyx-lobes ciliate at margins, glabrous outside; petals ovate-obovate to oblong *I. godajam*
4. Calyx-lobes entire at margins, pubescent outside; petals orbicular-oblong *I. sulcata*
5. Leaves dark gland dotted beneath *I. thomsonii*
5. Leaves not gland dotted beneath 6
6. Flowers solitary; 4-merous *I. griffithii*
6. Flowers fascicled; 4–5-merous 7
7. Petioles channeled. Calyx lobes not unequal .. 8
7. Petioles winged. Calyx lobes slightly unequal 9
8. Branchlets warty; leaves few distant, spinous teeth or rarely entire; flowers 4-merous *I. embelioides*
8. Branchlets white streak granular; leaves acuminate-caudate; flowers 4–5-merous. *I. theaeifolia*
9. Leaves membranous *I. fragilis*
9. Leaves coriaceous 10
10. Leaf lateral veins 10–13 pairs
..... *I. fargesii* subsp. *melanotricha*
10. Leaf lateral veins 12–15 pairs *I. sikkimensis*

Acknowledgements

Authors are grateful to Shri. Darshan Shankar, Vice Chancellor, TDU, Bangalore for facilities and Dr. K. Ravikumar TDU, Bangalore for encouragements.

Literature Cited

BASU D. 2000. Aquifoliaceae. In: SINGH N.P. & J.N. VOHRA (Eds), *Flora of India*, Volume 5. Botanical Survey of India, Kolkata. pp. 50–75.

CHEN S.K., MA H.Y., FENG Y.X., BARRIERA G. & P.A. LOIZEAU 2008. Aquifoliaceae. In: WU Z.Y., RAVEN, P.H. & D.Y. Hong (Eds.), *Flora of China*, Volume 11. Science Press & Missouri Botanical Garden Press, Beijing & St. Louis. pp. 359–438.

CHOWDHURY H., GIRI G.S., PAL G.D., PRAMANIK A., & S.K. Das 1996. (Ranunculaceae – Dipsacaceae) In: HAJRA P.K., VERMA D.M. & G.S. GIRI (eds.), *Flora of India Series 2. Materials for the Flora of Arunachal Pradesh*, Volume 1. Botanical Survey of India, Kolkata. pp. 292–294.

DEB D.B. 1981. *The flora of Tripura State*, Volume 1. Today & Tomorrow's Printers and Publisher. pp. 425–428.

HARIDASAN K. & R.R. RAO 1987. *Forest Flora of Meghalaya*, Volume 1. Bishen Singh Mahendra Pal Singh, Dehra Dun. pp. 220–225.

HONG D.Y. 2015. A taxonomical revision of *Ilex* (Aquifoliaceae) in the Pan-Himalaya and unraveling its distribution patterns. *Phytotaxa* 230: 151–171.

HOOKE J.D. 1875. Order Ilcineae. In: HOOKE J.D. (Ed.). *The Flora of British India*, Volume 1(3). L. Reeve & Co., London, pp. 598–606.

IUCN 2024. Guidelines for using the IUCN Red List Categories and Criteria, Version 16. Prepared by the Standards and Petitions Subcommittee of the IUCN Species Survival Commission. Available at: <http://jr.iucnredlist.org/documents/RedListGuidelines.pdf> (Accessed on 01.07.2024).

JIANG L., Xu K., Fan Q. & H. Peng 2017. New species of *Ilex* (Aquifoliaceae) from Jiangxi Province, China, based on morphological and molecular data. *Phytotaxa* 298 (2):147–157. <https://doi.org/10.11646/phytotaxa.298.2.4>.

KANJILAL U.N. & N.L. Bor 1997. *Flora of Assam*. Volume 1. Omsons Publications, New Delhi. pp. 255–260.

LOIZEAU P.A., BARRIERA, G., MANEN J.F. & O. BROENNIMANN 2005. Towards an understanding of the distribution of *Ilex* L. (Aquifoliaceae) on a World-wide scale. *Biologische Skrifter* 55: 501–520.

LOIZEAU P.A., SAVOLAINEN V., ANDREWS S. & R. SPICHTIGER 2016. Aquifoliaceae. In: KUBITZKI K. (Ed.) *Flowering plants. Eudicots, The families, and genera of vascular plants*. Springer, Berlin. pp. 31–36.

POWO 2024. *Plants of the World Online*. Facilitated by the Royal Botanic Gardens, Kew. Available at: <https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:326017> (Accessed on 17.08.2024).