

RESEARCH NOTES

(I)

Lindsaea malabarica (Bedd.) Baker Ex C.Chr. A New Distributional Record For Maharashtra

The genus *Lindsaea* was described in extenso by Dryander (1797). However, it had been included a few years before in a paper by Smith (1793) as "*Lindsaea dryandri* (inedit.)" which constitutes a valid publication. However, for none of the three species listed the combination under the new genus was made, this was left to Dryander's publication, which included a total of 10 species, of which seven species were published as new species of *Lindsaea* and the others were transferred to the new genus from *Adiantum*. The Lindsaeoid ferns are small to medium-sized, terrestrial ferns, occasionally scandent or epiphytic, rhizome creeping or climbing, clothed with scales, usually mixed with reduced, hair-like, but always flattened scales, sometimes these reduced scales only present, the scales non-peltate, entire, with very few exceptions not clathrate, stipe non-articulate, persistently scaly at the base only; lamina very variable, simple to decompound, rarely dimorphous, glabrous but thinly clothed with microscopic, mostly two or three celled hairs; *rachis* groove bordered by ridges; *pinnae* and *pinnules* non-articulate, attached (Patil, 2014). The genus *Lindsaea* Dryand. ex. Smith comprises ca. 200 species occurring worldwide (Kärmer, 1972; PPG-I, 2016). In India, 18 species are reported (Fraser-Jenkins *et al.*, 2017), of which five species are recorded from Southern India (Manickam and Irudayaraj, 1992; Patil *et al.*, 2012; Patil and Dongare, 2017).

Two species of *Lindsaea* (*L. ensifolia* Sw., and *L. heterophylla* Dryand.) have been reported from Maharashtra by Patil *et al.* (2023). During the survey of pteridophytes from Southern Maharashtra, authors came across an interesting species of *Lindsaea*, which was identified as an endemic species *L. malabarica* (Bedd.) Baker ex C.Chr. So far, this species was not known from Maharashtra; hence, present study reports it as new distributional record for Maharashtra. The detailed taxonomic description, distribution and conservation status along with photographs are given.

Collection of plant specimens: Field surveys were carried out from June 2022 to January 2024 from Southern Maharashtra. Specimens were collected in sterile polyethene bags and brought to the laboratory for further processing.

Literature survey and identification of taxon: For

the critical examination of the collected specimen, related literature has been used for the confirmation of the identity of the taxa under investigation. Detailed information on different *Lindsaea* species was gathered from national as well as regional floras, books, journals, periodicals and research publications. Further, the characteristics of each specimen were compared with the available literature (Manickam and Irudayaraj, 1992; Patil *et al.*, 2019).

Herbarium deposition: Voucher specimens were deposited in the BARO herbarium of the Department of Botany, The Maharaja Sayajirao University of Baroda, Vadodara (Gujarat).

IUCN status: It was analysed by using the criteria given by the IUCN Red List of Threatened Species (Version 2020-1).

Result and Discussion

Taxonomic Treatment

Lindsaea malabarica (Bedd.) Baker ex C.Chr. Contr. U.S. Natl. Herb. 26: 295. 1931.

Type: from South India, Karnataka, Malabar, South Kanara, Mysore, R.H. Beddome, K.

Schizoloma malabaricum Bedd., Ferns Brit. India t. 268. 1868.

S. lobatum (Poir.) Bedd. var. *malabaricum* (Bedd.) Bedd., Handb. Ferns Brit. India 79, t. 39. 1883.

Plant terrecolous, perennial herb reaching a height 30–42 cm; *rhizome* 2–5 mm thick, short creeping, covered with short brownish hairs, rises 5–10 fronds; *fronds* 29.2–41.5 x 18–25 cm, unipinnate-bipinnate, dark green-pale green, linear-lanceolate, glabrous, glossy; *stipe* 10–17 cm, as long as lamina or smaller than lamina, quadrangular, green at young, brown at maturity, scaly at base, polished, glabrous above; *lamina* 19.2–25.5 x 18–25 cm, longer than broader, rhomboidal, unipinnate, glossy, glabrous; *pinnae* 2–2.5 x 0.5 cm, opposite below, subopposite or alternate above, short-stalked, dimidiate, parallelogram, apex obtuse in lower pinnae, acute at upper pinnae, lobed along the margins, progressively reduced towards apex; *veins* forked or dichotomously branched, lower veins fused to forming areoles; *sori* along the margins, oblong,



Fig. 1 : *Lindsaea malabarica* (Bedd.) Baker ex C. Chr.: **A.** habit, **B.** short creeping rhizome covered with scales **C.** Enlarged pinnae with glabrous, angular rachis, lower oppositely and upper oppositely arranged pinnules, **D.** Enlarged pinnule showing forked veins and discontinuous sori.

not continuous, indusiate; indusia thin membranaceous, thin, white-green at young, brown at maturity; *sporangia* 187.5 x 125 µm, subglobose, stalked; spores 23 x 26 µm in diameter, trilete, yellowish brown, triangular, densely rugulose.

Specimen Examined: INDIA: Maharashtra, Kolhapur Dt., Tilhari Nagar, growing along the stream at an altitude 1800 m, 24/12/2021, SMP, AAP, KSR – 10001 (BARO!).

India: Kerala and Maharashtra (Endemic)

IUCN status: Endemic, endangered.

Ecology: Terricolous or saxicolous, growing along the stream or hilly small streams associated with *Lindsaea heterophylla*, *Thelypteris dentata*, *Blechnum orientales* and *Pteris biaurita*.

Earlier two species, *Lindsaea ensifolia* and *L. heterophylla* were reported from Maharashtra by Patil et al. (2023). *L. ensifolia* has simple pinnate fronds, pinnae

linear-lanceolate or sometimes ovate, apex acute or obtuse, margin entire, sori linear, continuous along the margins whereas *L. heterophylla* has bipinnate or tripinnate fronds, pinnae ovate or deltoid, pinnules rhomboid, apex obtuse or acute, margins entire sori linear, continuous along the margins. The species collected in the present study is characterised by fronds with simple pinnate or bipinnate, pinnae dimidiate, apex acute or obtuse, margins lobed, sori linear, discontinuous along the upper margin of pinnae.

Lindsaea malabarica is not known hitherto from Maharashtra; hence, the present study documents it as a new distributional record for Maharashtra.

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