

On the occurrence of *Athyrium* genus from Bhandardara hills, Akole taluka, Ahamednagar Maharashtra, India.

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ABSTRACT

Bhandardara region comes on the highest plateau of Western Ghats. Survey of fern was carried out from Bhandardarahills. It is a rich biodiversity area. The present attempt was undertaken to give a detailed account of non- flowering plants, especially ferns in these hills. During the survey authors collected 15 species of ferns belonging to 10 genera and the most important genera are: *Adiantum*, *Chelilanthus*, *Pteris*, *Athyrium*, *Tectaria* etc. three species of the genus *Athyrium* is described here for the first time from the area.

Key words: Bhandardara, Fern, Western Ghats, Biodiversity, Non- Flowering Plants.

INTRODUCTION

Bhandardara is a village near Igatpuri, lies in the highest plateau of Western Ghats of India. The village is located in the Akole taluka, Ahamadnagar district of the state Maharashtra state. Geographical location of Bhandardara 19°31'45N73°45'5"E,

The average height of the hills is 1400mts. That makes the forest deep and evergreen on the western sides. The main pteridophytic species those are seen in this area are *Adiantum*, *Chelilanthus*, *Pteris*, *Athyrium*, *Tectaria*, *Lepisorus*, *Microsorium* etc. *Athyrium* is the most dominant genera among these.

The vegetation in general is mixed deciduous type of forest. The forest department occupies an area of 3682 hectares. Different types of vegetation are found here. Ahamadnagar district is a place of attraction to many ayurvedic drug dealers and 'Vaidus' of the neighbouring areas for their locally available materials.

Bhandardara hills is surrounded by hilly ranges and received heavy rainfall during rainy season. Climate of Bhandardara is monsoon type.

Athyrium (lady-fern) is a genus of about 180 species of terrestrial ferns, with a cosmopolitan distribution. It is placed in the family Athyriaceae, in the order Polypodiales.

Various species of *Athyrium* are common in the Western Ghats of South India,

Especially in Anamalais, Ponmudi hills, Munnar hills, Sabarimalai and rare on the Tirunelveli Hills. (Beddome 1863, Manickam & Irudayaraj 1992, Nayar & Geevarghese 1993, Chandra 2000, Neel et al, 2018.) Fern flora of Maharashtra have not been botanically explored at all or very cursorily explored as can be judged from the works of Dalzell and Gibson (1861), Blatter and Almeida (1922), Mahabale and Kamble (1981), Manickam and Irudayaraj (1992) Rathod et al. (2009) Pardeshi (2009), Rathod and Pardeshi (2010), Neel et al, (2018) etc.

Three species of *Athyrium* viz; *Athyrium falcatum*, *Athyrium lanceum*, *Athyrium nigripes* collected from the area is described here.

MATERIAL METHODS

The present study was undertaken to identify the Pteridophytic flora of Bhandardara Hills. The area was visited many times during different seasons of the year 2018, especially rainy season. Field notes were taken at the time of collection to observe habit, habitats and localities. During the survey photographs of plants were taken and selected specimens were brought to the laboratory in sealed bags and pressed in standard herbarium sheets. The specimens were deposited in the herbarium of the department of Botany, Z. B. Patil College, Dhule. The fern species were identified using the standard floras, like The Ferns of British India (Beddome 1976), Pteridophytic Flora of the Western Ghats- South India (Manickam and Irudayaraj, 1992), The Ferns of Bombay (Blatter & Almeida 1922).

Taxonomical account

Athyrium falcatum Bedd., FSI t.151,1863 & Handb.164,1883; Nayar & Kaur, Comp. Bedd., Handb.40,1974; Dixit, Census *Athyrium nigripes* (Bl.) T. Moore, Index Fil.49,1857; 126,1984; Bhuskute, Indian Fern. J.7: 128,1990; Chandra S., FI Bedd., FSI t.157,1864 & Handb 166, 1883; Nayar & Kaur, 126,2000. *Asplenium drepanophyllum* Bak., in Hook. & Bak., Comp. Bedd., Handb.41,1974; Dixit, Census 128, 1984; Syn. Fil. 2: 226, 1874 non Kunze 834. *Athyrium drepano-* Manickam & Irudayaraj, Pterid. Fl. West. Ghats, 235,1992; *phyllum* (Bak.) Bedd., Handb. Suppl. 32, 1892. *A. keralensis* Chandra S., FI 130,2000. *Aspidium nigripes* Bl., Manickam & Irudayaraj, Pterid. Fl. West. Ghats, 238-239 t. Enum. Pl. Jav. II: 162, 1828. *Athyrium solenoptris* (Kze.) 185, 1992. *A. puncticaules* sensu Manickam & Irudayaraj, Moore in Handb. 166, 1883 *pro-partenon* T. Moore in Pterid. Fl. West. Ghats, 234 t. 180, 1992.

Plant erect, ca 30-35 cm. Rhizome erect, scaly, scales dark brown, lanceolate, 4 x 1 mm, acute, entire. Fronds bipinnately compound, tufted; stipes dark brown, abaxially grooved, ca 10-12 cm, sparsely scaly at base, glabrous; rachis light brown, winged, ca 20 - 24 cm; leaflet alternate, sessile, 20 pairs, basal two pairs shorter

than middle, linear-lanceolate, acuminate, 2-3.5 x 0.5-1 cm, glabrous on both surface, apex obtuse or acuminate, base broadly cuneate, margin lobes, pinnatifid at the apex, venation forked once or twice, reaching the margin. Sori indusiate, sori linear along the veins in two rows, indusia straight; sporangia 84.1 x 44.9 μ .

Distribution: in moist shady places.

Exsiccate: Bhandardara-V.N. Rathod-22,39.

Athyrium lanceum (Kze.) Moore Index Fil. 185, 1860; Manickam & Irudayaraj, Pterid. Fl. West. Ghats, 38, 1992; Chandra S., FI 129, 2000. *Aspidium lanceum* Kunze, Bot. Zeit. 1846: 473, 1846. *Aspidium macrocarpum* Bl., Enum. Pl. Jav. 162, 1828 *pro-parte*. *Athyrium macrocarpum* sensu Bedd., FSI t. 153, 1864 & Handb. 165, 1883 *pro-parte*; Nayar & Kaur, Comp. Bedd., Handb. 40, 1974; Dixit, Census 127, 1984.

Plant erect, ca 25-48 cm. Rhizome erect, scaly, scales dark brown, lanceolate, 3 x 1 mm, acute, entire. Fronds bipinnately compound, tufted; stipes palaeaceous - below, abaxially grooved, ca 8-13 cm, glabrous; rachis pale brown ca 30 - 40 cm; leaflet alternate, shortly stalked, 18 - 25 pairs, basal two- three pairs is shorter than middle, trapezoid-oblong-lanceolate, 2 - 4.5 x 0.9 - 2 cm, glabrous on both surface, pinnules pinnatifid, apex acute, base crenated, pinnules rhomboid, pinnae upper base sub - rotundo - auriculate, base acroscopic, apex rounded, margin inciso-crenate, venation twice or thrice forked, not reaching the margin, clevate at end. Sorisubmedian on the veins, indusia more or less lacerate - fimbriate; sporangia 81.2 x 30 μ .

Distribution: along road side and fully shaded stream bank.

Exsiccate: Bhandardara-V.N. Rathod-60.

Plant erect, ca 30-50 cm. Rhizome erect, scaly, scales pale brown, lanceolate, 8 x 1 mm, acute, entire. Fronds bipinnately compound, tufted; stipes light green, abaxially grooved, ca 10-15 cm; rachis light green, abaxially grooved, cylindrical, ca 20 - 24 cm; leaflet alternate, shortly stalked, 24 pairs, basal two pairs

shorter than middle, oblong - lanceolate, 2-3x0.8-1.5cm, glabrous on both surface, pinnae sub - decurrent, crenato - oblong, pinnatifid, apex acute, base broadly cuneate, margin sharply serrate lobes one- fourth to the costa, venation forked once or twice, reaching the margin. Sori indusiate, sori situated at two rows close to the costules, indusia usually hooked (J- shaped); sporangia 81.2 x 42 μ .

Distribution: along shady streams, deep in forests, hill slopes.

Exsiccate: Bhandardara-V.N.Rathod- 13, 17.

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REFERENCES

- Blatter and Almeida (1922) 'The ferns of Bombay'. DB Taraporevala Sons and Co., Bombay.
- Dalzell and Gibson (1861) 'The Bombay Flora, Bombay'. In "Ferns of Bombay" Blatter and Almeida (1922).
- Jenkins (2008) Taxonomic revision of three Hundred Indian Subcontinental Pteridophytes with a revised Census List. Bishen Singh Mahendra Pal Singh, Dehra Dun. Pp. 679.
- Jenkins, et al. (2017) An Annotated Checklist of Indian Pteridophytes Part - 1 (Lycopodiaceae to Thelypteridaceae). pp. 562. Bishen Singh Mahendra Pal Singh, Dehra Dun.[Released on 28-12-2016].
- Manickam and Irudayaraj (1992) Pteridophytic flora of the western ghats South India B.I. Publication pvt. Limited.
- Pardeshi (2009). The Manual of Ferns of India. (Treatise on Beddome's ferns of British India). Saraswati publication house, Aurangabad.
- Neel, et al. (2018) Fern Flora of Maharashtra, Bioinfolet 15 (2): 114-122.
- Rathod, et al. (2009) The occurrence of *Bolbitis subcrenatooides* Fr. - Jenk. in the Sahyadri hills of the western ghats, Maharashtra. Indian Fern J. 26: 60-64
- Rathod, and Pardeshi (2010) Occurrence of *Bolbitis appendiculata* (Willd.) Iwats. In Sahyadri hills of western ghats, Maharashtra. Bioinfolet. S7(1) 54-56.
- Verma, S.C. And Jenkins (2008) *Adiantum philippense* L. The correct name for *A. lunulatum* Burm. F., and its subspecies. *Perspectives in pteridophytes*, pp. 65-92, Bishen Singh Mahendra Pal Singh, Dehradun, India.

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