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Enumeration of Pteridophytes from the Vicinity of Bhandara District (Maharashtra), India

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Abstract

The present study describes the Pteridophytic flora of the Bhandara district. The area was surveyed in different seasons during the years 2009 to 2012. Total of 34 species of ferns and fern allies belonging to 21 genera and 19 families were recorded. Some possible threats to further survival of these are identified and highlighted.

Keywords: Pteridophytes, Bhandara district, ferns and fern allies.

Citation

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1. Introduction

Pteridophytes are vascular cryptogams and form neglected group of plants in biodiversity. It forms a conspicuous element of vegetation all over the earth's surface. Although, they have been replaced by the spermatophytes in the modern day flora, they occupy an important and a crucial systematic position in classification system of plant kingdom concern with phylogeny and evolution. This group of plants grows abundantly in Himalaya and hilly regions of Central and South India. About 110 genera and 600 species are found in India (Sukumaran *et al*.,2009). The only authentic taxonomic work on this group plants are Beddome (1883), Blatter and Almeida (1922), Panigrahi and Dixit (1966, 1967), Sharma et.al. (1977), Dixit (1984), Mahabale (1987), Bir (1987a & b), Manickam and Irudayaraj (1992), Ghosh et. al (2004), Chandra et.al. (2008). Bhandara district is situated on the bank of Wainganga River. It lies between the latitudes $20^0$39' and $21^0$38' North and longitudes $79^0$27' and $80^0$42' East and has an area of 3716.65 sq. kilometer, which have various frequent and dense forest areas. The annual rainfall is 5000 mm. The tropical climate with high humidity, moderate temperature and soil type provide suitable conditions for luxuriant growth of ferns. The landscape diversity of Bhandara district provides an additional feature for growth of a variety of ferns and facilitates the survival of a rich diversity. Hence it was thought worthwhile to take up the survey of the forest for pteridophytic diversity. The present study was done to fill the gap in the knowledge of Pteridophytic flora of Bhandara district.

2. Materials and Methods

Extensive floristic surveys of several forest region of Koka forest, Rawanwadi lake, Purkabodi, Pagora, Chandpur, Hattidoi, Dhivardhuti, Pauni forest, Gaymukh hill ranges, Ziri, Bhandara district in Maharastra were study period from June 2009 and October 2012. Survey of ferns and fern allies, ten sites (Three plots of 1m × 1m were sampled from each of these sites in a random manner. Representative samples of pteridophytes were collected and taken photograph and preserved in herbarium. Pteridophytes were identified with the help of Beddome (1883) Alderwerlet van Rosenburgh (1908), Blatter and Almeida (1922), Panigrahi and Dixit (1966 & 1967), Manickam and Irudayaraj (1992), Rodrigues et.al (1996), Ghosh *et al*., (2004). The voucher specimens are deposited at Department of Botany, S. N. Mor College, Tumsar. During the survey, possible threats to this group were also identified and recorded.

3. Results and Discussion

The floristic study shows the richness and diversity of Bhandara district forest. Since our study was conducted over four years, it is a pouch of great pteridophytic diversity. On the whole, Maharashtra is quite rich in pteridophytes, there are about 55-60 ferns and 11 fern allies known, so far Mahabale (1987), out of which about 34 resides in Bhandara district. Table No.1 reveals the list of ferns and fern allies recorded. This work is significant because for the first time these species were collected from this region. During this study Pteridaceae is dominant family with 5 species and it is followed by Selaginellaceae & Adiantaceae (3 species), Ophioglossaceae, Isoetaceae, Nephrolepidaceae, Dryopteridaceae & Marsileaceae (2 species) while 12 families are monospecific. The four ferns are less abundant (*Equisetum, Lindsaea, and Actinopteris*) and the others are common. Compared to flowering plants, Pteridophytes are largely neglected by researchers. But the ferns are becoming popular in horticulture for the beauty and variety of their frond forms. Some of them are widely cultivated as ornamental pot plants. Some Pteridophytes are traditionally used as medicines by the native people from this hilly region. The Ethnobotanical survey of ferns and fern allies needs further study.

Damage and destruction are also increased with the construction works, construction of Indira Sagar Dam (Gose Dam) and excavation of metals and other developmental activities. The possible threats to this eco-sensitive group are clear responsibility to conserve them. Therefore, the conservation measures should be extended for *ex situ* conservation for the ferns and fern allies.

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Isoetes coromandelina

Ophioglosum vulgatum

Ceratopteris thalictorides

Adiantum raddianum

Adiantum lunulatum

Cheilanathes farinosa

Pteris vittata

Lygodium flexuosum

Actinopteris dochotoma

Equisetum ramosissimum

Marsilea quadrifolia

Azolla pinnata

Fig.1: Morphotaxonomic Investigation of Pteridophytes from the Vicinity of Bhandara District (Maharashtra), India

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Table-1: Morphotaxonomic Investigation of Pteridophytes from the Vicinity of Bhandara District (Maharashtra), India

Sr. No	Name of species	Family	Abundance	Habitat
1	*Ophioglossum gramineum*	Ophioglossaceae	++	Semiaquatic
2	*Ophioglossum vulgatum*	Ophioglossaceae	+++	Semiaquatic
3	*Selaginella delicatula*	Selaginellaceae	++++++	Terrestrial
4	*Selaginella tenera*	Selaginellaceae	++++	Terrestrial
5	*Selaginella selaginoides*	Selaginellaceae	++++	Terrestrial
6	*Isoetes coromandelina*	Isoetaceae	++++	Semiaquatic
7	*Isoetes dixitei*	Isoetaceae	+++	Semiaquatic
8	*Equisetum ramosissimum*	Equisetaceae	+	Semiaquatic
10	*Lygodium flexuosum*	Schizeaceae	++++	Terrestrial
11	*Pteris vittata*	Pteridaceae	++++	Terrestrial
13	*Pteris pellucida*	Pteridaceae	++	Terrestrial
14	*Pteris quadriaurita*	Pteridaceae	++	Terrestrial
15	*Pteris argyraea*	Pteridaceae	+++	Terrestrial
16	*Actiniopteris dochotoma*	Pteridaceae	+	Terrestrial,
17	*Ceratopteris thalictorides*	Parkeriaceae	++	Semiaquatic
18	*Cheilanathes farinosa*	Sinopteridaceae	++++	Terrestrial
19	*Pityrogramma calomelanos*	Heminitidaceae	++	Terrestrial
20	*Adiantum caudatum*	Adiantaceae	++	Terrestrial
21	*Adiantum lunulatum*	Adiantaceae	++++	Terrestrial
22	*Adiantum raddianum*	Adiantaceae	+++	Terrestrial
23	*Pteridium aquilinum*	Dennstaedtiaceae	++++	Terrestrial
24	*Lindsaea heterophylla*	Lindsaeaceae	+	Terrestrial
25	*Nephrolepis auriculata*	Nephrolepidaceae	+++	Terrestrial
26	*Nephrolepis multiflora*	Nephrolepidaceae	+++	Terrestrial
27	*Asplenium caudatum*	Aspleniaceae	++	Terrestrial
28	*Athyrium hohenackeranum*	Athyriaceae	++++	Terrestrial
29	*Hypodematium crenatum*	Dryopteridaceae	++	Terrestrial
30	*Tectaria microdonta*	Dryopteridaceae	++++	Terrestrial
31	*Microsorium punctatum*	Polypodiaceae	++	Terrestrial
32	*Marsilea minuta*	Marsileaceae	+++	Semiaquatic
33	*Marsilea quadrifolia*	Marsileaceae	+++++	Semiaquatic
34	*Azolla pinnata*	Azollaceae	++++	Aquatic

4. Acknowledgements

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