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Research Article

PTERIDOPHYTIC DIVERSITY OF WESTERN GHATS IN KOLHAPUR DISTRICT, MAHARASHTRA (M.S.)

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ABSTRACT
Kolhapur district is situated in the south-eastern part of Maharashtra. The habitats of the concerning area and the pteridophytic species have been listed. The study area has been botanically explored in different seasons. The paper deals with taxonomic enumeration of the pteridophytic flora. In all 52 species belonging to 33 genera have been enumerated from the district. The most important localities included in the survey of pteridophytic flora are Tillari Ghat, Chikotra Dam, Bhudargad Fort, Patgaon Dam, Shahusagar Dam, Laxmi Dam, Dajipur santcury, Anuskura Ghat, Amba Ghat and Panhala Fort.

Keywords*: Pteridophytes, Kolhapur, Maharashtra*

INTRODUCTION
Kolhapur district is located at the south-western point of Maharashtra. Western Kolhapur includes seven (7) tahasils (Talukas) viz. Chandgad, Ajara, Bhudargad, Radhanagari, Gaganbavada,Panhala and Shahuwadi. The eastern Kolhapur comprises river valleys which includes five (5) tahasils viz. Karveer, Kagal, Gadhinglaj, Shirol and Hatkanangale.
Kolhapur district is bordered by district sangli on north-east, Belgaum (Karnataka state) on south-east and Goa on south-west. Its Western boundary ends with Sindhudurg and Ratnagiri districts.
Kolhapur district represents major land form, hills, mountains, plain, and valleys. Chandgad, Ajara, Bhudargad, Radhanagari, Gaganbavada, Panhala and Shahuwadi provide a large area suitable for forests which are important places of botanical interests on the main ranges of Sahyadri (Western Ghats). Geographically this region is probably the transitional zone from south eastern part of Kolhapur. Tillari Ghat, Panahala Fort, Bhudagrad fort, Patgaon Dam, etc. are interesting locations to explore pteridophyte diversity. After reviewing the literature, it is found that pteridophytic diversity of Western Kolhapur district is not investigated frequently (Agashe, 1968). However, some botanical expeditions were made in this area, but mainly focused on angiosperm diversity and fungal diversity. Therefore, the knowledge on pteridophyte diversity in this region is rather limited. Consequently, botanical surveys of pteridophyte diversity in this region are necessary to gain more knowledge on species diversity as well as their geographical distribution. Agashe (1968) studied 46 genera and 105 species from Kolhapur district.

Study Area
The Kolhapur district is ideally situated from botanical point of view. The district lies in the south-western part of Maharashtra. The main forests of Kolhapur where a large number of plants are concentrated lie to west and south-west of Kolhapur. It is strong hilly region and extends to Chandgad to Panhala. The study was conducted in Chandgad, Ajara, Bhudargad, Radhanagari, Gaganbawada, Panhala and Shahuwadi which are situated at the south-western part of Kolhapur. The average rainfall is 35” to 300”. Dhamani, Chikotra, Hiranykeshi, Vedganga, Doodhganga, Tulsi, Kumbhi, Kasari, etc. rivers flow through this hilly region of the district. The study area has dominated lateritic rocks and red soil. Naturally the vegetation is very dense.

MATERIALS AND METHODS
The extensive floristic survey of the study area was carried out since 2006. The specimens of pteridophytes were collected and identified with the help of different floras (Alderwerelt C.R.W.K. van Rosenburgh, 1908; Beddome 1864, 1873, 1883, 1892; Blatter and d’Almeida, 1922; Manickam and

Irudayaraj 1992; Ghosh *et al.*, 2004 and Fraser Jenkins 2008). C.J Fraser Jenkins was personally consulted for correct identification. The voucher specimens were deposited at the Department of Botany, Doodhsakhar Mahavidyalaya, Bidri.

Table 1: Diversity of Pteridophytes from Kolhapur Dsitrict

Sr. No.	Name of Pteridophytes	Chandgad	Ajara	Bhudargad	Radha-nagari	Gagan -bawada	Panhala	Shahuwadi
01	*Huperzia phlegmaria*		+					
02	*Isoetes coromandelina*	+	+	+	+	+	+	+
03	*Selaginella delicatula*	++++	+++	+++	++++	++++	+++	++++
04	*Selaginella ciliaris*	+++	++	++	+++	+++	+++	+++
05	*Selaginella tenera*	++++	++++	++++	++++	++++	++++	++++
06	*Equisetum ramosissimum*		+					
07	*Ophioglossum nudicuale*	+	+	+	+	+	+	+
08	*Ophioglossum reticulatum*	+				+	+	
09	*Osmunda hugeliana*	+	+			+		+
10	*Lygodium flexuosum*	+	+			+		+
11	*Marsilea minuta*	+++	++++	++++	++++	+++	+++	+++
12	*Dicranopteris linearis*	+++	+++	++	++	++	+	+
13	*Drynaria quercifolia*	++						
14	*Lepisorus nudus*	++	+++	++	+++	+++	+++	+++
15	*Microsorium punctuatum*	+	+	+				
16	*Microsorium membraneceum*	+++	+++	+++	+++	+++	+++	+++
17	*Pyrrosia lanceolata*	++	++	++	+	++	+	++
18	*Pteridium aquilinum*	+++	+++	+++	+++	++	++	+++
19	*Actiniopteris radiata*	+	+		+			
20	*Anogramma leptophylla*						+	
21	*Ceratopteris thalictroides*	+	+	++	++			
22	*Cheilanthes farinosa*	++	++	+++	++	++	+++	+
23	*Cheilanthes albomarginata*	+++	++	+	++	++	++	++

24	*Cheilanthes tenuifolia*	++	++	++	+	+	++	+
25	*Hemionitis arifolia*		+			+		+
26	*Pityrogramma calomenos*	+++	++	+++	+++	++	++	++
27	*Pteris vittata*	++++	++++	++++	++++	++++	++++	++++
28	*Pteris biaurita*	++++	++++	+++	++++	+++	++	+++
29	*Pteris pellucida*	++	++	++	++	+	+	+
30	*Pteris otaria*	+	+	+				
31	*Pteris quadriaurita*	+++	+++	+++	++	++	+	++
32	*Adiantum phillippense*	++++	++++	++++	++++	++++	++++	++++
35	*Adiantum caudatum*	++	++	++	+	++	++	+
36	*Adiantum raddiannum*	+	+	+	+	+	++	+
37	*Adiantum incisum*	+	+		+	+	++	++
38	*Adiantum capillus-veneris*	++	++	+++	+++	++++	++++	++++
39	*Adiantum concinnum*	+	+	+	+	+	+	+
40	*Asplenium indicum*	+	+			+	+	+
41	*Asplenium laciniatum*	+					+	
42	*Christella parasitica*	+++	+++	++++	+++	+++	++++	++++
43	*Athyrium hohenackerianum*	+++	+++	+++	+++	++	+++	++
44	*Athyrium falcatum*	+	+	++	+	+	++	+
45	*Athyrium filix-femina*	++	++	+	+	+	++	+
46	*Diplazium esculentum*	+			+			+
47	*Hypodematium crenata*						+	
48	*Tectaria coadunata*	++++	++++	+++	++++	++++	++++	+++
49	*Nephrolepis multiflora*	++++	+++	+++	+++	++++	++++	+++
50	*Nephrolepis auriculata*	+++	+++	+++	+++	+++	+++	++++
51	*Azolla piñata*	++	++	++	++	++	++	++
52	*Salvinia molesta*	+	+	+	+	+		+

Abundance/ frequency: + Rare ++ Occasional +++ Common ++++ Very common

RESULTS AND DISCUSSION

Study of pteridophytic diversity is crucial in terms of environmental health. Researchers are doing comprehensive attempts to assess the pteridophyte diversity of various regions which could be helpful in future to carry out their conservation, vis a vis exploring their ecological and evolutionary information (Liu, 2016, Rekha and Athira Krishnan, 2017). A total of 52 species were collected in our study. Among these Pteridaceae was the dominant family with 14 species and it was followed by Adiantaceae (06 species); Polypodiaceae (05 species); Woodsiaceae (05 species). 13 families were monospecific. The endangered species are *Isoetes, Ophioglossum, Annogranna, Equisetum* (Table No.1).

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