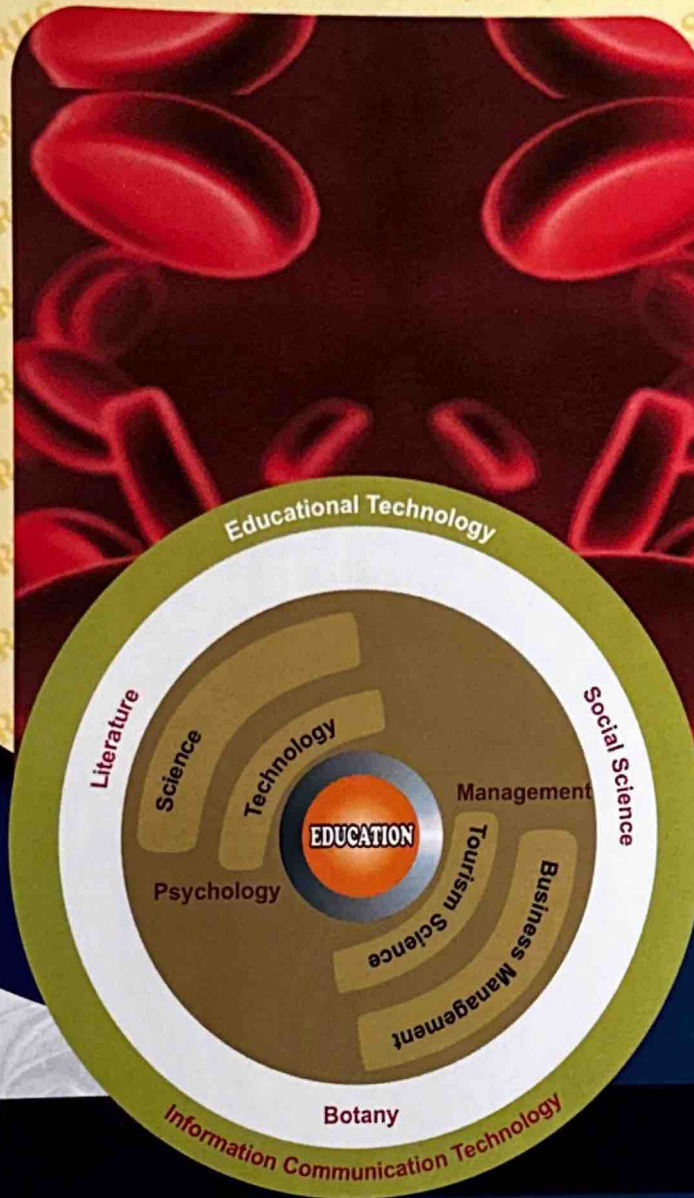
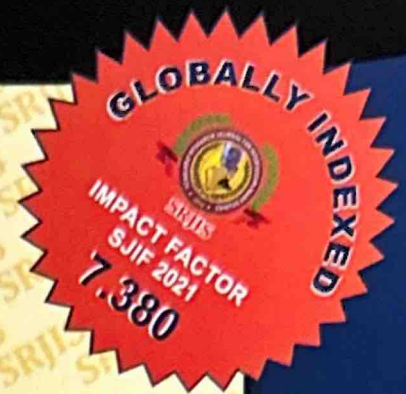




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DIVERSITY OF PTERIDOPHYTES FROM AKOLE TEHSIL OF AHMEDNAGAR DISTRICT (MAHARASHTRA)**Somnath S Shinde***R. B. Narayanrao Borawake College Shirampur, Tal: Shirampur Dist.: Ahmednagar, Somathshihnde08@mail.com;***Deepmala Tambe***P.G. Department of Botany, Adv.M.N. Deshmukh College Rajur, Tal-Akole, Dist-Ahmednagar tambedeepmala@gmail.com***Abstract**

Pteridophytes are vascular cryptogams that dominated the earth 250 million years ago. Currently, there are 13,600 species of pteridophytes around the world, and is the second most dominant plant group. In India, there are 1200 pteridophyte species with 70 families and 192 genera. Akole Tehsil of Ahmednagar district is well known for rich and bio diverse region. The westerns part of this tehsil is Kalsubai-Harishchandragad Sanctuary. For present study we select western part of Akole Tehsil. The information about pteridophytes is collected, identifies and classified into different families and genus and species. In present study there are about 32 plant species belonging to 23 Genus and 13 families has been recorded

The major families of pteridophytes found in the westerns part of Akole tehsil are Pteridaceae Aspleniaceae, Polypodiaceae, Dryopteridaceae, Selaginellaceae, Pteridaceae, etc. Whereas on the generic level, maximum diversity is observed in the genus Adiantum, Microsorium, Asplenium, Selaginella, Pteris, Athyrium, , etc.

Keywords: *Pteridophytes diversity, Western Ghat, Akole*

Introduction:

However, there is no such report on the diversity and distributional studies of Pteridophytes from Akole tehsil of Ahmednagar district (Maharashtra). This emphasizes to study the diversity and distribution of the pteridophytes along with a different altitudinal zones. The maximum diversity was observed at the high altitude zone, high rainfall zone, high atmospheric humidity and low temperature zone.

The pteridophytes are special plants preferring cool, moist, shady habitats in general and do not prefer extreme climatic conditions of highland /rock outcrops which are known for it; but still any conclusion without considering pteridophyte flora of a region/site could be misleading because the pteridophytes are specialized to particular habitats. Thus, their presence or absence could be better exploited to interpret the environmental variables.

Study Area:

The study area concentrates in and around is part of Kalsubai-Harishchandra gad Sanctuary areas of Akole taluka located in Ahmednagar district of Maharashtra state is included in Western Ghats. It lies an average about 800m in height above the mean sea level and situated at 19°15'N-74°20'E. It has many striking hill ranges such as Kalsubai (1646), Harishchandragad (1424), Ratangad (1297), Ajuba dongar (1375) and many other peaks.

The maximum temperature of this taluka is about 35° - 41°C and minimum of 4° - 15°C. The average rainfall is 508.9; some of the areas like Lavhali, Pachnai, kumshet, shirpunje, , Bhandardara,

Murshet, Koltembbe , Panjaare, Ratanvadi, Sambrad, Ghatghar, Udadavane and Shendi of Akole receiving highest rain i.e. 2000-3000 mm of rain every year.(Khyade et al. 2011).

Survey and Collection: The present taxonomic study is mainly based on extensive and systematic field's survey and collection to different explored and unexplored area of Akole. Field tours were planned to cover mid monsoon and post-monsoon. All areas were comprehensively visited and surveyed periodically to the unexplored areas on the North Western Ghats were explored by making various field studies, particularly in the wildlife regions of Kalsubai Harichndra gad Sanctuary in different seasons during the one year 2021 to 2022 for documentation of Pteridophytes. All the collected specimens were processed and mounted on herbarium sheets as per the procedure and the mounted specimens are preserved at the Adv. M.N. Deshmukh College Rajur.

Field Work:

Major Fields exploration was made after the rainy season in the month of September 2021 to January 2022. During this period more than 528 fields number and approximate 1100 specimens collected with rhizome and vegetative characters. 2-3 field tours were undertaken every year covering various seasons and each tour enduring for 10-29 days, were made to cover maximum area viz; Lavhali, Pachnai, kumshet, Shirpunje, Bhandardara, Murshet, Koltembe, Panjare, Ratanvadi, Sambrad, Ghatghar, Udadavane and Shendi of Akole during 2021-2022.

Material and Methods:

Extensive fieldwork was carried out in undisturbed forest, secondary forests, wetlands, agricultural fields, bush fallow and farmers trails in all 13 village of the Akole tehsil. Specimens were collected from a wide range of habits such as terrestrial, mesophytic, aquatic and lithophytic, The morphological features were recorded and photographed in their natural habitat using Canon SLR 1200D.

Collected specimens were identified up to the family level following the artificial key proposed by Woods and Diamond (2008) while detailed morpho-taxonomic identification of the specimens were carried out with the help of the ferns of Bombay (Blatter and d'Almeida 1922), Fern and Fern allies of Sikkim Pictorial Handbook-2 (Kholia 2014), Pteridophytic Flora of Eastern India (Ghose et al. 2004), Fern f Southern India and British India (Beddome 1876), Ferns of North-west Himalayas (Dhir 1979), Hand Book to the Ferns of British, India (Beddome 1892).

Results:

The results of this study are given in Table 1, where species are arranged alphabetically. For each species are the botanical names and family of the plant recorded.

The study revealed that the pteridophyte community on and around the rich diversity in Western Ghats of Maharashtra consists of a total no. of 36 species. 11 families are given in Table 2. Maximum number of ferns belongs to the family Pteridaceae.

These 36 taxa constitute about 35.83% of total 120 pteridophytes reported for Maharashtra (Naik, 2006) and almost 45% of the taxa distributed in Western Ghats of Maharashtra. Author of present study himself enlisted 60 species from Pune district during his work on a Project (Rahangdale, 2013). It is noteworthy that, these 36 taxa are located at the microhabitats on and around the highland.

The diversity under study are representatives of different eco-climatic regions found in the Kalsubai Harichndra gad Sanctuary of Ahmednagar district and show variability in the macro habitats to some extent. The observations recorded about habitats in the present study are presented in the table 1 with respect to occurrence of pteridophytes in particular (special sense).

TABLE 1: Occurrence and Habit of pteridophytes in Akole tehsil of Ahmednagar district of Maharashtra

Sr. No.	Botanical Name	Family	Habitat
1.	<i>Adiantum capillus veneris</i> L.	Pteridaceae	Terrestrial
2.	<i>Adiantum incisum</i> Forssk.	Pteridaceae	Terrestrial
3.	<i>Adiantum philippense</i> L.	Pteridaceae	Terrestrial
4.	<i>Aleuritopteris anceps</i> (Blanf.) Panigrahi	Pteridaceae	Terrestrial
5.	<i>Aleuritopteris bicolor</i> (Roxb.) Fraser Jenk.	Pteridaceae	Terrestrial
6.	<i>Angiopteris helferiana</i> C. Presl.	Pteridaceae	Terrestrial
7.	<i>Anogramma leptophylla</i> (L.) Link	Pteridaceae	Terrestrial
8.	<i>Asplenium decrescens</i> Kunze.	Aspleniaceae	Terrestrial
9.	<i>Asplenium inaequilaterale</i> Bory ex Willd.	Aspleniaceae	Terrestrial
10.	<i>Asplenium polyodon</i> G. Forst	Aspleniaceae	Terrestrial
11.	<i>Azolla pinnata</i> R.Br	Salviniaceae	Aquatic
12.	<i>Blechnopsis orientalis</i> (L.) C. Presl	Pteridaceae	Terrestrial
13.	<i>Bolbitis repanda</i> (Blume) Schott.	Dryopteridaceae	Terrestrial
14.	<i>Bosmania membranacea</i> (D. Don) Testo	Polypodiaceae	Terrestrial
15.	<i>Cheilanthes tenuifolia</i> (Burm. fil.) Sw	Pteridaceae	Terrestrial
16.	<i>Crepidomanes latealatum</i> (Bosch) Copel.	Hymenophyllaceae	Terrestrial
17.	<i>Doryopteris concolor</i> (Langsd. & Fisch.) Kuhn	Pteridaceae	Terrestrial
18.	<i>Dryopteris austroindica</i> Fraser-Jenk.	Dryopteridaceae	Terrestrial
19.	<i>Dryopteris sparsa</i> (D. Don) Kuntze	Dryopteridaceae	Terrestrial
20.	<i>Equisetum ramosissimum</i> Desf.	Equisetaceae	Terrestrial
21.	<i>Isoetes coromandelina</i> L.f	Isoetaceae	Aquatic
22.	<i>Lepisorus nudus</i> (Hook.) Ching	Polypodiaceae	Epiphytic
23.	<i>Leptochilus decurrens</i> Blume	Polypodiaceae	Epiphytic
24.	<i>Marsilea minuta</i> L.	Marsileaceae	Aquatic
25.	<i>Microsorium pteropus</i> (Blume) Copel.	Polypodiaceae	Aquatic
26.	<i>Microsorium membranaceum</i> (D. Don) Ching	Polypodiaceae	Epiphytic
27.	<i>Microsorium punctatum</i> (L) Copel.	Polypodiaceae	Epiphytic
28.	<i>Nephrolepis exaltata</i> (L.) Schott.	Nephrolepidaceae	Terrestrial
29.	<i>Ophioglossum parvifolium</i> Hook. & Grev.	Ophioglossaceae	Terrestrial

Sr. No.	Botanical Name	Family	Habitat
30.	<i>Ophioglossum petiolatum</i> Ho.	Ophioglossaceae	Terrestrial
31.	<i>Pityrogramma calomelanos</i> (Sw.) Link	Pteridaceae	Terrestrial
32.	<i>Pteris blumeana</i> J. Agardh	Pteridaceae	Terrestrial
33.	<i>Pteris heteromorpha</i> Fee.	Pteridaceae	Terrestrial
34.	<i>Pteris pellucida</i> C.Presl	Pteridaceae	Terrestrial
35.	<i>Pteris venusta</i> Kunze.	Pteridaceae	Terrestrial
36.	<i>Salvinia x molesta</i> D.S. Mitch.	Salviniaceae	Aquatic

Table No. 2: Number of Family, Genus and species of pteridophyte found in Akole Tahsil

Sr. No.	Family	No. of Genus	No. of Species
1.	Pteridaceae	9	15
2.	Aspleniaceae	3	5
3.	Salviniaceae	1	1
4.	Dryopteridaceae	2	3
5.	Polypodiaceae	4	6
6.	Hymenophyllaceae	1	1
7.	Equisetaceae	1	1
8.	Isoetaceae	1	1
9.	Marsileaceae	1	1
10.	Nephrolepidaceae	1	1
11.	Ophioglossaceae	1	2
Total	11	23	36

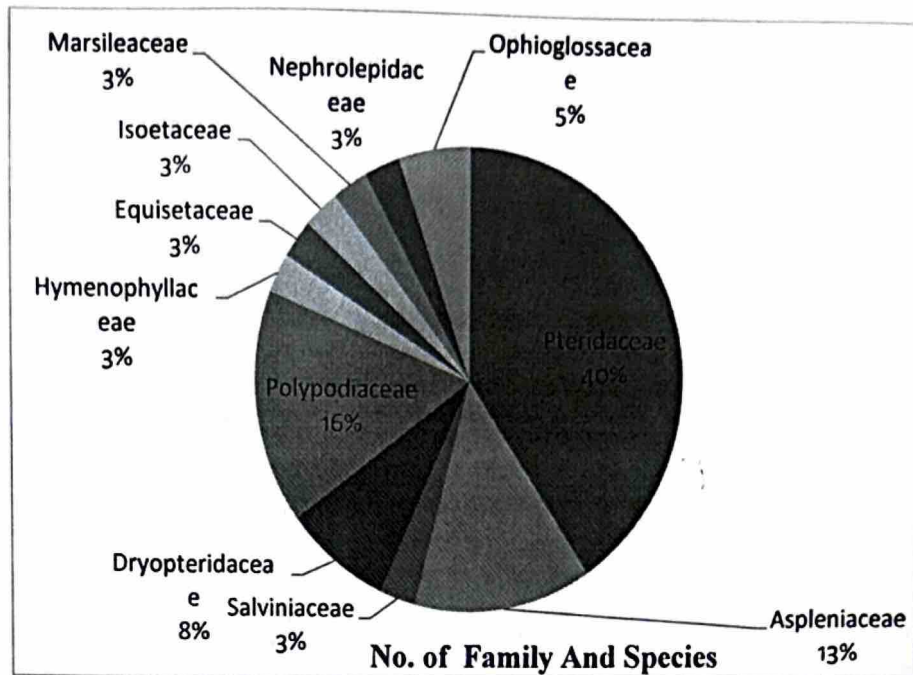


Figure 1: Major Families of pteridophyte found in Akole Tahsil

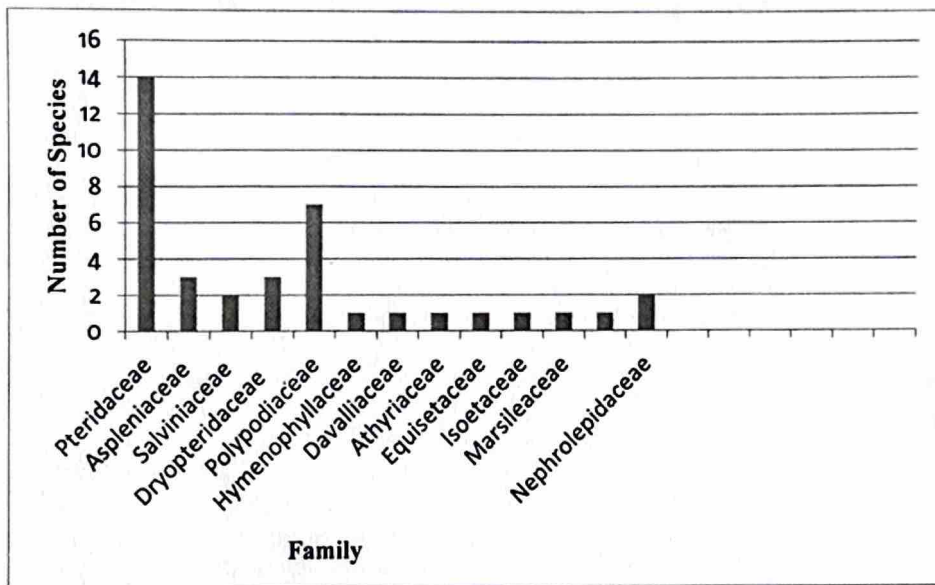


Figure 2: Graphical Representation of Family

CONCLUSION

During the present study there are 36 species belong to 11 families found in study area .On the basis of results from the present study it can be concluded that, rich diversity in the Kalsubai

Harichndragad Sanctuary in Ahmednagar district harbour a significant number of pteridophytes, which are indispensable part of the biodiversity of the highland. The pteridophytes play very significant role in the highland ecosystems and therefore any study of the highland could not be considered as complete without them. Present study brings on the record one more taxon as new addition to the flora of Maharashtra state while reported to the Western Ghats in Maharashtra as extended distribution.

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