

Pteridophytes of Kotgarh and Rampur Forest Division of Shimla District, Himachal Pradesh, India

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Abstract: In India, Pteridophytes are particularly distributed in the Himalayan and coastal regions. The variable topography and climate conditions of India contribute to a rich diversity of its flora and Pteridophytic diversity. Kotgarh and Rampur forest division region has rich biodiversity due to the great altitudinal variations with the Pteridophytes found in shady and moist patches of the regions. 22 species of pteridophytes belonging to 10 families and 16 genera have been reported in the present study. Dryopteridaceae and Pteridaceae with 5 species, Polyodiaceae and Thelypteridaceae with 3 species and remaining Families with single species have been reported.

Keywords: Pteridophytes, Rampur and Kotgarh forest, Shimla, Himachal Pradesh.

INTRODUCTION

Himachal Pradesh is one of the hill states of India, which lies in the Western Himalaya and is known for its natural beauty. Its entire territory is mountainous with altitude varying from 350 to 7000 m above the mean sea level. It covers an area of 55,673 sq. Km which accounts for about 1.7% of total area of country and about 10.48% of the total area of Indian Himalayan region. It is bordered by Jammu and Kashmir in the north, Punjab in the west and southwest, Haryana in the south, Uttarakhand in the southeast and Tibet in the east. It has 12 districts. The Kotgarh and Rampur Forest divisions in the Shimla district shows great altitudinal variations ranging from 730 meters at Pandoa to 5690 meters at Gushu Pushu ridge [6]. The hilly tract with the slopes vary from moderate to steep and very steep to precipitous which drain into the river Sutlej.

Pteridophytes, the seedless vascular plants which constitute a fairly prominent part of the present day vegetation of the world. Pteridophytes prefer shady, moist habitats with moderate temperature but also occur throughout a very diverse range of habitats from high altitude. A number of contributions about the taxonomy, ecology and distribution of pteridophytes have been published from time to time

MATERIALS AND METHODS

Area of study

The present study is done in the Kotgarh and Rampur forest divisions in Shimla District of Himachal Pradesh. The total geographical area occupied by this tract is 1 274. 08 sq. Km. This tract situated in mid hill Himalayan region between latitude 31. 8'40" to 31.42'50" North and longitude 72 .18'50" to 77. 58' East. It covers the area of Kotgarh, Kumarsain, Ranges of Kotgarh Forest Division and Balhi, Nankhari, Rampur and Sarahan ranges of Rampur Forest Divisions.

Methodology

The present study is the outcome of collections made from the different geographical localities of the Rampur forest division with four ranges (Rampur, Sarahan, Bahli and Nankhari) and Kotgarh forest division with two ranges (Kotgarh and Kumarsain) of Shimla District, Himachal Pradesh. The collections were made from February, 2012 to December, 2017. The standard procedures were adopted for the collection, identification, preservation and classification of the plants. The diagnostic features of the plants were noted and their photographs were taken in the field. The specimens were identified with the help of illustrations and descriptions available in authentic journals, monographs, manuals and books. Descriptions of species and identification were also done with the help of literature: Fraser and Jenkins [5], Pteridophytes from Upper Gangetic plains by Chowdhary [2], Fern flora of Western Himalaya by Khullar [7,8], Rare and interesting Pteridophytes of India by Dixit [3], A

Census of the Indian Pteridophytes by Dixit [4], Ferns and fern allies from Kumaun Himalaya illustrated by Pande and Pande [10], A Summary of the Status of Threatened Pteridophytes of India by Subash Chandra *et. Al.* [11], Pteridophytic flora of Simla hills by Bir [1],

Diversity in pteridophytes of Kangra district (Himachal Pradesh) by Khullar and Prasher [9]. Nomenclature has been updated from the 1.1 version, 2013 of The Plant List.

Table-1: List of Pteridophytes in Kotgarh and Rampur Forese divisions

Sr. No.	Name of Plant	Family	Common name	Uses	Elevation (m)
1.	<i>Adiantum venustum</i> D.Don	Adiantaceae	-	Inflammatory of the chest, headache.	900-3000 m.
2.	<i>Asplenium dalhousiae</i> Hook.	Aspleniaceae	-	antibacterial	500-3000 m.
3.	<i>Christelladentata</i> (Forssk.) Brownsey & Jermy	Thelypteridaceae	Downy Maiden Fern	-	500-1500 m.
4.	<i>Cyclogramma auriculata</i> (J. Sm.) Ching	Thelypteridaceae	-	-	1400-2800 m.
5.	<i>Drynaria mollis</i> Bedd.	Polypodiaceae	-	-	2000-3000 m.
6.	<i>Dryopteris redactopinnata</i> S.K. Basu & Panigrahi	Dryopteridaceae	Basket Fern	-	2300-3800 m.
7.	<i>Glaphyopteridopsis erubescens</i> (Wall. Ex Hook.) Ching	Thelypteridaceae	-	-	900-2400 m.
8.	<i>Hypodematiium crenatum</i> Subsp. <i>crenatum</i> (Forssk.) Kuhn.	Hypodematiaceae	-	-	1800-2200 m.
9.	<i>Hypolepis punctata</i> (Thunb.) Mett.	Hypolepidaceae	Downy Ground Fern.	Poulticing the boils	1000-2500 m.
10.	<i>Lepisorus nudus</i> (Hook.) Ching	Polypodiaceae	-	-	900-3000 m.
11.	<i>Onychium contiguum</i> Wall. Ex C. Hope	Pteridaceae	-	indoor decoration, antibacterial	900-3100 m.
12.	<i>Onychium plumosum</i> Ching	Pteridaceae	-	-	1200-2800 m.
13.	<i>Osmunda claytoniana</i> L.	Osmundaceae	-	-Used for slope stabilization and erosion control measures	1600-3400 m.
14.	<i>Polypodioides lachnopus</i> (Wall. Ex Hook.) Ching.	Polyodiaceae	-	-	900-2400 m.
15.	<i>Polystichum discretum</i> (D. Don) J. Sm.	Dryopteridaceae	-	-	1200-2000 m.
16.	<i>Polystichum prescottianum</i> (Wall. Ex Mett.) T. Moore	Dryopteridaceae	-	-	3300-3900 m.
17.	<i>Polystichum squarrosum</i> (D. Don) Fee	Dryopteridaceae	-	Preparation of curries	1800-2200 m.
18.	<i>Polystichum yunnanense</i> Christ	Dryopteridaceae	-	-	1400-3100 m.
19.	<i>Pteris cretica</i> L.	Pteridaceae	-	Antibacterial and shoots are edible	1200-3000 m.
20.	<i>Pteris pseudoquadriaurita</i> Khullar	Pteridaceae	-	-	1700-2500 m.
21.	<i>Pteris vittata</i> L.	Pteridaceae	-	demulcent, glandular swelling and hypotensive tonic	1600-1800 m.
22.	<i>Woodwardia unigemmata</i> (Makino) Nakai	Blechnaceae	-	-	800-2600 m.

RESULTS AND DISCUSSIONS

A total number of 22 species of pteridophytes belonging to 10 families and 16 genera have been reported in the present study. Pteridophytes with their scientific name, family, common name, uses and elevation shown in table 1.

The higher number of species are reported in family Dryopteridaceae with 5 species (*Dryopteris redactopinnata*, *Polypodioides lachnopus*, *Polystichum squarrosus*, *Polystichum prescottianum*, *Polystichum yunnanense*) and Pteridaceae with 5 species (*Onychium contiguum*, *Onychium plumosum*, *Pteris cretica*, *Pteris pseudoquadriaurita*, *Pteris vittata*) followed by Polyodiaceae with 3 species (*Drynaria mollis*, *Lepisorus nudus*, *Polypodioides lachnopus*), Thelypteridaceae with 3 species (*Christella dentate*, *Cyclogramma auriculata*, *Glaphyopteridopsis erubescens*) and remaining Families with single species have been reported.

CONCLUSION

The information of Pteridophytes in Himalayan region is vital importance as they prevent the soil erosion, maintain ecosystem, edible and of ethnobotanical importance. Moreover, the phytochemical and pharmacological investigations about medicinal use of pteridophytes may be footsteps towards the new drug development. A total number of 22 species of pteridophytes belonging to 10 families and 16 genera have been reported in the present study. They are also economically important i.e. dry fronds of ferns used as cattle feed, biofertilizers, indicator plants, ornamental value. Due to increase temperature, pollution, habitat fragmentation, deforestation, forest fires, overexploitation, constructions and developments plans in these sensitive areas have adverse effect on pteridophytes because they are very sensitive in nature. Pteridophytes mostly found in temperate areas and local inhabitants are not much aware about their regulated uses. So there is an urgent need to aware the peoples through different ideas like education, posters, slogans, media, meetings and seminars etc. and conservation strategies.

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