

Pteridophytic Flora of Rajasthan: A Review

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ABSTRACT

In Rajasthan, pteridophytic flora is the scantier floristic resources but some sites like Mt. Abu, Kumbhalgarh, Sitamata, Todgarh-Raoli Sanctuary and Bundi are richer in distribution of pteridophytes. According to king's "Sketch of flora of Rajputana" (1878-79) about 63 species of 29 genera of pteridophytes were reported. But later on intensive survey carried out by many explorers and revealed the occurrence of only 44 species belonging to 23 genera. *Athyrium hohenoekerianum*, *A. parasnathense*, *Asplenium lanulatum*, *Botrychium lanuginosum*, *Cheilanthes belangeri*, *Dryopteris parasitica*, *Pityrogramma calomelanos* and *Pteris cretica* have not been reported despite thorough search by the researchers. It is a clear indication that these taxa have lost/eradicated from Rajasthan. This is an alarm for us to give proper attention to pteridophytic vegetation especially to such restricted taxa as *Asplenium pumilum* var. *hymenophylloides*, *Isoetes reticulata*, *I. rajasthanensis* and *Marsilea aegyptiaca* and *Selaginella rajasthanensis*. Similarly, populations of some ferns like *Araiostegia pseudocystopteris*, *Dryopteris cochleata*, *Nephrolepis cordifolia*, *Ophioglossum gramineum* and *Pteris vittata*, are also becoming thin and restricted in Mt. Abu. Severity of the threat to pteridophytic flora of Rajasthan is demanded to conserve this beauty of nature. *Negripteris scioana* (Chiov.) Pic.Serm. is a new record to the pteridophytic flora of Rajasthan.

KEY WORDS: Rajasthan, pteridophytic flora, survey, explorers, taxa, restricted, record

INTRODUCTION

Rajasthan lies between 23°3' and 30°12' N latitude and 69°3' and 78°12' E longitude. The Aravalli, the oldest mountain range of the world, divides the Rajasthan into xerophytic and mesic vegetational segments. In Rajasthan, pteridophytic flora is the scantier floristic resources but some sites like Mt. Abu, Kumbhalgarh, Sitamata, Todgarh-Raoli Sanctuary and Bundi are richer in distribution of pteridophytes. According to king's "Sketch of flora of Rajputana" (1878-79) about 63 species of 29 genera of pteridophytes were reported. *Athyrium hohenoekerianum*, *A. parasnathense*, *Asplenium lanulatum*, *Botrychium lanuginosum*, *Cheilanthes belangeri*, *Dryopteris parasitica*, *Pityrogramma calomelanos* and *Pteris cretica* have not been reported despite thorough search by the researchers. It is a clear indication that these taxa have lost/eradicated from Rajasthan. This is an alarm for us to give attention to pteridophytic vegetation especially to such restricted taxa as *Asplenium*

pumilum var. *hymenophylloides*, *Isoetes reticulata*, *I. rajasthanensis* and *Marsilea aegyptiaca* and *Selaginella rajasthanensis*. Similarly, populations of some ferns like *Araiostegia pseudocystopteris*, *Dryopteris cochleata*, *Nephrolepis cordifolia*, *Ophioglossum gramineum* and *Pteris vittata*, are also becoming thin and restricted in Mt. Abu. Severity of the threat to pteridophytic flora of Rajasthan is demanded to conserve this beauty of nature. [1]



OBSERVATION

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Todgarh-Raoli Wildlife Sanctuary is centrally located in Aravalli range. The vegetation of the Sanctuary is also an ecotone of xeric and mesic vegetational segments. Pteridophytic flora of this region is showing Natural variations. It is bounded on the north by Ajmer district, on the south by Udaipur district, on the west by Pali district and on east by Rajsamand the district.



Todgarh-Raoli Wildlife Sanctuary

Out of 09 species of 06 genera are distributed in the various localities of Todgarh-Raoli wild life sanctuary, 04 genera namely *Actiniopteris*, *Azolla*, *Cheilanthes* and *Salvinia* are representing by single species each. *Marsilea* is represented by two species while *Adiantum* is represented by three species.



Actiniopteris

The most of genera is represented in single species in the sanctuary. Studies on pteridophytic flora observed that the population densities as well as number of individuals of *Adiantum philippense*, *Cheilanthes farinosa* and *Marsilea aegyptiaca* species fall in the RET category and many taxa are gradually decreasing in this region. *Actiniopteris radiata* (Swartz) Link, is abundantly found xerophytic fern in Todgarh-Raoli wild life sanctuary. *Adiantum capillus-veneris*, *Marsilea minuta* and *Azolla pinnata* is commonly found. [6,9]



Azolla

Kumbhalgarh Wildlife Sanctuary in the south central part of Rajasthan spreads over the Udaipur, Pali, Ajmer and Rajsamand districts of Rajasthan state and forms a special ecotone between hilly forests of Aravallis and Thar Desert located in the west. The pteridophytes which form a sizeable component of floral resources of Rajasthan are of tremendous academic and medicinal importance, have largely been neglected from this sanctuary, therefore, to document and find out the present status of these plant species, Kumbhalgarh Wildlife Sanctuary of Rajasthan was visited time and again by many explorers.



Cheilanthes farinosa

The area of KWS has been found to be rich in pteridophytic floral diversity. A total of 23 species belonging to 16 genera of pteridophytes have been recorded from the area of this Sanctuary of Rajasthan. Out of these, twelve pteridophytic genera are represented in single species in the sanctuary. They are namely *Actiniopteris radiata* (Swartz) Link., *Ampelopteris prolifera* (Retz.) Copel, *Azolla pinnata* R.Br., *Christella dentata* (Forsk.) Holuum., *Equisetum ramosissimum* Desf., *Hypodematium crenatum* (Forsk) Kuhn., *Negripteris scioana* (Chiov.)

Pic.Serm., *Ophioglossum reticulatum* Linn., *Pteris vittata* Linn., *Salvinia auriculata* Roxb. and *Selaginella repanda* (Desv.) Spring.



Kumbhalgarh Wildlife Sanctuary

Dense populations of *Equisetum ramosissimum* and *Pteris vittata* Linn. have been recorded at several localities in this sanctuary area which is rarely seen in other parts of the state. Genus *Adiantum* has been found to be represented by four species, *Marsilea* by three species, *Aleuritopteris* and *Cheilanthes* by two species. [3,5]



Equisetum ramosissimum

The Sitamata wildlife sanctuary is located in Pratapgarh and Chittaugarh districts. Pteridophytic survey of Sitamata Wild Life Sanctuary has revealed the existence of as many as 21 species, out of which five belong to fern allies and 16 species to ferns. They are *Actinopteryx radiata* (Swartz) Link., *Adiantum capillus-veneris* Linn., *A. incisum* Forsk., *A. lunulatum* Burm., *Ampelopteris prolifera* (Retz.) Copel., *Azolla pinnata* R.Br., *Cheilanthes albomarginata* Clarke., *C. farinosa* (Forsk.) Kaulf., *Christella dentata* (Forsk.) Holttum., *Equisetum ramosissimum* Desf., *Hypodematium crenatum* (Forsk) Kuhn., *Isoetes rajasthanensis* Gena, *Marsilea minuta* Linn., *M. rajasthanensis* var. *billardii* Gupta., *M. aegyptiaca* Willd., *Ophioglossum reticulatum*

Linn., *Pteris vittata* Linn., *Salvinia auriculata* Roxb., *Selaginella ciliaris* (Retz.) Spring and *S. reticulata* (Hook. & Grev.) Spring. [2,4,11]



Hadoti Plateau

Floristic survey of Hadoti plateau, Rajasthan has revealed the existence of 11 species of 8 genera. These are *Actinopteryx radiata* (Swartz) Link., *Adiantum capillus-veneris* Linn., *A. incisum* Forsk., *Ampelopteris prolifera* (Retz.) Copel., *Ceratopteris thalictroides* (L.) Brongn., *Equisetum ramosissimum* Desf., *Marsilea minuta* Linn., *Ophioglossum constatum* R.Br., *O. petiolatum* Hook., *O. reticulatum* Linn. and *Pteris vittata* Linn.[7]

Pteridophytic survey of Bundi, Rajasthan has revealed the existence of as many as 15 species of 11 genera. These are *Actinopteryx radiata* (Swartz) Link., *Adiantum capillus-veneris* Linn., *A. incisum* Forsk., *Azolla pinnata* R.Br., *Cheilanthes farinosa* (Forsk.) Kaulf., *Christella dentata* (Forsk.) Holttum., *Hypodematium crenatum* (Forsk) Kuhn., *Isoetes tuberculata* Gena, *Marsilea aegyptiaca* Willd., *M. minuta* Linn., *Ophioglossum constatum*, *O. nudicaule* L.f., *O. petiolatum* Hook., *Pteris vittata* Linn. and *Salvinia auriculata* Roxb.[8]

Floristic survey of Ajmer, Rajasthan has revealed the existence of 11 species of 8 genera. These are *Actinopteryx radiata* (Swartz) Link., *Adiantum incisum* Forsk., *A. capillus-veneris* Linn., *Azolla pinnata* R.Br., *Cheilanthes farinosa* (Forsk.) Kaulf., *Equisetum ramosissimum* Desf., *Marsilea aegyptiaca* Willd., *M. minuta* Linn., *M. rajasthanensis* var. *billardii* Gupta, *Nephrolepis cordifolia* (L.) C. Presl and *Pteris vittata* Linn.[10]

RESULT AND DISCUSSION

Intensive survey carried out by many explorers and revealed the occurrence of only 44 species belonging to 23 genera. Pteridophytic flora of Rajasthan is mostly confined to Aravalli range (Mt. Abu, Kumbhalgarh, Sitamata, Todgarh-Raoli Sanctuary)

and Hadoti plateau which have variable climatic conditions. Climatic extremity is a characteristic feature of Rajasthan state. The North and North-East

part of the state are poor in pteridophytic flora as these areas are full of sand dunes.

Pteridophytic flora of Rajasthan

S. No.	Genus	Species
1	<i>Actiniopteris</i>	<i>A. radiata</i> (Swartz) Link.
2	<i>Adiantum</i>	<i>A. capillus-veneris</i> Linn. <i>A. caudatum</i> L. <i>A. incisum</i> Forsk. <i>A. lunulatum</i> Burm.
3	<i>Aleritopteris</i>	<i>A. anceps</i> (Blanf.) Panigrahi <i>A. bicolor</i> (Roxb.) Fraser-Jenk.
4	<i>Ampelopteris</i>	<i>A. prolifera</i> (Retz.) Copel
5	<i>Asplenium</i>	<i>A. pumilum</i> var. <i>hymenophylloides</i> Fee.
6	<i>Araiostegia</i>	<i>A. pseudocystopteris</i> (Kunze) Copel.
7	<i>Athyrium</i>	<i>A. falcatum</i> Bedd. <i>A. pectinatum</i> (Wall. ex C.Hope) C.Presl <i>A. schimperii</i> Moug. ex Fee.
8	<i>Azolla</i>	<i>A. pinnata</i> R.Br.
9	<i>Ceratopteris</i>	<i>C. thalictroides</i> (L.) Brongn.
10	<i>Cheilanthes</i>	<i>C. farinosa</i> (Forsk.) Kaulf. <i>C. albomarginata</i> Clarke.
11	<i>Christella</i>	<i>C. dentata</i> (Forsk.) Holttum.
12	<i>Dryopteris</i>	<i>D. cochleata</i> (D.Don) C.Chr.
13	<i>Equisetum</i>	<i>E. ramosissimum</i> Desf.
14	<i>Hypodematium</i>	<i>H. crenatum</i> (Forsk) Kuhn.
15	<i>Isoetes</i>	<i>I. rajasthanensis</i> Gena <i>I. reticulata</i> Gena <i>I. tuberculata</i> Gena
16	<i>Marsilea</i>	<i>M. aegyptiaca</i> Willd. <i>M. condensata</i> Bak. <i>M. coromandelina</i> Willd. <i>M. minuta</i> Linn. <i>M. rajasthanensis</i> var. <i>billardii</i> Gupta.
17	<i>Negripteris</i>	<i>N. scioana</i> (Chiov.) Pic.Serm.
18	<i>Nephrolepis</i>	<i>N. cordifolia</i> (L.) C.Presl
19	<i>Ophioglossum</i>	<i>O. constatum</i> R.Br. <i>O. graminium</i> Willd. <i>O. nudicaule</i> L.f. <i>O. petiolatum</i> Hook. <i>O. reticulatum</i> Linn.
20	<i>Pteris</i>	<i>P. vittata</i> Linn.
21	<i>Salvinia</i>	<i>S. auriculata</i> Roxb. <i>S. molesta</i> Mitch.
22	<i>Selaginella</i>	<i>S. ciliaris</i> (Retz.) Spring <i>S. rajasthanensis</i> Gena <i>S. repanda</i> (Desv.) Spring. <i>S. reticulata</i> (Hook. & Grev.) Spring
23	<i>Tectoria</i>	<i>T. macrodonta</i> C.Chr



Aravalli Ranges

Mt. Abu is one of the richest sites of pteridophytes in entire Rajasthan. The ferns mainly flourish in rainy season and are seen in plenty of number. In addition to Aravalli ranges, pteridophytes are also observed in Hadoti plateau.



Aleuritopteris

CONCLUSION

Pteridophytes, the seedless vascular plants, have scanty distribution in Rajasthan. Out of 44 species of 23 genera are distributed in the various localities of state, 14 genera namely *Actinopteris*, *Ampelopteris*, *Asplenium*, *Araiostegia*, *Azolla*, *Ceratopteris*, *Christella*, *Dryopteris*, *Equisetum*, *Hypodematium*, *Negripteris*, *Nephrolepis*, *Pteris* and *Tectoria* are represented by single species. *Aleuritopteris*, *Cheilanthes* and *Salvinia* are representing by two species each. *Athyrium* and *Isoetes* are represented by three species each. *Adiantum* and *Selaginella* are represented by four species each. *Marsilea* and *Ophioglossum* are represented by five species each.

REFERENCE

- [1] Bhardwaja, T. N.; Yadav, A. K.; VERMA, S. (1987). "Status surveys of pteridophytic flora of Rajasthan with special reference to endangered ferns and fern-allies". *Indian fern Journal*. 4:47-50.
- [2] Chaudhary, B.L; Dulawaat, C.S. (2006). "Distribution of ferns and fern-allies in Sitamata Wildlife Sanctuary, Rajasthan, India". *Indian fern Journal*. 23(1-2):75-82.
- [3] Chaudhary, B.L; Khichi, Y.S. (2006). "Ferns of Kumbhalgarh Wildlife Sanctuary, Rajasthan, India". *Indian fern Journal*. 23(1-2):83-91.
- [4] Dulawaat, C.S; Chaudhary, B.L. (2006). "*Selaginella ciliaris* (Retz.) Spring (*Selaginella* ceae: Pteridophyta) - A new record for Rajasthan, India". *Indian Fern Journal*. 25: 106-109.
- [5] Hussain, S; Meena, K. (2015). "Pteridophytic diversity of Kumbhalgarh Wildlife Sanctuary, Rajasthan, India". *Phot on*. 115:465-472.
- [6] Kanther, R.P; Gena, D. (2020). "Floristic analysis of ferns and fern-allies from Todgarh - Raoli Wildlife Sanctuary, Rajasthan, India". *J. Phytol. Res*. 33(1):25-31.
- [7] Sharma, N. K. (2002). "Ethnomedicinal on ferns and fern-allies of Hadoti plateau south-eastern Rajasthan". *Zoos' Print Journal*. 17(3):732-34.
- [8] Sharma, O. P. (2005). "Pteridophytic flora of Bundi district south-eastern Rajasthan". *Zoos' Print Journal*. 20(4):1836-1837.
- [9] Todarwal, R. (2013). "Pteridophytes of Todgarh Raoli Wildlife Sanctuary, Rajasthan, India". *IJIRSET*. 2(10):7151-7155.
- [10] Todarwal, R. (2014). "Distribution of Pteridophytes in Ajmer District, Rajasthan". *IJIRSET*. 3(3):10844-10846.
- [11] Yadav, B. L; Meena, K.L; Meena, K; Hussain, S. (2011). "*Selaginella reticulata* (Hook. & Grev.) Spring (*Selaginellaceae*) - A new record to the Pteridophytic flora of Rajasthan, North-Western India". *J. Bombay Nat. Hist. Soc.*, 108 (3): 239-241.