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A STUDY ON PTERIDOPHYTIC FLORA OF RAJASTHAN

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ABSTRACT

Since the king's "Sketch of flora of Rajputana" was published in 1878–1879, there have been around 63 species of pteridophytes documented from Rajasthan. These species are distributed among 29 different genera. However, a comprehensive survey conducted in all pteridophytic habitats across the country at various times of the year and across the four seasons from 1975 to 1985 revealed the presence of several species that belonged to a variety of distinct genera. This results in the appearance of Athyrium hohenockerianum, Asplenium lanulatum, Cheilanthes belangeri, Botrychium lanuginosum, Dryopteris parasitica, Pityrogramma calomelanos, Pteris cretica, and Athyrium parasnathense. The fact that these taxa are no longer found in Rajasthan may be taken as conclusive evidence that they were recently eliminated or extinguished in the state as a result of one or more of the factors listed here. It is also something that has been noticed on a consistent basis that the population densities of many of the modern day. There has been a concerning decline in the number of pteridophytes in Rajasthan, particularly with regard to restricted taxa such as Asplenium pumilum var. hymenophylloides, Selaginella rajasthanensis, Isoetes reticulata, I. rajasthanensis, and Marsilea aegyptiaca. In a similar vein, the populations of certain ferns that are native to Mount Abu, such as Ophioglossum gramineum, Araiostegia pseudocystopteris, Pteris vittata, Dryopteris cochleata, and Nephrolepis cordifolia, are dwindling and becoming more localized, and they are now considered to be "seriously rare" taxa of Mount Abu. It is especially important to underline the seriousness and severity of the threat to the pteridophytic flora of this region because the state only has a limited amount of floristic resources. Adiantum recurvatum (D.Don) Fras. –The pteridophytic flora of Rajasthan gained a new record with the discovery of Jenk.

KEYWORD:- Pteridophytic, Floristic

INTRODUCTION

Ecological indicators, often known as EIs, are helpful tools that can be used to link empirical findings, models, and theories to environmental applications. They play a significant role in the categorization of habitats as well as the assessment of natural and/or anthropogenic disturbances or stresses (Siddig et al. 2016, Niemi & McDonald 2012). EIs are a species or group of species that readily reflect the abiotic or biotic status of an environment, according to one definition (McGeoch 1998, Dale & Beyeler 2001, Heink & Kowarik 2010a). This term was developed by McGeoch, Dale, and Beyeler. Only species and/or groups of species are included in this definition; however, other taxonomic levels (such as family or genus) or still ecological characteristics (such as richness and diversity) could be utilized instead.

Since the EIs are easier to measure than other ecological variables that are of more interest but more difficult to measure (the indicandum, if there is only one, or the indicanda, if there are two or more), they are frequently utilized when resources, such as money and time, are limited (Oster et al. 2008). Another reason why the EIs are frequently used is that they are more easily measurable. Indicating biotic and abiotic conditions, identifying and monitoring environmental changes (natural and/or caused by man), determining areas that need to be conserved/restored or are more advantageous for agriculture, and predicting the distribution of other organisms are some of the many uses of environmental indices (Sampson 1939, McGeoch 1998, Niemi & McDonald 2012).

The purpose (or purposes) of indicating has a direct bearing on the EIs that are selected. Many criteria have been presented for the purpose of selecting EIs that are appropriate and effective (McGeoch 1998, Heink & Kowarik 2010b). The goal of these criteria is to reduce the likelihood of wasting time and resources researching taxa that are not likely to serve as reliable indicators. In table 1, we provide a summary of the criteria given by various research in order to investigate how they are or could be used to pteridophytes.

In order to choose a reliable EI, it is necessary to assess all four sets of these requirements. First, the economic and logistical suitability (including financial cost, time efficiency, and personnel requirements); second, the analysis and interpretation efficiency (including the accurate correlation between indicator and indicandum, the capacity to be understandable, self-explanatory, and simplify the information); third, the availability of ecological information (including distributional, reliability, representation, physical tolerance, response in function of o); and finally, the availability of genetic information (including distributional, reliability, representation, physical tolerance, response in function of o).

When selecting EIs, in addition to determining the criteria to be used, there are a few additional processes that can be taken. McGeoch (1998) suggests nine of them that, irrespective of the purpose of the indicator, might be taken into consideration. Having a clear understanding of the objectives to be achieved through the usage of the EI, as well as its temporal and spatial scales, is required throughout the process of selection. It is crucial to consider the scale of an indication, as it is possible that a local disturbance that is only temporary cannot be appraised using regional or global scales. As a result, the purpose of this selection is to locate an organism or group of organisms that exemplify a particular biotic or abiotic quality according to the interest scale. Because strong (significant) associations provide stronger predictive values, it is important that the sampling procedures be constructed in such a way that they can find links between the EIs and the environmental or biotic variables of interest.

Pteridophytes are vascular plants that do not produce seeds, and there are over 12,000 identified species of them. According to PPG I 2016, they come from two phylogenetically separate groupings, which are the

lycophytes (with fewer than 1500 species) and the ferns (with about 10,500 species). They can be found almost anywhere, from the tundra to the woods of the tropics, although the equatorial region is where they are found in the greatest diversity (Tryon 1972, Tryon & Tryon 1982, Moran 2008). Even though lycophytes and ferns achieve their highest frequency and abundance in humid forests, they can also be found in drier habitats, and in those environments, certain genera can have an exceptionally large number of species (Moran 2008). Locally, the distribution of pteridophytes is not random because their presence or absence reflects the features of the microhabitat in which they are found (Nóbrega et al. 2011, Patil et al. 2016). These variables include the soil texture and fertility, atmospheric temperature and humidity, precipitation, and light intensity. As a result of the close relationship between the distribution of pteridophytes and the abiotic factors, this group possesses a significant potential for use as EI. In addition, it is possible to recognize a large number of species and genera out in the field (Tuomisto & Ruokolainen 1993, Salovaara et al. 2004).

According to Conservation International (2005), the Western Ghats of the Indian peninsula are one of the 34 global biodiversity hotspots. This is due to the region's very high levels of plant endemism as well as its higher levels of habitat degradation. Sri Lanka is another one of the global biodiversity hotspots. The rocky range of hills that runs for over 1600 kilometers along the west coast of India, from south of Gujarat to the end of the peninsula (lat. 8° and 21° N and long. 73° and 78° E), is only broken up by a gap of about 30 kilometers in the state of Kerala known as the Palghat Gap (Radhakrishna 2001). About 12,000 plant species make up the Western Ghats' diverse flora, which includes everything from unicellular cyanobacteria to angiosperms. In this spectrum, flowering plants make up approximately 27% of the Indian flora. There are 4000 species of flowering plants in India, and approximately 1500 of those species are indigenous. The Western Ghats are a rich repository of cryptogams such as pteridophytes, bryophytes, lichens, fungus, and algae in addition to sheltering a rich diversity of angiospermic flora. This is because the Western Ghats are home to a rich diversity of the angiospermic flora. Along with the Himalayas, the Eastern Ghats, and certain regions in the center of India, the Western Ghats make up a significant portion of a key center for the distribution of ferns and fern allies.

Pteridophytes are a group of vascular plants that do not produce flowers but do produce spores. This group includes ferns and fern allies. They are an obvious component of the plant life that covers the planet and are significant from an evolutionary standpoint because they demonstrate the development of the circulatory system and reflect the formation of a habitat for seed production in plants. They are also an obvious component of the plant life that covers the earth. Around 250 million years ago, they were the primary component of the plant life on earth. However, in the flora of today, seed bearing plants have mostly replaced them as the predominant component. It is of great interest that they can be found in a variety of eco-geographically vulnerable places, ranging from sea level to the highest mountains, as they thrive luxuriantly in moist tropical and temperate forests (Dixit, 2000). Pteridophytes are situated between bryophytes and higher vascular plants, such as gymnosperms and angiosperms, since they are the connecting connection between the lower group of plants and the higher group of seed-bearing plants. Pteridophytes also create a connecting link between the lower group of plants and the higher group of seed-bearing plants.

OBJECTIVES

1. Ecological studies shall be undertaken.

2. To evaluate the environmental impact on growth of pteridophytes including angiospermic associates, inter specific competition and populational dynamics

Pteridological Studies

Remarkable contributions to the classification of the ferns of the Indian subcontinent were made in the nineteenth century by R. H. Beddome, C.B. Clarke, and C.W. Hope. The founding of the Indian Fern Society in 1983 provided significant impetus to the growth of the fern research community in India. This group has been instrumental in bringing together pteridologists from throughout the country and is working to increase interest in the study of ferns by hosting conferences on the topic and publishing relevant research findings. Since its inception in 1984, the Indian Fern Journal has provided pteridologists from all over the world with a medium through which they may exchange information and ideas. Bir penned an account titled "Pteridology in India" that provided specifics of the work done in a variety of sectors. Many studies on Indian pteridophytes were conducted by researchers from other countries. To the very end of the 19th century, workers such as R.H. Beddome, C.B. Clarke, and C.W. Hope contributed to the development of this field. Even in modern times, Beddome's Handbook of the Ferns of British India, Ceylon, and the Malay Peninsula is the only authentic and informative publication that has been published on the subject.
Regional flora on Nagaland (Jamir & Rao 2018) Meghalaya, (Baishya & Rao 2011), Tirap (Singh, S. and G. Panigrahi (2005). (Arunachal Pradesh) and the North-West Himalayas were also included in a previous publication. Checklist on pteridophytes of North-East India; Darjeeling and Sikkim Himalayas, Western Himalayas, Mount Abu in Rajasthan and other places viz., Pachmarhi, Tamiya and Patalkot in Madhya Pradesh, Kambab; Shevroy and Pachaku-Tattachi hills and Bombay, Mahabaleshwar, Mather and Kanara etc. in western Ghats have been published. Both "A census of Indian pteridophytes" and "Dictionary of Pteridophytes of India" were published by Dixit (2014) in their respective years. North-East India, Andaman and Nicobar Island, and the South Indian Hills are just some of the sites in India where substantial collections of pteridophytes have not yet been taken to date. If extensive collections are made from these regions in the not-too-distant future, several new species will be discovered in these parts of the country.

DESCRIPTION OF LOCALITIES

Present study deals mainly with the pteridophytic flora of Ajmer division, Rajasthan. For this purpose every possible area which seemed likely to support pteriodphytic flora was visited time and again during the period July. 2017 to March, 2019. A detailed account of each locality and the pteridophytes found there is being given below:

1**. Raoli Todgarh hills:**

Situated in the northern side of Kumbhalgarh hills from two important fern localities. The surrounding vegetation of Todgarh forest (especially that of Dudheshwar Mahadev) and Raoli is dominated by the association of Anogeissus pendula and Boswelia serrata. Soil is gravel and rich in mica. Cheilanthes farinosa, Ophioglossum petiolatum and Adiantum capillus-veneris besides Adiantum incisum and Actiniopteris radiata which are widely distributed, form the pteridophytic flora of these localities.

2. Mainal:

This locality is situated in the Uppermall region of Bhilwara district on Bhilwara-Bundi route about 45 km from Bhilwara. It is a part of, the Deccan lava plateau of south western Rajasthan pathar (Haroti plateau) and forms an important fern locality.

Topographically this locality is a plateau with a sudden valley about 60m deep from the surface. A perennial water fall formed by a rivulet maintains high atmospheric humidity in the valley compared to the plateau surface. Anogeissus pendula, Acacia catechu, Boswellia serrata and Ajmer

Diospyros melanoxylon are the dominant trees found here. Dendropthoe falcata, a common partial parasite mostly on Boswellia serrate is an important plant of this locality. Associations of Tezminalia sp. and Bauhinia vahlii occur in the valley and near the margins of this locality.

Pteridophytes at this locality are restricted to deep valley only. Pteris vittata, *Christella* dentata, *Hypodematium crenatum, Adiantum philippense, Adiantum capillus-veneris, Adiantum incisum, Ceratopteris thallictroides, Marsilea minuta, Azolla pinnata, Isoetes tuberculata, I. rajas thanensis and Actiniopteris radiata are found growing at this locality. Pteris vittata grows in the rock crevices in vertical valls of the valley while Adiantum philippense and Adiantumcapillus-veneris form thick mats on the walls and floor of the valley. After Mt. Abu, this is the only locality which possesses all the five species of Ophioglossum occuring in Rajasthan. In fact it is the only locality where all these species grow in close association.*

3. Ajmer:

Ajmer district is centrally located in the State of Rajasthan at 25°38' and 26°58' north latitude and 73°52' and 75°22' east longitude. It is surrounded alround by Aravalli ranges. Ajmer city on the south eastern side is bounded by Nagpahar and Taragarh (873m above M.S.L.) which is the highest peak of Aravallis in this district. It receives an average annual rainfall of about 54 cm. The soil is red and yellow being silty loam to silty clay loam. Soil of hilly areas is gravel while at foot hills it is coarse sand or sandy loam. Vegetation of this region is dominated by the associations of Euphorbia caducifolia and Grewia pilosa at lower elevations and Anogeissus pendula and Boswellia serrata at higher elevations.

The Pteridophytes in this district are mainly represented by adiantum incisum and Actiniopteris radiata which are widely distributed throughout the Aravalli ranges. Adiantum capillusveneris is found under moist and shady localities of "Happy Valley", Nagpahar, Ajaipal, Rajgarh, Baijnath and Gorikund. Ophioglossum petiolatum is also widely distributed in Nagpahar, Taragarh, Nasirabad valley, Tabiji, Rajgarh and Gorikund. Equisetum ramosissimum grows along the margins of streams at Nasirabad valley, Happy valley anid Ajaipal. Marsilea minuta, M. rajasthanensis and M. aegyptiaca grow abundantly at various localities around Ajmer.

It is clear from the foregoing account that 11 genera and 20 species of pteridophytes occur at various localities of central Rajasthan. A list of these pteridophytic taxa is given below:

S.No.	Name of Species
1.	*Equisetum ramosissimum*
2.	Isoetes rajasthanensis
3.	tuberculata
4.	*Ophioglossum costatum*
5.	*O. gramineum*
6.	*O. reticulatum*
7	*O. nudicaule*
8.	*O. petiolatum*
9.	*Ceratopteris thallictroides*
10.	*Actiniopteris radiate*
11.	*Pteris vittata*
12.	*Cheilanthes farinose*
13.	*Christella dentata*

14.	*Adiantum capillus-veneris*
15.	*A. incisum*
16.	*A. philippense*
17.	*Marsilea aegyptiaca*
18.	*M. minuta*
19.	*M. rajasthanensis*
20.	*Azolla pinnata*

Diversity

Pteridophytes can be found growing in a variety of environments, including wet or dry rocks and boulders, on tree trunks, as hydrophytes in lakes, ponds, and other bodies of water, on forest floors and margins, along perennial streams and deep ravines, grasslands, tea and coffee estates, inside gloomy Georges, and so on. The following is a list of environments for pteridophytes:

(A) Hydrophytes (Aquatic), (B) Terrestrial: I. Plants that thrive in the sun: (a) Exposed areas that are located far from water courses; (b) Exposed areas that are located closer to water courses (II) The Pleasure of the Shade (III) Ravine plants—(a) those that live in ravines and (b) those that form thickets (IV) Climbing ferns: (a) Low climbing, (ii) High climbing, (iii) Twiners, (v) Xeric Plants, and (vi) Xeriphytes. (C) Lithophytes: (I) on rocks that are exposed to the air; (II) on rocks that are moist;

(D) Epiphytes: (I) Low epiphytes—a) shadow loving, and (b) Epiphytes of damp conditions), (II) Epiphytes of Medium height, and (III) Epiphytes on high exposed branch—(a) nest forming ferns, and (b) Bracket forming ferns.

The vast majority of ferns and fern allies are land-based plants that develop and differ in terms of the environments in which they live. Some of the most important genera of terrestrial growing pteridophytes include Pteris, Dryopteris, Athyrium, Diplazium, Thelypteris, Cyclosorus, and Alsophila, among others. Pteridophyte species that live in epiphytic environments include, but are not limited to, Pyrrosia spp., Drynaria quercifolia, Lepisorus nudus, Microsorum punctatum, Asplenium nidus, Huperzia squarrosum, and others. The majority of these epiphytic species would rather live on trees of the Ficus and Mangifera genera. At higher elevations, the stems and branches of trees are typically coated with a damp mossy surface and green liverworts. This creates an excellent environment for the growth of pteridophytes, which are plants that have scale-like or feather-like leaves. Climbing ferns like Lygodium, Stenochlaena, and Microsorium have underground serpentine rhizomes and belong to the genus Microsorium. With the assistance of rachis, the plants climb up the neighboring bushes and branches of the nearby trees in order to take advantage of more favorable lighting conditions.

Some types of ferns are classified as lithophytes and can be found growing in the cracks and fissures of rocks as well as amid the boulders that line water channels. Some plant species, such as Adiantum venustum, A. capillus veneris, and Asplenium rutamaria, like to make their home in shady wall cracks or amid the rock boulders that surround waterfalls.

Economic Importance

Since ancient times, man has relied heavily on plants as a significant source of medicine, and this dependence continues now. The bright red dye that may be made from the young stems of the Sphenomeris chinensis plant and is commonly utilized by peasants and tribal people. Dryopteris cochleata, Dryopteris sparsa, and Leucostegia immersa have sensitive fronds that are used in the preparation of a vegetable curry. In India, fresh Ampelopteris prolifera fronds, Ceratopteris thalictroides fronds, Marsilea minuta fronds, and Tectaria

caudunata fronds are combined with pulses and eaten according to personal preference. Because of the decorative quality of the fronds of Dryopteris, Adiantum, and Nephrolepis, potted plants of these species are often found on the terraces of homes, hotels, and other buildings, as well as in gardens. The dried stipeses are sometimes utilized in decorative purposes as well. Trials in Eastern India and Arunachal Pradesh consume the pith of tree ferns, Angiopteris evecta, and Cibotium assamicum during times of food scarcity, either as is or occasionally after colling. This occurs both in Eastern India and Arunachal Pradesh. The ancient text known as the 'Charak Samhita' makes reference to the medicinal value of Adiantum capillusveneris and Marsilea minuta. In India, the plant Selaginella bryopteris, more commonly known as Sanjiwani, is frequently employed in the role of tonic. Powder made from Lycopodium spores is applied to the skin to treat various skin conditions. In the art of firework, the spores of Lycopods, sometimes called as vegetable brimstone, are utilized. A decoction made from the fronds of Actiniopteris radiata is given to women who are menstruating or going through an abortion in order to prevent excessive bleeding. The decoction of Adiantum lunulatum is used as a laxative and can be helpful in the treatment of dysentery. In the Unani system of medicine, the fronds of the Asplenum adiantumnigrum plant are used by women for family planning, while the leaves are used to treat conditions related to the spleen. The rhizome of the Helminthostachys zeylanica plant is utilized in the treatment of dysentery, while the leaves are utilized in the treatment of ulcers on the tongue. Rheumatism can be treated with the stems of the Lygodium flexuosum plant when they are boiled in mustard oil. In India, the rhizome of Polystichum squamosum is referred to as "Nirviri," and it is used to treat bites from scorpions and other insects. The Darjeeling residents have full faith in the ability of the juice that is derived from the rhizomes of Tectaria macrodonta to treat diarrhea in youngsters. It is possible to treat cuts and wounds with the fronds of Pteris species. Orchids can be grown successfully on the main stems of Osmunda, Alsophila, Angiosphila, and Angiopteris. Therefore, there are many applications for pteridophytes in human society.

There are a lot of different species that could be useful, and plenty of different medicines could be made from them. The Greek philosopher Theophrastus and his Indian colleagues Sushrut and Charak both made mention, about the year 300 B.C., of the medical benefits of ferns, whether or not these qualities actually existed. It has also been documented how certain ferns and pteridophytes native to India can be used for therapeutic purposes. The symbiotic relationship that Azolla has with nitrogen-fixing, blue-green algae, specifically Anabaena azollae Strasburger, is one of the most important aspects of this type of algae. Because of this quality, the agronomic potential of Azolla as a biofertilizer for rice has been recognized in a great number of nations, one of which is India. The 'Charak Samhita' makes reference of the therapeutic value of Adiantum capillusveneris and Marsi. lea minuta. The rhizome of Polystichum squamosum, which is referred to as 'Nirviri' in India, is a good treatment for scorpion bites and bug bites. It has been discovered that a chest ailment can be effectively treated using a decoction made from the leaves and roots of a plant called Adiantum phillipensis, which is found naturally in the Philippines. The spores of the Angiopteris evecta plant are beneficial in treating leprosy and other skin illnesses, while the leaf extract of this plant is used to cure dysentery. Actiniopteris radiata is a plant that is used to cure severe illnesses such as diarrhea, dysentery, helminthiasis, haemopstysis, and fever. It has attributes such as anthelmintic, astringent, sweet, cooling, acrid, and febrifuge, and it possesses these qualities in plenty. One of the ornamental fern species that is utilized the most frequently is called the sword fern and is scientifically known as Nephrolepis cordifolia. Other species of ferns, such as Adiantum capillusveneris, Asplenium sp., Selaginella sp., Lygodium sp., and Pteris sp., are also cultivated in the gardens and containers. Ferns have also been proven to play a significant part in the bioremediation of wastewater, which has been demonstrated.

Since the beginning of time, people have relied heavily on various plants for their medicinal needs, and this dependence has not abated. Even in modern times, many indigenous communities and rural populations are extremely reliant on the natural resources gathered from the forest regions surrounding them for the treatment of a wide variety of illnesses and conditions. Ayurveda, Siddha, and Unani are some of the traditional medical practices that have been utilized by many indigenous people in India (Gadgil, 2016). Traditional Indian medicine is founded on these practices. Unfortunately, only a small number of research have been conducted

to investigate the medicinal potential of pteridophytes, despite the fact that a great number of investigations have been conducted that concentrate on the therapeutic qualities of plants, particularly angiosperms. As early as 300 B.C., the Greek philosopher Theophrastus (Corne, 1924a) and his Indian contemporaries Sushrut and Charak describe the medical benefits of ferns, whether these qualities are actual or imagined. It has also been documented that certain ferns and pteridophytes native to India can be used for therapeutic purposes (Caius, 2015; Nair, 2009). It has been thoroughly documented in the past (Benjamin and Manickam, 2007) that 61 distinct types of ferns and fernallies can be used for therapeutic purposes.

Azolla, which belongs to the family Azollaceae, is yet another major pteridophyte that can be found in many sections of the Western Ghats and India. This pteridophyte is a member of the Azollaceae family and serves a variety of roles in the ecosystem. The agronomic potential of Azolla as a biofertilizer for rice has been recognized in many countries including India, the Philippines, the United States of America, Sri Lanka, and Thailand (Ahluwalia et al., 2002). This is due to the fact that Azolla has a symbiotic association with nitrogen-fixing, blue-green algae known as Anabaena azollae Strasburger. According to Sanyahumbi et al. (2018) and Vermaat and Hanif (2018), the exceptional ability of Azolla to take up heavy metals from polluted water can be employed for the treatment of wastewater. It is also well known that it has been used as a traditional medicine for the treatment of cough and sore throat (Wagner, 2017; Usher, 2014).

Ferns have also been proven to play a significant part in the bioremediation of wastewater, which has been demonstrated. The Chinese Bracken fern, also known as Pteris vittata L., was discovered to be a hyper-accumulator of the poisonous element arsenic by Ma et al. (2001). They discovered that in addition to producing a substantial amount of biomass, this fern was also effective in the accumulation of arsenic, with concentrations reaching as high as 2.3% in the aerial regions of the fern. It has been demonstrated by Nichols et al., 2000; Olgun et al., 2007; and Suné et al., 2007 that several species of Salvinia, including S. herzogii, S. minima, S. natans, and S. rotundifolia, have the capability of removing a wide variety of contaminants, including heavy metals, from wastewater.

The usage of ferns as decorative elements dates back a significant amount of time. Because of the decorative quality of the fronds of Drypteris, Adiantum, and Nephrolepis, potted plants of these species are often found on the terraces of homes, hotels, and other buildings, as well as in gardens and other outdoor spaces (Dixit, 2010). They can reproduce asexually by spores or vegetatively through vegetative mechanisms, and many nurseries cultivate them for their decorative potential before selling them on the market. During a variety of events, the fronds of ferns are often utilized to decorate stages, halls, and other venues in addition to being incorporated into bouquets.

CONCLUSION

Around 280–230 million years ago, seedless vascular plants known as pteridophytes enjoyed a period of great prosperity during which they predominated the vegetation on the surface of the earth. Despite the fact that they have been completely supplanted in the extant flora by seed-bearing vacular plants, they continue to make up a rather significant portion of the vegetation that exists on the planet at the present time. Pteridophytic flora makes a significant contribution to the vast biodiversity of India's flora, which is made possible by the country's climate, which is highly varied. Because of the unique ecological pattern in which they are distributed, pteridophytes are also an intriguing and important component of the flora of our country.

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6