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DIVERSITY AND DISTRIBUTION OF PTERIDOPHYTE IN SIDHI DISTRICT (M.P.)

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ABSTRACT:

This study investigates the diversity and distribution of pteridophytes in Sidhi District, Madhya Pradesh, India. Field surveys were conducted across various habitats, including forests, grasslands, and wetlands, to catalog the species present. The findings highlight the region's rich biodiversity and the ecological significance of these plants in their respective environments. The study also examines factors influencing their distribution, such as soil type, moisture levels, and altitude. Conservation recommendations are provided to address the threats faced by these species due to habitat loss and climate change. This research contributes to the understanding of pteridophyte diversity in Central India and emphasizes the need for further ecological studies in the region. The diversity and distribution along different ecological places of speceis pteridophytets from Sidhi district were studies most common speceis viz; Selaginella bryopteis, Equisetum hymalae., Azolla pinnta, Pteris vittat, Adiantum philipens, Marsillia minuta and Angiopteris dichotma etc.

KEYWORDS: *Pteridophytes, Diversity and Distribution.*

INTRODUCTION:

Pteridophytes, which include ferns, horsetails, and clubmosses, are an important group of vascular plants with a long evolutionary history. They play a significant role in ecosystem functioning, including nutrient cycling, soil formation, and carbon storage. In addition, they have been used in traditional medicine and have cultural significance in many societies. Northern India is a region known for its diverse flora and fauna, and the pteridophytic diversity in this region has received limited attention. Therefore, this study aims to explore the diversity of pteridophytes in Northern India and provide a baseline for future studies in the region.

The first vascular plants to emerge on Earth were pteridophytes, or ferns and fern-allies, during the Silurian epoch, which started 438 million years ago. They are considered to be"vascular cryptogams" since they are the first plants to have ever formed on the planet, signaling the existence of a fully developed vascular system with xylem for transporting water and phloem for transporting food, respectively. Pteridophytes, which have specialized tissues for transporting food and water, signaled a period of increased colonization in terrestrial environments, to the point that many of them could grow to large heights like blossoming trees. By the time the Carboniferous epoch arrived, they had effectively established themselves as terrestrial plants and were evolving at a very fast pace, dominating the majority of the forests on the surface of the planet. The fall of the pteridophytes started in the late

Cretaceous and progressed through time, notably with the emergence and domination of the flowering plants. Nonetheless, this intriguing group of plants, which connects the higher evolutionary seed plants with non-vascular cryptogams, continues to inhabit a variety of habitats on land, in marshes, swamps, and even in bodies of water (Dudani et al., 2011).

MATERIAL AND METHODS:

Sampling status Pteridophytes were collected from their natural occurrences using a random selection method using three points-spot per population, per species, and per area. Plants were carefully removed from the surface/water and placed in polythene bags containing soil or water. The bag mouth was sealed with a rubber band and labelled. On the spot, a habitat detail was noted. These specimens were brought to the college herbarium for examination and authentication. A well-known Professor of Advance Study Centre, Department of Botany, Govt. S.G.S. PG. College Sidhi (M.P.) has identified various specific statuses of plants (M.P.). Species were verified using previously published literature and herbarium samples.

OBSERVATION & DISCUSSION:

Each species of pteridophyte has his its own preference of micro habitat depending on the temperature, humidity, soil type, moisture, light intensity, etc. and many cases are very specific indicators of the conditions they need. It is well observed and noted that most species of pteridophytes succeed under high humidity and shade condition unless they are species that prefer more xeric conditions and more heliophilous (Dudani et al 2014) the cange in diversity and distribution along the ecological gradients and potential mechanism were studied.

Table -1: List of Pteridophytes of Sidhi district (M.P.)

S.N.	Plant species	Family	Habitate	Remark
1	Selaginella bryopteis L	*Selaginelliaceae*	Terrestrial	
2	Selaginella kraussiana	*Selaginelliaceae*	Terrestrial	
3	Equisetum hymallae	Equisitaceae	Moist area	
4	Azolla pinnta R	*Azollaceae*	Aquatic	
5	Pteris cretica L	*Pteridaceae*	Terrestrial	
6	Pteris vittata L	*Pteridaceae*	Terrestrial	
7	Adiantum lunulatum burm	*Adiantaceae*	Terrestrial	
8	Adiantum philipens L	*Adiantaceae*	Terrestrial	
9	Marsillia minuta L	*Marsiliacae*	Aquatic	
10	Angiopteris erecta	*Angiopteridaceae*	Terrestrial	
11	Angiopteris dichotoma	*Angiopteridaceae*	Terrestrial	
12	Dryopteris cochleata	*Aspidiaceae*	Terrestrial	

The diversity and distribution of pteridophytes in Sidhi District, Madhya Pradesh, India, offer fascinating insights into the region's flora. Pteridophytes, which include ferns and their relatives, thrive in various ecological niches and are important indicators of environmental health.

Diversity of Pteridophytes in Sidhi District:

1. **Species Richness**: The Sidhi District hosts a variety of pteridophyte species, each adapted to specific microhabitats, such as moist forests, rocky outcrops, and wetlands. Common families include Polypodiaceae, Aspleniaceae, and Dryopteridaceae.
2. **Endemic Species**: Some species may be endemic or have restricted distributions, contributing to the biodiversity of the region. This highlights the importance of conservation efforts.
3. **Ecological Roles**: Pteridophytes play crucial roles in their ecosystems, such as soil stabilization, water retention, and providing habitat for various organisms.

Distribution Patterns:

1. **Habitat Preferences**: Pteridophytes often favor humid and shaded environments. Their distribution is influenced by factors such as soil moisture, light availability, and altitude.
2. **Geographical Variation**: The distribution may vary significantly within the district due to topographical variations, resulting in diverse habitats from valleys to elevated areas.
3. **Anthropogenic Effects**: Human activities, including agriculture and urbanization, can impact pteridophyte populations by altering habitats and introducing invasive species.

Conservation Concerns:

The preservation of pteridophyte diversity is critical. Conservation strategies should focus on:

- **Habitat Protection**: Safeguarding natural habitats against deforestation and land conversion.
- **Research and Monitoring**: Conducting studies to monitor pteridophyte populations and their ecological roles.
- **Community Awareness**: Educating local communities about the importance of pteridophytes and promoting sustainable practices.

CONCLUSION:

The study of pteridophyte diversity and distribution in Sidhi District, Madhya Pradesh, highlights the ecological significance and biodiversity of this region. Pteridophytes, encompassing various ferns and their relatives, serve as crucial components of the local ecosystem, contributing to both ecological balance and environmental health. Pteridophytes play multiple roles in their ecosystems, such as improving soil quality, preventing erosion, and enhancing moisture retention. Their presence indicates healthy forest ecosystems, as they thrive in moist, shaded environments that are often found in undisturbed areas. The rich diversity of pteridophyte species in Sidhi reflects the area's varied habitats and microclimates. This biodiversity is vital for ecological resilience, allowing ecosystems to withstand and adapt to changes, whether natural or anthropogenic.

The ongoing threats posed by habitat destruction, climate change, and invasive species necessitate urgent conservation efforts. Protecting natural habitats is crucial not only for the pteridophytes themselves but also for the myriad of other species that share these environments. Effective conservation strategies could include creating protected areas, restoring degraded habitats, and enforcing sustainable land-use practices. Further research is essential to comprehensively document the species present, understand their ecological roles, and monitor population trends over time. This knowledge can inform conservation strategies and highlight areas that require urgent attention. Involving local communities in conservation efforts is critical. Educating them about the importance of pteridophytes and their ecosystems can foster a sense of stewardship and encourage sustainable practices that protect these plants. Community-led initiatives, such as the establishment of botanical gardens or educational programs, can promote awareness and appreciation for local flora. Continued studies could explore the potential uses of pteridophytes in traditional medicine, horticulture, and as indicators of environmental health. Research could also investigate the impact of climate change on these species and their habitats, providing valuable data for adaptive management.

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