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Lithophytic Fern of Haroti Plateau, South-East Rajasthan

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ABSTRACT: Lithophytes grow in fissures in rocks, walls etc. where soil or organic matter has accumulated. The examples of lithophytes include several orchids, mosses, ferns, algae, and some angiosperms. Based on habitat preferences Pteridophytes are classified into ten categories by earlier workers like shady and dark forest species, species inhabiting grassy areas, climbers, lithophytes, hydrophytic etc. In these categories lithophytes of area is concerned. The present paper deals with phenology, ecology, distribution and morphological characters of common lithophytic fern of Haroti plateau.

KEY WORDS: Deciduous, Fern, Haroti plateau, Lithophytes, Pteridophytes

I. INTRODUCTION

Haroti plateau is situated at the edge of the Malwa plateau at 23°45' to 25°53' N latitude and 75°9' to 77°26' E longitude in the south-eastern corner of Rajasthan. Hilly region, higher elevation, characteristic topography and forest cover makes important reasons for richness of fern flora of the area. It covers Kota division of Rajasthan and includes Kota, Bundi, Jhalawar and Baran districts respectively. The climate of the area favours the growth of dry deciduous forests. Haroti plateau has been found to support luxuriant growth of Pteridophytes.

Lithophytes are plant that grow in or on rocks, walls etc. They can be classified as either epilithic or endolithic. Epilithic lithophytes grow on the surface of rocks while endolithic lithophytes grow in the crevices of rocks. These plants feed off nutrients from rainwater and nearby decaying plants. The most common lithophytic fern of Haroti region are *Actiniopteris radiata* (SW) Link., *Adiantum capillus-veneris* Linn. and *Adiantum incisum* Forssk. All these ferns belong to the family Pteridaceae and place in order Polypodiales. The *Adiantum capillus-veneris* Linn. known as Maiden hair fern while *Adiantum incisum* Forssk. known as walking fern. in botanical description.

Adiantum capillus-veneris Linn. and *Adiantum incisum* Forssk. grows in rock crevices, moist rock walls and embankments, near water channels or waterfalls. The reproductive part sori are borne sub marginally and are covered by reflexed flaps of leaf tissue which resemble indusia. *Actiniopteris radiata* (SW) Link. is most widely distributed xerophytic fern, it is usually growing on exposed rocks, rock crevices, old walls of houses, forts and foothill rocks which are mostly exposed and dry. It is well adapted to drought conditions. Habitat and systematic enumeration of lithophytic fern of this area are considered in this communication.

II. RELATED WORKS

The notable contribution from ecological studies particularly on vegetation of fern and fern allies includes Mital, 1969; Bhardwaja, Gena, and Yadav, 1977; Bhardwa, Gena and Verma, 1987; Sharma, 1999; Kikim and Yadava. 2001; Singh and Singh 2002; Kumar, 2012; Meena, 2012 and Sharma, 2013.

III. METHODOLOGY

Environmental degradation and Climate change have severe impacts on growth rate and survival ship of fern flora because these are moisture loving taxa. The present study is based on field observations and collection tours. The paper is based on earlier survey of research work during 1997 to 1999 and current exploration and field observation of the area (During January 2017 to February 2020). Distribution and occurrence of common lithophytic fern species of Haroti plateau have been pointed out in this observation.



IV. EXPERIMENTAL RESULTS

Actiniopteris radiata (SW) Link. is most widely distributed xerophytic fern. Both species of *Adiantum* are evergreen and perennial fern which has creeping rhizome and beautiful pinnately compound leaves. Systematics, ecology, distribution and morphological observations of lithophytic fern of Haroti plateau have been mentioned in present work.

1. *Actiniopteris radiata* (SW) Link.

Order: Polypodiales

Family: Pteridaceae

Common name: Morpankhi

A small fern attaining height up to 15 cm., may be 8 to 20 cm. in height, roots penetrating in the root crevices. The rhizome is oblique to horizontal. The young leaves show circinate vernation. Leaves (Fronds) in summer season look like small broom and turn to expanded fan shaped in rainy season. The laminae are stiff and rough, composed of radiating segments. Sporangia are leptosporangiate, spores triangular, trilete.

Fertile: September to October.

Distribution: Most commonly occurring xerophytic fern, growing on the walls of old building, ruins, mud houses, dry and wet rocks and rudiments on the locality. Fronds are of expanded fan shaped in rainy season. It is very common on walls of old mud houses in Jhalawar district.

2. *Adiantum capillus-veneris* Linn.

Order: Polypodiales

Family: Pteridaceae

Rhizome short creeping, densely scaly; stipe chestnut coloured, wiry, scaly at base; scales as on rhizome, but smaller. Lamina bipinnate or tripinnatifid, deltate-ovate, green, shining, coriaceous; veins forked, free. Sori 4-6 in each pinnule, notched, brown, indusiate; indusia reniform or oblong; spores yellow, trilete, tetrahedral, non-perisporiate.

Fertile: August to October.

Distribution: A very common fern of humid places throughout Haroti plateau, such as Rameshwar, Bhimlat, Mukandara ranges, Khatkar, Sitabari, Kundakhoh. This fern is commonly seen between wet rock crevices and damp areas at base of the *Phoenix sylvestris* (Khajur) trees.

3. *Adiantum incisum* Forssk.

Order: Polypodiales

Family: Pteridaceae

Rhizome short, erect, tufted, densely scaly, dark brown, concolorous or bicolorous with darker centre, linear, base cordate, margins entire, apices hair pointed. Lamina linear-lanceolate, 1-pinnate, sub-coriaceous, hairy throughout; rachis hairy, elongated often rooting at the apex; pinnae sub-opposite, sessile, lobed in upper margin, basal pair of pinnae generally reduced and deflexed, both surfaces hairy; veins forked, free. Sori 3-8 in each pinna on the upper margins, rounded to elongate, indusiate, indusia thick, oblong or sub-reniform, hairy on margins; spores trilete tetrahedral, yellow, non-perisporiate, smooth.

Fertile: August to October.

Distribution: Most common fern of study area, grows on humid places, exposed rocks, walls and along foothills at Gaper Nath, Mukandara ranges, Rameshwar and Ramjhar. It is commonly seen at hilly areas of Khatkar and near the Mej rivers.

V. CONCLUSION

The present study is an addition to the knowledge of lithophytic fern of Haroti plateau. *Actiniopteris radiata* (SW) Link. is most widely distributed xerophytic fern, found almost everywhere its suitable habitats, like walls of old building, ruins, mud houses, dry and wet rocks and rudiments on the locality, in the area. Its roots penetrating in the root crevices. *Adiantum capillus-veneris* Linn. and *Adiantum incisum* Forssk. fern also inhabiting rock crevices. Various types of construction work for religious and other purposes in area have disturbed the natural habitat of both species of beautiful fern of *Adiantum*.

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