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Studies on some Pteridophytes in Jajpur district, Odisha, India

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ABSTRACT

This paper deals with the studies of some Pteridophyes in Jajpur district of Odisha. A survey has been conducted during 2020-2022 in different areas of Jajpur district to document the pteridophytes. Extensive as well as intensive floristic studies have been conducted in these areas, voucher specimens have been collected, identified and preserved in the form of herbarium following standard methods. The results revealed 15 species of Pteridophytes under 11 genera and 11 families which not only fulfil the basic needs of the local people but also maintain ecological balance in this region. Further research is necessary to promote conservation of this biodiversity in this region.

Key words: *Pteridophytes, Sporulation, Vascular Cryptogams*

Introduction

Pteridophytes are the vascular cryptogams as the conducting system has been developed from this group in the plant kingdom. These plants were first appeared in the Silurian period and well flourished during Devonian, Mississippian and Pensylvanian period. It forms the link between cryptogams and phanerogams. The pteridophytes form a dominant part of earth's vegetation since a long period and play a key role in the evolution of plant kingdom. Pteridophytes ranges from hydrophytic form to epiphytic form. These are used by Peoples as food, ornamentals, biofertilizers and medicines. Different parts of the plant are used in curing different diseases like fever, cough, asthma, rheumatism, stomach disorders, poisonous bites, diabetes and other problems (Benniamin, 2011).

Study Site

The geographical area of Jajpur district in the state of Odisha is 2899 sq.km. The district lies between 85 ^{0} 40 E to 86^0 44 E longitude and from 20^0 30N to 21^0 10 N latitude. The district is surrounded by Bhadrak on its north and east, Kendrapara on its south and east, Dhenkanal on its west and Keonjhar on its northwestern side. There are one subdivision Jajpur; six Tahasils namely Sukinda, Jajpur, Binjharpur, Bari, Dharmasala and Darpana; ten blocks namely Barchana, Bari, Binjharpur, Danagadi, Dasarathpur, Dharmasala, Jajpur, Korei, Rasulpur and Sukinda. The district has 25% hilly area whereas 75% area belongs to the riverine and deltaic plain. The important rivers flowing through the district are Brahmani, Baitarani and their tributaries.

Review of Literature

Studies on pteridophytes and fern flora, its chemical constituent and medicinal properties has been evaluated by different workers in India and abroad (Singh *et al*., 1989; Singh 1999; Manandhar, 1996; Nayar, 1957; Kaushik and Dhiman, 1995; Manikkam and

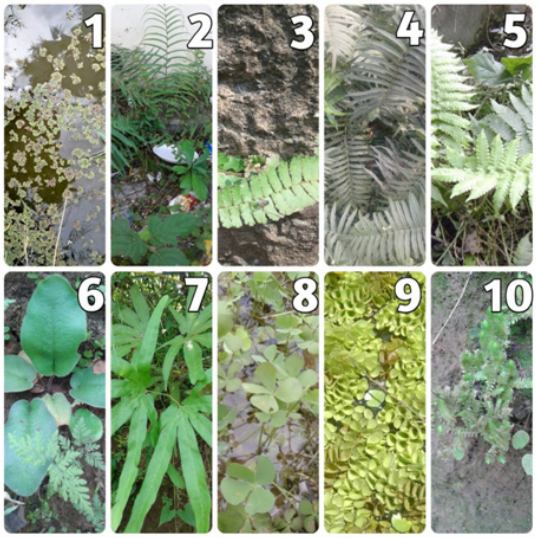
Irudayaraj, 1992; Trivedi, 2002; May 1978; Singh and Panigrahi, 2005).

Materials and Methods

Regular field trips have been conducted during 2020-2022 to different area of Jajpur district to collect the pteridophytes and fern. The collected plant specimens were identified by using flora books (Haines, 1921-1925; Saxena and Brahmam, 1994-1996) and other available literature (Mishra and Panda, 2013). Herbarium specimens have been prepared by following standard method. Voucher specimens of the collected plant species have been deposited in the herbarium of Dhenkanal Autonomous College, Dhenkanal.The plants are also classified on the basis of their habitat (Common-C, Occasional-O, Rare-R). Status of the plant, time of sporulation and spore type have been recorded during the investigation.

Results and Discussion

The present study reveals that, a total number of 15 species of pteridophytes belonging to 11 Genera and 10Families have been recorded from different area of Jajpur district (Fig. 1, Table 1). Habitat wise distribution of plants shows that nine species are marshy, fourare floating and two are amphibious (Figure 2). It has been observed that, 8 species are homosporous and 7 species are heterosporous (Table 2). Status of the plant shows that, 8 species are common, 2 are occasional and 3 are rare species (Table 3). Family-wise distribution of plants shows that, the families Pteridiaceae, Marsileaceae, Azollaceae, Salviniaceae are represented by 2 species each and other 7 families are represented by one species each (Table 4).



1. *Azolla pinnata*
2. *Pteris vittata*
3. *Adiantum capillus veneris*
4. *Ampelopteris prolifera*
5. *Dryopteris cochleata*
6. *Hemionitis arifolia*
7. *Lygodium microphyllus*
8. *Marsilea quadrifolia*
9. *Salvinia cuculata*
10. *Selaginella bryopteris*

Fig. 1. Distribution of Pteridophytes in the study area

Table 1. List of Pteridophytes from the study area

Sl. No.	Botanical Name and family	Status	Habit	Type of Spore	Time of Sporulation
1	*Adiantum capillus-veneris* Linn. Adiantaceae	C	Marshy	Homosporous	July -Dec.
2	*Ampelopteris prolifera* (Retz.) Copel. Ampelidaceae	O	Marshy	Homosporous	Nov.-Feb.
3	*Azolla pinnata* R.Br. Azollaceae	C	Floating	Heterosporous	September
4	*Azolla microphylla* KaulfAzollaceae	C	Floating	Heterosporous	Throughout the year
5	*Ceratopteris thallictroides* (L.) Brongn. Parkeriaceae	R	Marshy	Homosporous	Oct.-Feb.
6	*Dryopteris cochleata* (D.Don) C.Chr. Dryopteridaceae	C	Marshy	Homosporous	Sept.-Jan.
7	*Hemionitis arifolia* (Burm.f.) Moore Hemionitidaceae	R	Marshy	Homosporous	Aug.-Jan.
8	*Lygodium microphyllum* (Cav.) R.Br. Lygodiaceae	O	Marshy	Homosporous	Nov.-Dec.
9	*Marsilea minuta* L. Marsileaceae	C	Amphibious	Heterosporous	Nov.-Mar.
10	*Marsilea quadrifolia* L. Marsileaceae	C	Amphibious	Heterosporous	Nov.-Feb.
11	*Pteris cretica* L. Pteridiaceae	C	Marshy	Homosporous	All the year round
12	*Pteris vittata* L. Pteridiaceae	C	Marshy	Homosporous	Nov.-Feb.
13	*Salvinia molesta* Mitch. Salviniaceae	C	Floating	Heterosporous	-
14	*Salvinia cuculata* Roxb. ex. Bory Salviniaceae	C	Floating	Heterosporous	-
15	*Selaginella bryopteris* (L.) Baker Selaginellaceae	R	Marshy	Heterosporous	Oct-Jan

Table 2. Spore wise Distribution of the plant

Sl. No.	Type of Spore	Number of plants
01	Homoporous	08
02	Heterosporous	07

Table 3. Status of Pteridophytes in study area.

Sl. No.	Status	Number of plants
01	Common	10
02	Occasional	02
03	Rare	03

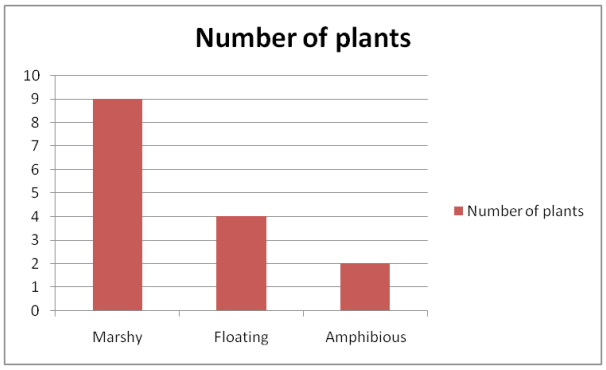


Fig. 2. Habit wise Distribution of the plant

Conclusion

Pteridophytes has a great contribution to the phytodiversity of Jajpur district of Odiha, which fullfill the basic needs of the local people and also maintain ecological balance of this region.Now a days due to different human activities like mining, deforestation, habitat destruction and pollution these bioresources are in verge of severe threat. The local people as well as the government should take adequate steps to conserve these plant resources which will improve the livelihood of the local people and promote biodiversity conservation in this region.

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Table 4. Family wise Distribution of the plant

Sl. No.	Family	Number of plants
1	Pteridiaceae	02
2	Marsileaceae	02
3	Azollaceae	02
4	Salviniaceae	02
5	Ampelidaceae	01
6	Adiantaceae	01
7	Dryopteridaceae	01
8	Hemionitidaceae	01
9	Lygodiaceae	01
10	Selaginellaceae	01
11	Parkeriaceae	01

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