

Diversity of Wetland Monocot Flora of Jajpur District in Odisha, India

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ABSTRACT

This paper deals with the assessment of wetland monocot flora in Jajpur district of Odisha. A survey was conducted during 2020-2022 in different aquatic and wetland habitats of Jajpur district to document the phytodiversity of this area. Extensive as well as intensive floristic studies have been conducted in these areas, voucher specimens were collected, identified and preserved in the form of herbarium following standard methods. The results revealed that there are 49 monocot wetland plant species under 33 genera and 10 families. Among these, 36 species are marshy, 05 species are amphibious, 05 species are free floating and 03 species are submerged plants. These plants not only fulfil the basic needs of the local people but also maintain ecological balance of this region. Further research is necessary to promote biodiversity conservation in this region.

Keywords: Aquatic, Monocot, Phytodiversity, Wetland

INTRODUCTION

The division angiosperm includes monocots and dicots. Both of these groups of plants have much economic values. Monocots account for a large proportion of human diet. These are also the abundant source of herbivores diet in grasslands in association with dicot taxa (Barik, 2017)¹. Beside this many grasses are medicinally important. They have soil binding capacity and hence are useful to check soil erosion. Monocots include wall grass, aquatic and wasteland grass, poisonous grass, fodder grass, cultivated grass, medicinal grass. Grasses have multiple uses in many aspects in human life. They are originated from cretaceous period (Mondal and Chatterjee, 2020)². The distinguishing taxonomical feature of monocots include single cotyledon, narrow leaf with parallel vein, unbranched stem, trimerous flower, fruit or seed pods having three parts.

STUDY AREA

Jajpur district is located towards Northeast part in the state of Odisha (Fig-1). It remained as Capital of the ancient Utkal long ago. The district is blessed with diversified wetland monocot flora. The geographical area of the district is 2899 sq. km. The estimated wetland area of the district is 15714 ha (Anonymous, ISRO, 2010)³. The district lies between 85° 40' E to 86° 44' E longitude and 20° 30' N to 21° 10' N latitude. Apart from being rich in agricultural and mineral resources, the presence of water divide of the Brahmani and the Mahanadi basins makes the region more fertile. Brahmani, Baitarani and their tributaries flow through this region.

These river plains receive water and sediments from the Mahanadi carried by the river Birupa. But during summer these rivers remain dry as they are rain fed water bodies. In spite of being located in the deltaic region of the Bay of Bengal, this district has somehow gone into isolation as a land pocket. Though it is not adjacent to the sea, it experiences all the features of a coastal district including its climate, saline weather, coastal wind as well as proneness to cyclonic storm. The aquatic or wetland habitat of the district are river, pond, tank, ditches, marshes, swamps and flood plains.

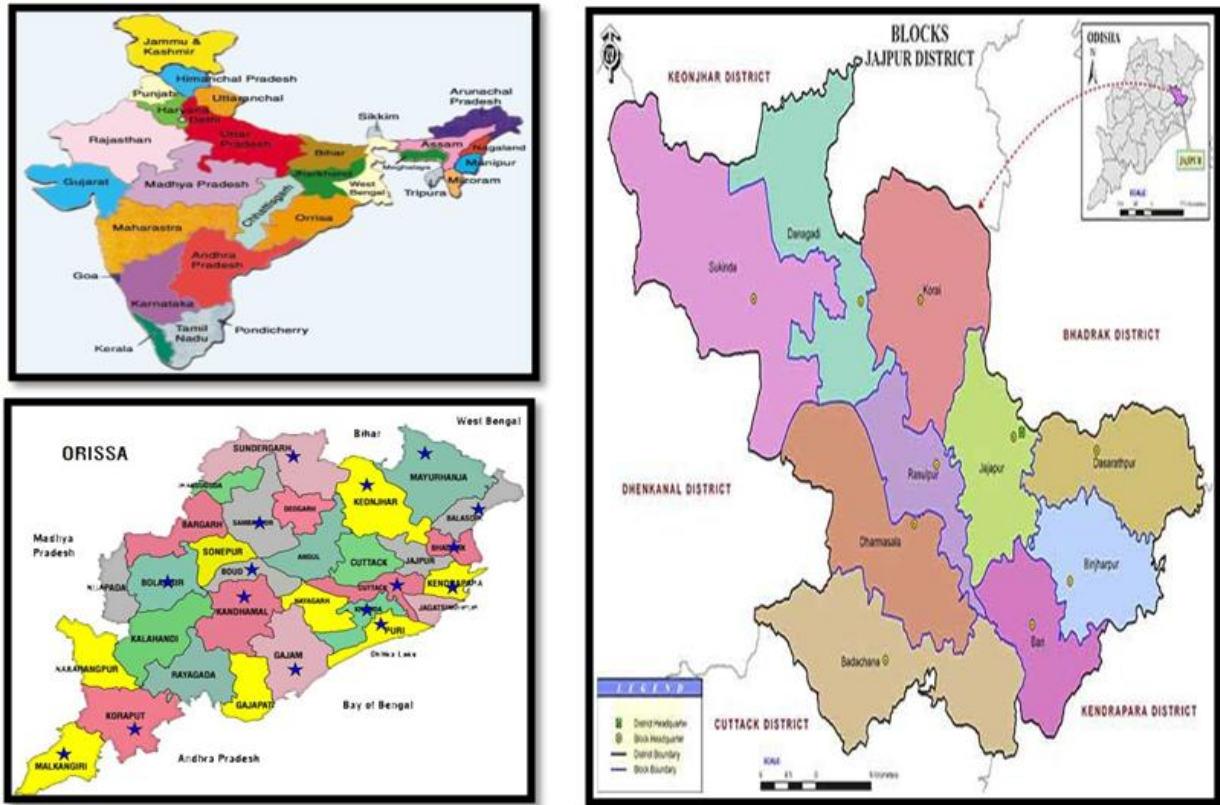


Figure-1: Location Map of the study area

REVIEW OF LITERATURE

Literature study reveals that, a lot of work on aquatic and wetland flora have been carried by several workers in various aquatic and wetland habitats of India (Adhiswar & Choudhary, 2013; Cook, 1996; Jain *et al.*, 2007; Agharkar, 1923; Pattnaik and Pattnaik, 1956; Panda and Das, 1995; Panda *et al.*, 2011; Panda & Mishra, 2011; Das, 1990; Mishra *et al.*, 2016; Subhadarsini *et al.*, 2016; Mandal *et al.*, 2017; Sahoo and Nayak, 2022)⁴⁻¹⁶. Kumar and Singh (2012)¹⁷ have studied the monocot aquatic and semi-aquatic flora of Lalitpur District of Uttar Pradesh. The impact of biotic factors such as urbanization, industrialization which have caused the loss of forests have resulted in the loss of biodiversity as well as the Indigenous Knowledge in different regions of Odisha (Nayak *et al.*, 2003 and Sahu *et al.*, 2013)¹⁸⁻¹⁹. The vegetation of Jajpur district is also severely affected due to rapid industrialization, urbanization and mining activities. These factors are also responsible for the disappearance of ponds and waterlogged areas which have caused much loss to the aquatic plants. Pollutants from various industries, urban areas and mining activities have also caused much loss to the wetland vegetation in different areas of this region. However, there are no records on wetland monocot plants in Jajpur district of Odisha. Keeping the above facts in mind an exhaustive floristic study as well as diversity analysis have been carried out in Jajpur district to document the diversity of wetland monocot plants.

METHODOLOGY

Several field trips have been conducted in different seasons of the year during 2020-2022 to different wetland and aquatic habitat of Jajpur district to collect the plant specimens. The plant specimens have been collected during flowering or fruiting stage. These are identified with the help of flora books (Haines 1921-25; Saxena and Brahmam 1994-96)²⁰⁻²¹ and other available literatures. Herbarium specimens have been prepared by following standard methods. Voucher specimens of the collected plant species have been deposited in the herbarium of N.C. (Autonomous) College, Jajpur. The plants are also classified on the basis of their habitat. Various uses of these plants have also been noted by collecting information from the local people and available literature (Mishra and Panda 2013)²².

RESULTS AND DISCUSSION

The present study reveals that, a total number of 49 plant species belonging to 33 Genera and 10 Families (Table-1) have been recorded from different aquatic habitats of Jajpur district of Odisha. It has been observed that, the family Poaceae (19 Species) is the most dominant family followed by Cyperaceae (13 Species) and Araceae (4 species);

Pontederiaceae and Commelinaceae are represented by 3 Species each; Lemnaceae and Hydrocharitaceae contribute 2 Species each. The family Aponogetonaceae, Amaryllidaceae and Typhaceae are represented by one species each. Distribution of plants on the basis of their habitat have been represented in the table. Out of the total species recorded from the study area, 36 species recorded are under marshy habitat which is highest of all group followed by amphibious (05 species), free floating (05 species) and submerged (3 species). The plants are used in human food, animal food, medicine, agriculture, water detoxification and making domestic commodities.

CONCLUSION

From the present investigation it is evident that, Jajpur district of Odisha is rich in wetland monocot flora which fulfills the basic needs and are beneficial to the local people who depend on them. Besides these plants also maintain ecological balance of this area. The aquatic and wetland habitat of these areas are on the verge of severe threat. Hence there is urgent need of more research and awareness to promote biodiversity conservation in this region.

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Table-1: List of wetland monocot plants of Jajpur District of Odisha

Sl.No	Name of the plant	Family	Local Name	Habitat	Uses
1	<i>Aponogeton natans</i> (L.) Engl. & Krause	Aponogetonaceae	Ghechu	Submerged	Food
2	<i>Alocasia macrorrhizos</i> (L.) G. Don.	Araceae	Mana saru	Amphibious	Food
3	<i>Brachiaria distachya</i> (L.) Stapf	Poaceae	-	Marshy	Fodder
4	<i>Chrysopogon aciculatus</i> (Retz.) Trin.	Poaceae	Guguchia	Marshy	Fodder
5	<i>Commelinabenghalensis</i> L.	Commelinaceae	Kanasiri	Marshy	Food & Fodder
6	<i>Commelina erecta</i> L.	Commelinaceae	Konisir	Marshy	Medicine
7	<i>Commelinadiffusa</i> Burm.f.	Commelinaceae	Kansira	Marshy	Medicine
8	<i>Coix lacryma-jobi</i> L.	Poaceae	Gargara	Marshy	Fodder
9	<i>Colocasia esculenta</i> (L.) Schott	Araceae	Saru	Amphibious	Food
10	<i>Crinum defixum</i> Ker-Gawl.	Amaryllidaceae	Panikenduri	Marshy	Fodder
11	<i>Cynodactylon</i> (L.) Pers.	Poaceae	Duba	Marshy	Fodder
12	<i>Cyperus articulatus</i> L.	Cyperaceae		Marshy	Fodder
13	<i>Cyperus brevifolius</i> (Rottb.) Hassk.	Cyperaceae		Marshy	Fodder
14	<i>Cyperus difformis</i> L.	Cyperaceae	Swonli	Marshy	Fodder
15	<i>Cyperus distans</i> L.f.	Cyperaceae		Marshy	Fodder
16	<i>Cyperus imbricatus</i> Retz.	Cyperaceae		Marshy	Fodder
17	<i>Cyperus iria</i> L.	Cyperaceae	Swanti	Marshy	Fodder
18	<i>Cyperus rotundus</i> L.	Cyperaceae	Mutha	Marshy	Medicinal
19	<i>Cyperus triceps</i> Endl.	Cyperaceae		Marshy	Food & Fodder
20	<i>Echinochloa colona</i> (L.) Link	Poaceae	Suanghasa	Marshy	Fodder
21	<i>Echinochloa crus-gali</i> (L.) P. Beauv.	Poaceae	Bialisuan	Marshy	Food & Fodder
22	<i>Eichhornia crassipes</i> (Mart.) Solms-Laub.	Pontederiaceae	Bilatidala	Free floating	Pig Fodder
23	<i>Eleusine indica</i> (L.) Gaertn.	Poaceae		Marshy	Fodder
24	<i>Eragrostis ciliaris</i> (L.) R. Br.	Poaceae		Marshy	Fodder
25	<i>Eragrostis viscose</i> (Retz.) Trin.	Poaceae		Marshy	Fodder
26	<i>Fimbristylis argentea</i> (Rottb.) Vahl	Cyperaceae		Marshy	Fodder
27	<i>Fimbristylis miliacea</i> (L.) Vahl	Cyperaceae		Marshy	Fodder
28	<i>Fimbristylis littoralis</i> Gaudich	Cyperaceae		Marshy	Fodder
29	<i>Hydrilla verticillata</i> (L.f.) Royle	Hydrocharitaceae	Chingudiadala	Submerged	Fish Food

30	<i>Isachneglobosa</i> (Thunb.) Kuntze	Poaceae	-	Marshy	Green manure
31	<i>Leersiahexandra</i> Sw.	Poaceae	-	Marshy	Fodder
32	<i>Lemnaperpusilla</i> Torrey	Lemnaceae	-	Free Floating	Phytoremediation
33	<i>Monochoria hastate</i> Solms-Laub.	Pontederiaceae	Nir Tamara	Amphibiou s	Food
34	<i>Monochoria vaginalis</i> (Burm.f.) C.Presl	Pontederiaceae	Kajalapatia	Amphibiou s	Medicine
35	<i>Oryza rufipogon</i> Griff.	Poaceae	Balunga	Marshy	Food &Fodder
36	<i>Oryza sativa</i> L.	Poaceae	Dhana	Marshy	Food&Fodder
37	<i>Otteliaalismoides</i> (L.) Pers.	Hydrocharitaceae	PaniKundri	Submerged	Food
38	<i>Panicum repens</i> L.	Poaceae	Panidala	Marshy	Fodder
39	<i>Paspalidiumflavidum</i> (Retz.) A.Camus	Poaceae	Bilainangi	Marshy	Fodder
40	<i>Paspalum vaginatum</i> Sw.	Poaceae	-	Marshy	Fodder
41	<i>Pistia stratiotes</i> L.	Araceae	Borajhanji	Free floating	Pig Food
42	<i>Sacciolepis indica</i> (L.)Chase	Poaceae	-	Marshy	Fodder
43	<i>Saccharum spontaneum</i> L.	Poaceae	Kasatandi	Marshy	Rope making
44	<i>Scirpus articulates</i> L.	Cyperaceae	Gaichara	Marshy	Fodder
45	<i>Scirpusgrossus</i> L.f.	Cyperaceae	Santara	Marshy	Mat making
46	<i>Spirodelapolyrhiza</i> (L.)Schleid.	Lemnaceae	-	Free floating	Phytoremediation
47	<i>Typha angustata</i> Bory&Chaub.	Typhaceae	Hangla	Amphibiou s	Medicinal
48	<i>Vetiveriazizanioides</i> (L.)Nash	Poaceae	Bena	Marshy	Basket making
49	<i>Wolffia globosa</i> (Roxb.)Hartog&Plas	Araceae	-	Free floating	Fish food

Table-2: Floral statistics of Three Dominant Family in the study areas

Sl. No.	Name of the Family	Number of Species	Percentage of Contribution
01	Poaceae	19	39
02	Cyperaceae	13	27
03	Araceae	04	08

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