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OBSERVATION ON AQUATIC AND WETLAND PLANT DIVERSITY IN RUPPUR LAKE, PATAN DISTRICT, GUJARAT

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ABSTRACT:

With an aim to make an inventory of aquatic and wetland plant diversity, field explorations were undertaken during August to February-2019 in Ruppur Lake, district Patan, Gujarat, India. The climate of the district is arid and semi-arid, with tropical dry deciduous and thorny forests. This floristic survey conducted for the first time in the study area showed the wealth of aquatic and wetland flora of the region under study. A total of 4 species in 4 genera and 3 angiosperm families were recorded for the first time during present survey conducted in the area under study. Of the total recorded species Dicotyledones consisted of 25% whereas, Monocotyledones of 75%. From the present stud, it can be concluded that the study area contains a significant proportion of varied aquatic and wetland plant species.

KEY WORDS: *Aquatic and wetland plants, Ruppur Lake, Gujarat.*

INTRODUCTION:

The definition of 'aquatic' presented by Cook in 1990. Vascular aquatic plant are interpreted as all Pteridophytina and Spermatophytina whose photo synthetically active parts are permanently or, at least, for several months each year partly or wholly submerged in water or which float on the surface of water. Wetlands are the 'lands transitional between terrestrial and aquatic ecosystems where the water table is usually at or near the surface or the land is covered by shallow water'. India has over 27000 wetlands of which over 23000 are inland wetland while around 4000 are coastal wetlands. Wetland occupy 18.4% of country's area of which 70% are under paddy cultivation. Further, out of an estimated 4.1 million hectares of wetlands, 1.5 million

hectares are natural, while 2.6 million hectares are manmade. This implies that majority of the wetlands in India are manmade. The coastal wetlands occupy an estimated 6750 km, and are largely dominated by mangrove vegetation. Out of 27000 wetlands, only 26 of these numerous wetlands have been designated as Ramsar site (National Wetland Atlas, 2011). Gujarat is dry state climatically but very rich in wetlands. The most striking aspect is that Gujarat has the maximum amount of land identified as wetland in the country which, is about 34.74 lakhs ha, total wetland area estimated is 3474950 ha, which accounts for about 17.56 % of geographical area of the state. The major wetland types include Intertidal mud flats (2260365 ha), River/Stream (275877 ha), Reservoirs/Barrages (248979 ha), Creeks (149898 ha) and Salt Marsh (144268 ha). The coastal wetlands dominate in the state. Some of the unique wetlands like corals and mangroves are found in Gujarat state. The water spread of wetlands is low during pre-monsoon, particularly; it is significant in case of Inland wetlands indicating rain fed nature of the wetlands. (National Wetland Atlas, 2010).

STUDY AREA:

Patan district is located in the northern part of the state with its headquarters at Patan town. The district covers an area of 5730 sq. km with total population of 11, 81,941. The district is surrounded by Banaskantha district in the north and northeast, Mehsana in its south and southeast and Kutch and Little Rann of Kutch in the east. Total 1037 wetlands are mapped including 416 small wetlands (< 2.25 ha) with 34268 ha area. Major wetland category of the district is Mud flats, Rivers/streams, Reservoirs and Tanks/ponds. Wetlands are more concentrated in the western part of the district. Details of area estimates of wetlands in Patan district is shown in Table-8. Area under aquatic vegetation in post-monsoon is about 2973 ha and slightly less during pre-monsoon (1280 ha). Open water spread of the wetlands is significantly higher in post monsoon (11595 ha) than during pre-monsoon (2593 ha). Turbidity of water is low to moderate in both the seasons.

METHODOLOGY:

The present study was carried out in the wetland of Rupper, district Patan, Gujarat. The field trips were organized during the year August to February-2019. The study area was visited frequently and floristic survey was done for collecting aquatic and wetland plants. The specimens were observed, photographed in their natural condition with high-resolution camera. The specimens were collected and then pressed by using blotting papers. The specimens were taken to the laboratory of the Botany Department Sheth M.N. Science College, Patan. Where their morphological characters were observed and identified up to genus/species level with the help of Flora of Gujarat State (Shah, 1978). Aquatic and Wetland Plants of India (Cook, 1996). Some specimens of wetland species needed microscopic observation for the morphological species identification too. The dried specimens were numbered and mounted on the

standard herbarium sheets by using Fevicol. All the herbarium sheets were poisoned with the 1% mercury chloride.

Following is the other Potamogeton Genus of family Potamogetonaceae with the identification key:

KEY TO SPECIES

1. Upper or all leaves floating*P. nodosus*
1. ALL leaves submerged:
 2. Leaves filiform*P. pectinatus*
 2. leaves not filiform:
 3. Leaves ovate, entire, 5-9 nerved, amplexicaul at base*P. perfoliatus*
 3. Leaves linear-oblong, crisped, translucent, rounded or ½ amplexicaul at base.....*P. crispus*

HYDROCHARITACEAE

KEY TO GENERA

1. Leaves radical:
 2. Leaves broadly ovate- oblong or suborbicular, petiolate; flowers bisexual; fruit winged.....*Ottelia*
 2. Leaves linear, sessile; flower unisexual or bisexual; fruits nit winged:
 3. Perianth single.....*Vallisneria*
 3. Perianth double.....*Blyxa*
1. Leaves cauline:
 4. Leaves whorled.....*Hydrilla*
 4. Leaves alternate or opposite but not whorled*Nechamandra*

RESULT AND DISCUSSION:

HYDRILLA L.C. Rich

Hydrilla verticillata (L.f.) Royle

Slender, submerged, free floating or rooting herbs. Leaves 0.6 -1.8cm long, linear to linear-oblong, glabrous. Flowers white, minute, dioecious, solitary, axillary, on filiform peduncle. Throughout; common.

FLS & FRS: Oct.-Dec.

***Potamogeton crispus* L.**

Submerged, slender, simple or branched, flaccid, glabrous herbs. Leaves 2.5-5.5x0.6-1.5 cm, finely serrulate on margins, sessile 0.8-2 cm long, terminal, compact. In ponds and ditches (except Kutch and saurashtra); locally abundant. FLS & FRS: Dec.-Jan.

***Vallisneria spiralis* L.**

Submerged, rooted, stoloniferous herbs. Leaves variable in length, erect, glabrous. Male flowers many, minute, in compact, ovoid or conical head, on short, axillary scape. Female flower solitary, on long, coiled scape. Fruits 1-1.3 cm long.

Throughout in stagnant water; common.

FLS & FRS: Dec-Feb.

CERATOPHYLLACEAE***CERATOPHYLLUM* L.*****Ceratophyllum demersum* L.**

Submerged, rootless, monoecious, slender herbs, leaves verticillate, mostly twice forked; segments linear or filiform, dentate. Flowers minute, axillary, solitary. Fruit straw-coloured, tuberculate, with 3 spines.

Panchmahals (Tuwa) and Bulsar, in ponds. FLS & FRS: Sep.-Nov.

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REFERENCES:

Cook, C. D. K. 1996. *Aquatic and Wetland Plants of India*, Oxford University press, Oxford, New York, Delhi.

<http://www.ipni.org/ipni /plantnamesearchpage.do>

http://www.npsoregon.org/documents /APG_III_Oregon.linear.pdf

Jangid, M. S. 2011. Aquatic Plants of Taluka Modasa, District Sabarkantha, Gujarat (India). *Life Science Leaflets*-17:631-635.

National Wetland Atlas, Gujarat. 2010. Space Applications Centre (ISRO), Ahmedabad, 198p.

National Wetland Atlas, India. 2011. Space Applications Centre (ISRO), Ahmedabad, 310p.

- Patel, S. K., Pandey, V. and Desai, P. 2014. Preliminary Checklist of Angiosperm from the Wetlands of Sabarkantha District, Gujarat, India. *Jalaplavit*-5(2):9-25.
- Punjani, B. L. and Chaudhary, Abhishek. 2014. Monocots in the wetlands of Talod Taluka, Sabarkantha District, North Gujarat, India. *Jalaplavit*-5(3):6-22 Research Special.
- Punjani, B. L. and Patel, Nakul. 2014. Study of Sedges from Meshwo River Plain in Talod Taluka of Sabarkantha District, Gujarat, India. *Jalaplavit*-5(3):50-59 Research Special.
- Shah, G. L. 1978. Flora of Gujarat State-I & II. Sardar Patel University, V. V. Nagar.
- Wadoodkhan, M. A. 2015. Cyperaceae of Western Ghats, West Coasts and Maharashtra. Dattsons Publishers, Nagpur, India.

www.ThePlantlist.org

https://www.eddmaps.org/ipane/ipanespecies/aquatics/potamogeton_crispus.htm

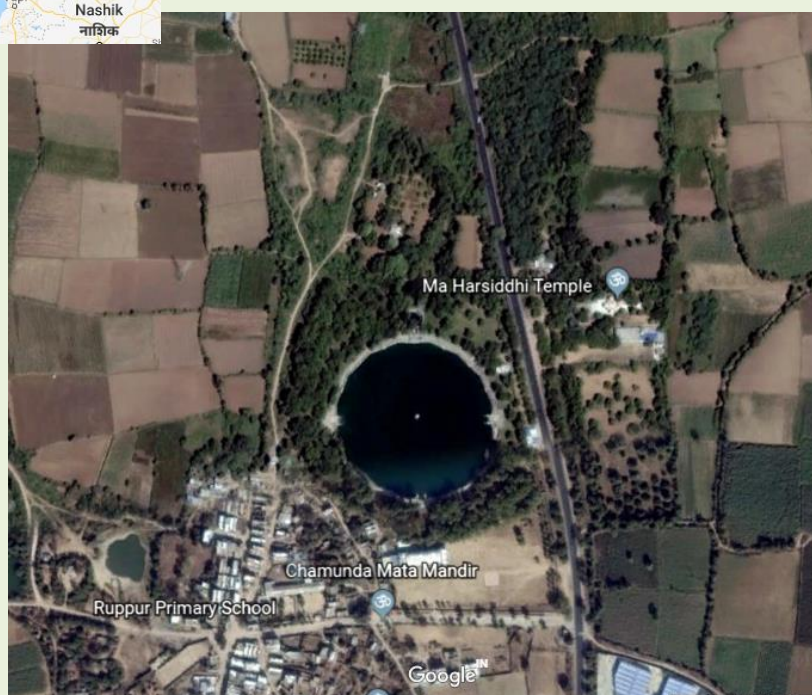


Fig.1: Shows Ruppur Lake on Gujarat Map



Hydrilla verticillata (L.f.) Royle,



Potamogeton crispus L.



Ceratophyllum demersum L.



Vallisneria spiralis L.