

Ecological observation of aquatic weeds in two ponds of Nagarpalika area of Sidhi (M.P.) India

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Abstract

The paper deals aquatic weeds and their ecological attributes of Nagarpalika area of Sidhi district Madhya Pradesh. The study has been carried out during 2017-2018. Total 36 weeds are recorded from both wetlands. The *Eichhornia crassipes*, *Ipomoea aquatica*, *Typha angustifolia*, *Hydrilla verticillata* are found throughout the year in both ponds.

Keywords: ecological, aquatic weeds, ponds, Sidhi district

1. Introduction

Wetland is among the most productive ecosystems in the world (Mitsch and Gosselink, 1963) [1]. Several works have been done on the aquatic macrophytes and phytosociology in different freshwater bodies of India (Kar and Barbhuiya 2007; Kauramb, 2007; Dabgar, 2006 & 2012; Chandra and Azeez, 2008; Gupta, 1996) [2-7]. In India the first comprehensive work on the wetland flora was produced (Biswas and Clader, 1984) [8]. Aquatic plants are key components for the well-functioning of wetland ecosystem for biological productivity and support diverse organisms and there by provide lots of goods and services for the dependent people. The aquatic plants are the most important component of the aquatic ecosystem. Wetlands are important for biodiversity conservation as some of the most endangered species survive on them, especially migratory birds. Wetlands are also vital for the maintenance of ground water at an optimum level. Also, if not properly conserved, the catchments area of the wetlands gets blocked upstream, causing water-logging in nearby residential and commercial societies. This has severe economic and health repercussions.

Description of study area

The Sidhi District is located in the north eastern part of Madhya Pradesh State having a total geographical area of 10526sq kms and extend by north latitude 23°45' and 24°45' and east longitudes 81° 15' and 83°00' and lies in survey of India Toposheet Nos. 63H&I respectively. *Gopal Das pond and Khurd (Amaha) pond both are situated within Nagarpalika area.*

2. Material and methods

The present study is the outcome of 6 months intensive survey with critical examination and standard quantitative assessment. In addition, species were documented by simple survey method to make a checklist of entire surveyed and samples areas. Moreover, this survey was attempted to categorize aquatic vegetation into Marshy, emergent, submerged, free floating hydrophytes. The nomenclature of the plant species are used in this paper on based on available

floras "The Flora of the Presidency of Bombay" (Deshkar, 2008) *et al.*, [9] "Aquatic and Wetland Plants of India" (Cooke) [10] and "The Flora of Madhya Pradesh" (Khanna, 1997) [11]. Once plants were identified, they were poisoned with 1% mercury chloride solution which was followed by drying under blotting paper. The dried, treated specimens were numbered and mounted on standard herbarium sheet.

3. Results and Discussion

The flora of Gopaldas and Khurd (Amaha) ponds of Sidhi Nagarpalika area of Madhya Pradesh showed 36 genera belonging to 25 families. The check list of plant species with their botanical name, family, local name and habitat is presented in Table 1. Amaranthaceae and Poaceae each with 5 plant species were found to be most dominated families. As shown in Line Fig 66.67% of total plant species that were recorded fall into the category of marshy land, followed by 13.89% emergent hydrophytes, 11.11% free floating hydrophytes and 8.33% submerged Hydrophytes.

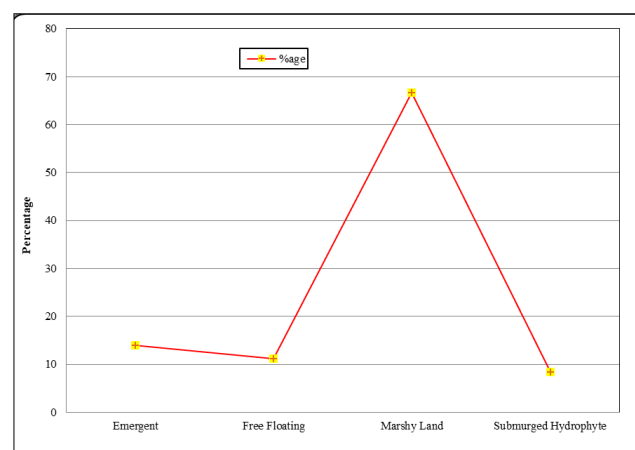


Fig 1: Graphics analysis of Total plant species and percentage of Gopaldas and Khurd (Amaha) ponds.

Free floating hydrophytes viz. *Eichhornia*, *Lemna* and *Pistia* and Rooted with floating viz. *Nelumbo*, *Nymphaea*, Rooted submerged viz. *Hydrillia*, *Ceratophyllum* and rooted

emergent viz. *Typha* and *Cyperus* were recorded throughout the year. *Sagittaria* and *scirpus* were found to be dominant during dry season of the year only. Some pteridophytes viz. *Azolla pinnata*, *Marsellia* were also found to be abundant in these wetlands. There was a number of plants association of which the following were frequently noticeable in both the wetlands:

A) Aquatic Habitat Association

1. *Ludwigia-Ammania - Commelina*
2. *Hydrilla-Ceratophyllum - Lympnophyton*
3. *Nymphaea-Hydrilla-Nelumbo*

B) Marshy Habitat Association

1. *Ipomoea -Typha- Scirpus*
2. *Ammania-Phyla-Commelina*

Biodiversity survey for terrestrial ecosystem of Sidhi district was done by many researches but biodiversity survey of ponds in Sidhi Nagarpalika especially Gopaldas and Khurd (Amaha) ponds remained neglected. Current study was aimed at identification of aquatic plants growing in these ponds. The plant species in our study were found to influence flood control, aquifer recharge, nutrient absorption and erosion control.

Table 1: Showing macrophytes of both Gopaldas and Khurd (Amaha) ponds.

S. No.	Scientific Name	Family	English Name	Habitat
1.	<i>Aeschynomene indica</i> L.	Fabaceae	Curly indigo	Marshy Land
2.	<i>Alternanthera philoxeroides</i>	Amaranthaceae	Alligator weed	Marshy Land
3.	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC.	Amaranthaceae	Sanguinaria	Marshy Land
4.	<i>Amaranthus spinosus</i> L.	Amaranthaceae	spiny amaranth	Marshy Land
5.	<i>Ammania baccifera</i> L.	Lythraceae	Monarch redstem	Marshy Land
6.	<i>Azolla pinnata</i> var. <i>imbricata</i> (Roxb. ex Griff.) Bonap	Azollaceae	Blunt Arrowhead	Free Floating
7.	<i>Ceratophyllum demersum</i> L	Ceratophyllaceae	Hornwort	Submerged Hydrophyte
8.	<i>Colocasia esculenta</i> (L.) Schott	Araceae	Elephant's ear	Emergent
9.	<i>Commelina benghalensis</i> L.	Comelineraceae	Asiatic Dayflower	Marshy Land
10.	<i>Cressa cretica</i> L.	Convolvulaceae	European water clover	Marshy Land
11.	<i>Cyperus difformis</i> L.	Cyperaceae	Flat sedge	Marshy Land
12.	<i>Dactyloctenium aegyptium</i> (L.) Willd	Poaceae	Egyptian grass	Marshy Land
13.	<i>Eichhornia crassipes</i> (Mart.) Solms	Pontederiaceae	Water hyacinth	Emergent
14.	<i>Elaeocarpus variabilis</i> Zmarzty	Elaeocarpaceae	Chorphone	Marshy Land
15.	<i>Eliocharis dulcis</i>	Cyperaceae	Wrinkle duck-beak	Marshy Land
16.	<i>Gomphrena celosoides</i> Mart.	Amaranthaceae	Gomphrena Weed	Marshy Land
17.	<i>Hydrilla verticillata</i> (L.f.) Royle	Hydrocharitaceae	Waterweed	Submerged Hydrophyte
18.	<i>Hygrophila auriculata</i> (Schumach.) Heine	Acanthaceae	Gokulakanta	Marshy Land
19.	<i>Hygroryza aristata</i> (Retz.) Nees ex Wight & Arn.	Poaceae	Great duckweed	Emergent
20.	<i>Ipomoea aquatica</i> Forssk.	Convolvulaceae	Water spinach	Emergent
21.	<i>Ischaemum rugosum</i> Salisb.	Poaceae	Wrinkle duck-beak	Marshy Land
22.	<i>Linnophila gratioides</i> R. Br.	Schrophulariaceae		Marshy Land
23.	<i>Linnophyton obtusifolium</i> (L.) Miq.	Alismataceae	elephant's ear	Emergent
24.	<i>Ludwigia peruviflora</i> L.	Onagraceae	Water-primrose	Marshy Land
25.	<i>Marsilea quadrifolia</i> L.	Marsiliaceae	Four Leaf Clover	Marshy Land
26.	<i>Nelumbo nucifera</i> Gaertn.	Nelumbonaceae	Indian lotus	Free Floating
27.	<i>Paspalum vaginatum</i> Sw.	Poaceae	Biscuit grass	Marshy Land
28.	<i>Peristrophe paniculata</i> (Forssk.) Brummitt	Acanthaceae	Panicled Foldwing	Marshy Land
29.	<i>Phyla nodiflora</i> (L.) Greene	Verbenaceae	Turkey tangle fogfruit	Marshy Land
30.	<i>Phyllanthus amarus</i> Schumach. & Thonn.	Phyllanthaceae	Carry-me seed	Marshy Land
31.	<i>Pistia stratiotes</i> L.	Araceae	Shellflower (water Lettuce)	Free Floating
32.	<i>Solanum surattense</i> Burm. f.	Solanaceae	Yellow-fruit nightshade	Marshy Land
33.	<i>Sphaeranthus indicus</i> L.	Asteraceae	Gorkhmundi	Marshy Land
34.	<i>Spirodela polyrrhiza</i> (L.) Schleid.	Araceae	Water velvet	Free Floating
35.	<i>Utricularia vulgaris</i> L.	Lentibulariaceae	Common Bladderworts	Submerged Hydrophyte
36.	<i>Vernonia cinerea</i> (L.) Less.	Asteraceae	Ironweed	Marshy Land

Table 2: Total plant species and percentage of Gopaldas and Khurd (Amaha) ponds.

S. No.	Habitat	Numbers of species	%age
1.	Emergent	05	13.89
2.	Free Floating	04	11.11
3.	Marshy Land	24	66.67
4.	Submerged Hydrophyte	03	8.33
	Total	36	100.00

4. Conclusion

During study of macrophytes of Gopaldas and Khurd (Amaha) ponds Emergent 05, Free floating 04, Marshy land

24 and Submerged hydrophyte 03 has been recorded. These are useful for fish fauna and other aquatic animals.

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