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MACROPHYTES DIVERSITY OF THREE FRSHWATER PONDS AT BRAMHAPURI, DIST: CHANDRAPUR (MS), INDIA.

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Abstract:
The three Freshwater ponds viz, Kalikar, Lendra and Barai ponds are situated at three different areas of Bramhapuri town which showing different trophic status. The present paper deals with the study of diversity of macrophytes of said three different ponds. The study was carried out for 24 months from June 2005 to May 2007 during different seasons. The study reveals that, total 24 species of macrophytes were reported from littoral and sublittoral zones of the ponds and species are classified into Free floating, Submerged, Marginal and Emergent categories.

Keywords: Macrophytes, Three freshwater ponds, Bramhapuri.

Introduction:

Aquatic macrophytes are macroscopic forms of aquatic vegetation and encompass macro algae. In natural ecosystem, macrophytes have been used to remove toxic and non- toxic elements in the sediments and water. The variation in the water chemistry can be assessed by surveying the abundance of macrophytes communities. The trophic nature of the water body is mainly influenced by the varieties of communities and indicator species occurring at the source. Moreover, metabolic activities of macrophytic communities accelerate the metabolic and physicochemical conditions of aquatic ecosystem. Macrophytes in freshwater play major ecological role and help in regulation and stabilization of trophic state and mineral cycling in aquatic ecosystem (Melzer, 1981; Weilgleb, 1984). They serves as bioindicators for the possible degree of damage in aquatic ecosystem (Pieczynska and Ozimek, 1976). Macrophytes are classified into Free floating, Submerged, Marginal and Emergent macrophytes. The ponds under investigation are used for agricultural practices and domestic purposes. In the present investigation, total 24 species of macrophytes belonging to four different categories were recorded.

Material and Methods:

Macrophytes were collected at monthly intervals during June 2005 to May 2007 form shallow, littoral zones by hand picking method. Specimens were wash thoroughly with water, excess water soaked with filter papers, specimens were kept in polythene bags and brought to laboratory in ice box and preserved in 10 % formalin and identified upto species with the help of pertinent literature from Edmondson, (1959); APHA, (1975); Pennack, (1978); Tonapi, (1980); Fasset, (2000); and K. Vanmala Naidu, (2005).

Results and Discussion:

The studies on aquatic macrophytes are important to limnologist in order to understand the fluctuating of the aquatic ecosystem, to fisheries personnel; as inventory of fish food and to pollution control personnel, for their nutrient removing capacity. Most of the aquatic macrophytes may become a nuisance when growing profusely. They are termed as aquatic weeds and become a concern of water management.

Macrophytes stimulate the growth of phytoplankton and help in recycling of organic matter. The submerged species at margin also acts as green manure favoring the abundance of zooplankton and benthic fauna. Macrophytes also provide suitable breeding and sheltering place for macroinvertebrates and fishes (Meshram, 2003).

In the present investigation, 24 species from 4 genera were recorded from the three ponds understudy (Table: 1).

Free floating species were abundant in Lendra and Kalikar ponds than Barai pond. Submerged and Emergent species were dominant in Barai pond as compaired to remaining two ponds. Marginal species shows their dominance in Kalikar and Lendra ponds followed by Barai pond.

Among the Submerged weeds, *Vallisneria* species, *Ceratophyllum* species, *Najas minor* were recorded only from Barai pond while *Hydrilla* species and *Potamogeton* species were recorded from all the three ponds. Narayana et al., (2002) considered that *Vallisneria* species and *Ceratophyllum* species

are the species that preferably grow at unpolluted sites.

Among the Marginal weeds, Kalikar and Lendra ponds are rich in *Cyperus* species, *Typha* species, *Marsilea quadrifolia*, *Marsilea minuta*, *Saggitaria* species and *Ipomea aquatica*. However, Barai pond shows richness in *Prosperpinaca* species, *Jussiaea* species, *Ludwigia* species and *Lythrum* species while very scare distribution of *Typha* and *Ipomea aquatica* were observed.

The Emergent weeds, like *Nymphoides* species, *Nelumbo* species, *Nymphaea stellata* and *Nymphaea naucheli* species were recorded only from Barai pond. This species might be growing in clear water.

Among Free floating weeds, Lendra and Kalikar ponds shows the thick mat of *Pistia* species and *Lemna* minor during winter and summer season which is the results of high nutrient load in the ponds. The growth and frequency of distribution of different aquatic macrophytes was correlated with an increase in Phosphate and Nitrogen content of water bodies. Similar observation was stated by Kiran et al., (2006); Seshavatharan et al., (1982) in the Kolleru lake, AP. It is probably possible that these nutrients stimulate the rapid organic production by aquatic macrophytes (Sarkar et al., 2002).

In the present study, Barai pond shows the maximum diversity in macrophytes while Kalikar and Lendra ponds harbor rich pollution indicator species along with higher density of phytoplankton. Similar observation also recorded by Narayana and Somashekhar (2002).

The diversity of macrophytes has been intensively studied by various workers viz, Chakraborty, (2008); Vardayan, (2006); Devi et al., (2004); Umeshwari etal., (2007); Manorama et al., (2007) and Laishram Kamla et al., (2007).

Table 1: Macrophytes of Three Water Bodies Understudy.

SN	Macrophytes	Family	Barai	Lendra	Kalikar
A.	**Free Floating**				
1.	Pistia Sp.	Araceae	-	+	+
2.	Lemna minor	Lemnaceae	-	+	+
3.	Wolffia sp.	Lemnaceae	+	-	+
4.	Salvinia sp.	Salviniaceae	-	+	+
5.	Azolla sp.	Salviniaceae	+	-	-
B.	**Submerged**				
6.	Hydrilla sp.	Hydrocharitaceae	+	+	+
7.	Ceratophyllum sp.	Hydrocharitaceae	+	-	-
8.	Vallisnaria sp.	Hydrocharitaceae	+	-	-
9.	Potamogeton sp.	Najadaceae	+	+	+
10.	Najas minor	Najadaceae	+	-	-
C.	**Marginal**				
11.	Marsilea quadrifolia	Marsilaceae	-	+	+
12.	Marsilea minuta	Marsilaceae	-	+	+
13.	Ipomea aquatica	Convolvulaceae	+	+	+
14.	Typha sp.	Typhaceae	+	+	+
15.	Cyperus sp.	Cyperaceae	-	+	+
16.	Sagittaria sp.	Alimaceae	-	+	+
17.	Prosperpinaca sp.	Haloragidaceae	+	-	-
18.	Jussiaea sp.	Onagraceae	+	-	-
19.	Ludwigia sp.	Onagraceae	+	-	-
20.	Lythrum sp.	Lythraceae	+	-	-
D.	**Emergent**				
21.	Nymphoides sp.	Nymphaeaceae	+	-	-
22.	Nelumbo sp.	Nymphaeaceae	+	-	-
23.	Nymphaea stellata	Nymphaeaceae	+	-	-
24.	Nymphaea nauchali	Nymphaeaceae	+	-	-

Nymphoides Sp. Ipomea aquatic Typha

Pistia Sp Marsilea Sp Ipomea Sp

Hydrilla Sp Salvinia Sp Ceratophyllum Sp

Plate 1: Macrophytes Of Three Ecosystems Understudy.

Conclusion:

Observation shift in macrophytes will give insight in management strategies of these ponds. Occurrence of dense vegetation or formation of blanket of *Pistia* and *Lemna minor* over the pond water during winter and early summer in Lendra and Kalikar ponds indicates organic enrichment due to release of domestic sewage, agricultural runoff, husk from mills, slaughterhouse wastages and vegetable wastages from weekly market. Both these two ponds increasing in its nutrient load from many years. These two water bodies are describes as highly productive, mesotrophic ecosystem and if proper control measures are not undertaken, they will become eutrophic within the forthcoming years. While Barai pond is very rich in macrophytes diversity and presence of clear water species in it shows that the Barai pond is classified under the oligotrophic in nature.

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