Research Paper

Volume : 4 | Issue : 2 | February 2015 • ISSN No 2277 - 8179

STUDY OF AQUATIC MACRO-PHYTES IN AND AROUND OF WADHVANA WETLAND AT DABHOI TALUKA

Science

KEYWORDS :

Dabgar P. J	Assistant Prof. Government Science College, Jhalod-Dahod, Assistant Prof. Government Science College, Ahwa-Dang
Kumbhar B. A.	Assistant Prof. Government Science College, Jhalod-Dahod, Assistant Prof. Government Science College, Ahwa-Dang

INTRODUCTION

Wetlands are defined as "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters". In addition, the Ramsar (Iran) Convention (1971) on Wetlands described as wetlands "may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six meters at low tide lying within the wetlands". As a result, coverage of the Ramsar Convention may be extended to include not only obvious freshwater resources such as rivers and lakes, but also costal and shallow marine ecosystems, including coral reefs, artificial water bodies and underground water resources.

Vadhvana is an important wetland covering an area of about 10 sq km. that falls in the central Gujarat. This important wetland is being managed by the irrigation and forest department of Gujarat. The wetland is located in Baroda District (22º 09' 42.2"N, 73º 28' 32.9"E). The major inlet of the wetland is Mahi and Narmada canals that are feeder canals of the lake. The maximum depth of the wetland measured during study is 20 ft. Tank Area is 1430 acre and Lath Of dam is 278 chanal. The total length of Lack is 17.60 km. The wetland is predominantly used for fishing, irrigation and supply of drinking water to nearest Village. Hence, this study investigated the overall biodiversity of the region and distribution of waterfowl species in relation to the existing habitat features of wadhvana wetland.

MATERIALS AND METHODOLOGY

For examining the experimental studies appropriate observation techniques were taken into consideration and field records were maintained in apposite manner. Essential materials and equipments were made available as per its necessities.

The detailed methodology used for the data collection of different aspects Study of Aquatic Macro-Phytes in and around the wetland of wadhvanaDabhoiTaluka is as follows.

In the present investigation for the herbaceous species quadrat method was employed by following the methods of Raunkaier (1934) and Stromberg (1993). The identification of aquatic plants was done with the help of standard flora and monographs like, Singh and Karthikeyan (2000 and 2001), (Shah, 1978), Biswas and Calder (1953).

The Vegetation study would look into the type and cover of aquatic regulation, based on which a check list of aquatic plant community in and around wetland area. to make inventory of macro-phytes by seasonally or monthly (cover submerged, floating, free floating be prepared, emergent, on shore,).

RESULTS AND DISCUSSIONS

The present work is compiled of biological and ecological aspects such as water quality, algal analysis, aquatic macrophytes, avifaunal diversity and socio economic important and dependency of wetland. It also includes conservations and management plan for the future of equal importance and discussed under following results need to be discussed for the following reasons.

Vegetation is perhaps the most conspicuous feature of wetland ecosystems and has been used extensively as an indicator of the presence of wetlands and a basis for wetland classification. Wetland plants are commonly defined as those growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content (Cowardin et al. 1979). This term includes both herbaceous (vascular and nonvascular) and woody species. Wetland plants may be floating, floating-leaved, submerged, or emergent and may complete their life cycle in still or flowing water, or on inundated or noninundated hydric soils (Cronk and Fennessy, 2001).

Plants have been used effectively to distinguish environmental stressors including hydrologic alterations, excessive siltation, nutrient enrichment, and other types of human disturbance (Moore and Keddy, 1989; Kantrud and Newton, 1996; Philippi et al. 1998).

Riparian plants used nutrient and thus influences water quality. However, nutrients are also released with the decomposition of dead plants. Riparian vegetation also controls water quality by exuding various organic and mineral components. Plants are excellent indicators of wetland condition for many reasons including their relatively high levels of species richness, rapid growth rates, and direct response to environmental change. Many species show varied tolerance to a wide array of stresses. Plant communities have been shown to change in response to hydrologic alterations (Squires and van der Valk, 1992); nutrient enrichment (Kadlec and Bevis, 1990); sediment loading and turbidity (Sager et al. 1998) and metals and other pollutants. These patterns can be interpreted and used to diagnose wetland impacts. Because they represent a diverse assemblage of species with different adaptations, ecological tolerances, and life history strategies, the composition of the plant community can reflect the biological integrity of the wetland.

Wetland vegetation provide critical habitat for epiphytic bacteria, phytoplankton, and some species of algae, periphyton, macroinvertebrates, amphibians, and fish. Aquatic macrophyte communities improve water quality in many ways:

1) Trap nutrients, debris, and pollutants entering a water body.
2) Absorb and break down some pollutants.
3) Reduce erosion by damping wave action and stabilizing shorelines and lake bottoms.
4) Provide shelter to many other organisms

The flora of Vadhwana showed 73 Genera and 82 species belonging to 43 families. The checklist of plant species with their botanical name, family, local name, Habit and Habitat is presented in Annexure- III Dicotyledonae were represented by 31 Families and 63 species. Monocotyledone were represented by 12 families and 19 Species. Astraceae with 07 species was the most dominant in family followed by Lamiaceae (04 species), Cypraceae (04 species) and Primuliaceae (03 species). Among 73

Genera *Nymphea*(02 species), *Portulaca* (02 species) and *Amania* (02 species) Free floating hydrophytes viz. *Eichornia, Lemna* and *Nymphoides*, Rooted with floating viz. *Trapa, Nelumbo, Nymphaea*, Rooted submerged viz. *Hydrillia, Potamogeton* and rooted emergent viz. *Typha* and *Cyperus*were recorded throught the year. *Saggitaria* and *Scirpus*were found to be dominant during the dry season. All these species includes flood control, aquifer recharge, nutrient, absorption and erosion control. It is also supported by Kay and Barblhuiya (2007) and Shah (2009).Some pteridophytes viz. *Azolla, pinnata*, *Marsellia*were abundant in lake. There was a number of plants association of which the following were frequently noticeable in the wetland:

A) Aquatic Habitat Association:

1. *Ludwigia-Ammania-Occimum*
2. *Hydrilla-Velicenaria-Nymphea*
3. *Nymphaea-Hydrilla-Nelumbo*

B) Marshy Habitat Association:

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

CONCLUSION

Gujarat is second highest in wetlands after the Orissa state in India. This study investigated the overall biological and ecological aspects of the wadhvana region. Summarization of the work carried out at four different selected sites/research station of Wadhvana wetland is as follows:

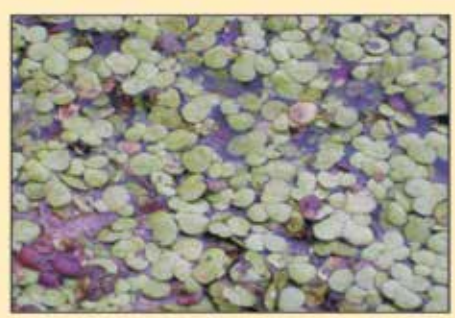
Aquatic macrophytes of Wadhwana wetland showed 73 Genera and 82 species belonging to 43 families. Dicotyledonae were represented by 31 Families and 63 species. Monocotyledone were represented by 12 families and 19 species.

ACKNOWLEDGEMENT

The author express their gratitude to the Dr. Y. B. DABGAR Principal, R.R. Mehta Collegeof Science and C.L. Parikh College of Commerce, Palanpur for necessary facilities and inspiration during the course of investigation.

Figure 4: Aquatic macrophytes in and around the wetlands.

Oxalis corniculata L.



Lemna verticellata Hegelm.

Nymphoides peltatum

Eichhornia crassipes Mart.

Ipomoea carnea Jace.

Chloris barbata Swartz, Fl. Ind.

Volume : 4 | Issue : 2 | February 2015 • ISSN No 2277 - 8179

REFERENCE

1. APHA 1985 Standard method for the examination of water and wastewater. APHA, AWWA and WPCF. 16th ed. American Public Progress Springfield, New York. | 2. Dabgar P.J, 2006. A contribution to the wetland flora of Satlasanataluka, North Gujarat. Adv. in Bio. Sci. 5;79-82 | 3. Goel, p.k.; Gopal, B. and Trivedi, r.k. 1980. Impact of sewage on fress water ecosystem II. Physio-Chemical characteristics of water and their seasonal changes. Int. J. of Ecol. and Environ. Scie., 6:97-116 | 4. Shah GL, 1978. Flora of Guajarat state Val. I & II V. V. Nagar (S. P. University) |