

## RESEARCH ARTICLE

## Anthropogenic impact on aquatic weed diversity of Balaji temple reservoir of Chimur city, Chandrapur district

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Manuscript details:	ABSTRACT
<p>Date of publication 18.10.2014</p> <p>Available online on <a href="http://www.ijlsci.in">http://www.ijlsci.in</a></p> <p>ISSN: 2320-964X (Online) ISSN: 2320-7817 (Print)</p> <p><b>Editor: Dr. Arvind Chavhan</b></p> <p><b>Cite this article as:</b> Sitre Shashikant R, Thakare Mahendra G and Kamble Rahul K (2014) Anthropogenic impact on aquatic weed diversity of balaji temple reservoir of chimur city, chandrapur district, <i>Int. J. of Life Sciences</i>, Special issue A2: 85-87.</p> <p><b>Copyright:</b> © Author(s), This is an open access article under the terms of the Creative Commons Attribution-Non-Commercial - No Derives License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.</p>	<p>The Balaji Temple reservoir is a freshwater reservoir having an area of about 42 acres located in the heart of Chimur city of Chandrapur district in Maharashtra State. This study was carried out during summer 2013 at 4 different sites on this beautiful reservoir to know the status of prevailing aquatic weeds. The investigation revealed 19 macrophyte species in the catchment area of the reservoir. Out of the 19 macrophytes from the study area, 5 species each were belong to free floating, rooted floating and submerged type whereas 4 species belong to emergent type. The people residing nearby this reservoir use this reservoir for washing and bathing activities and for open defecation practices in the bank thus adding anthropogenic source of pollution leading to enriching its nutrient contents thereby subsequently degrading the water quality and copious growth of aquatic weeds. This reservoir was a closed type of ecosystem having concrete embankments on all the sides and the sediments of this lake are constantly getting polluted due to construction activities present near the basin and anthropogenic interference by dumping sewage and drainage from the nearby localities.</p> <p><b>Keywords:</b> <i>Aquatic weeds, Weeds, Balaji temple reservoir, Chimur, Chandrapur</i></p>
	<p><b>INTRODUCTION</b></p> <p>Biodiversity is referred to as a combination of different species living together in a particular habitat, whether freshwater or marine. In Indian subcontinent a large number of aquatic weeds got adapted in water bodies thus posing a grave threat to water portability by their death and decay and subsequent organic enrichment and reducing the water holding capacity of lakes.</p> <p>In water bodies large number of macrophytes of different nature thrives and succeeds throughout the year. Depending on the type of nutrients loading the macrophytes colonize freshwater bodies. The aquatic weeds are classified as free floating, rooted floating, submerged and emergent type. Based on nutrients loading into a lake from the catchment area and anthropogenic activities, the process of succession converts the pond ecosystem into a dry land and the pond ecosystem will be not be usable for benefit of human being. Taking into consideration this point, an assessment of aquatic weed biodiversity of Balaji temple reservoir of Chimur city was undertaken during summer 2013 by field visits and visual observations methods.</p>

The aquatic weeds are of great importance today as far as food supply to fish species is concerned. Aquatic weeds are an integral component of an aquatic ecosystem and serve as source of food to the water birds and animals thus forming a base for aquatic wildlife conservation practices. Macrophytes of different water bodies in India are studied by researchers such as Wetzel (1975), Majid (1986), Sugunan (1989), Venkatraman *et al.* (2000), Yadav and Sardesai (2002), Abmasht (2005), Raut and Pejaware (2005), Sitre (2013) and many more. As there are no previous reported studies on aquatic weed biodiversity of Chimur's Balaji temple reservoir, an attempt has been made to study them.

## MATERIALS AND METHODS

The Balaji temple reservoir is located in the heart of Chimur town having an area of approximately 42 acres with a firm embankment in the Chandrapur district of Maharashtra state. The studies were carried out during summer 2013 from 4 different sites of the reservoir catchment area. Aquatic weeds were collected by field visits and visual observations from the study area. The survey was conducted to collect information regarding floating, emergent, marginal and submerged type of vegetation. The macrophytes

were collected by hand picking method and then brought to the laboratory and were preserved in 10% formalin solution and were identified using Cook (1996) and other standard literature.

## RESULTS AND DISCUSSION

The observation on aquatic weeds of Lake Basin is presented in Table 1. Altogether 19 species of aquatic weed belonging to four groups viz. free floating, rooted floating, submerged and emergent types were recorded from study area. The tiny and delicate five species of free floating weeds including species of *Pistia*, *Azolla*, *Lemna*, *Salvinia* and *Wolffia* covered the major surface of lake water. Rooted floating species prevalent in mud region included species of *Trapa*, *Marsilea*, *Nymphaea* and *Hydrilla* had long creeping and lofting stems. Rooted floating species include species such as Submerged weeds such as *Vallisneria spiralis*, *Utricularia* spp, *Ceratophyllum* spp., *Potamogeton crispus*, and *Najas* spp. were confined to littoral zone of the lake and can be classified as fragile water weeds. They remain firmly fixed in the bottom sediments but their top regions were exposed in the environment. Emergent weeds like *Typha* spp., *Ipomoea indica*, *Cyperus* spp. and *Sagittaria* spp. were observed.

**Table 1: The diversity of weeds in Balaji Temple Reservoir of Chimur city**

Aquatic weed species	English name	Family
<b>Free floating weeds (5)</b>		
<i>Azolla pinnata</i>	Feathered mosquito fern, water velvet	Azollaceae
<i>Lemna minor</i>	Duckweed, Common duckweed	Araceae
<i>Pistia stratiotes</i>	Water lettuce	Araceae
<i>Salvinia molesta</i>	Giant salvinia, Kariba weed	Salviniaceae
<i>Wolffia</i> spp.	Water meal, Duckweed	Lemnaceae
<b>Rooted floating weeds (5)</b>		
<i>Hydrilla verticillata</i>	Hydrilla	Hydrocharitaceae
<i>Marsilea</i> spp.	Water clover and four-leaf clover	Marsileaceae
<i>Nelumbo nucifera</i>	Indian lotus	Nelumbonaceae
<i>Nymphaea</i> spp.	Water lily	Nymphaeaceae
<i>Trapa natans</i>	Water chestnut	Trapaceae
<b>Submerged weeds (5)</b>		
<i>Ceratophyllum demersum</i>	Hornwort	Ceratophyllaceae
<i>Najas</i> spp.	Water weed	Najadaceae
<i>Potamogeton crispus</i>	Curly leaf pondweed	Potamogetonaceae
<i>Utricularia</i> spp.	Bladderworts	Lentibulariaceae
<i>Vallisneria spiralis</i>	Tape grass, Eel grass	Hydrocharitaceae
<b>Emergent weeds (4)</b>		
<i>Ipomoea aquatica</i>	Water spinach	Convolvulaceae
<i>Ipomoea indica</i>	Morning glory	Convolvulaceae
<i>Sagittaria</i> spp.	Arrowhead, Duck potato	Alismataceae
<i>Typha</i> spp.	Bulrush, Reedmace	Typhaceae

Meshram (2003) recorded dominant macrophytes like *Hydrilla ceratophyllum* and *Chara* in Wadali lake of Amravati district and stated that the macrophytes stimulate the growth of phytoplankton and help in the recycling of the organic matter. Sitre (2013) recorded 17 macrophytes species in Ghotnimbala reservoir of Bhadrawati tehsil in Chandrapur district. Ambasht (2005) recorded 25 species of macrophytes from Gajner Tal, Jaunpur township of North India. Patil *et al* (2012) investigated Panchaganga river stretch in Ichalkaranji city of Kolhapur district and recorded 9 hydrophytes and 6 amphibious plants and recorded that the macrophytes were drained into river basin from the lakes in the vicinity of river during flood situation. Kiran *et al.* (2006) recorded 15 species of macrophytes belonging to 13 families and grouped them under submerged (2 species), rooted floating (2 species), free floating (2 species), emergent (7 species) and marshy amphibious (2 species) from fish culture ponds of Karnataka. Sugunan (1989) stated that aquatic macrophytes figure prominently in the community structure and trophic events of the reservoirs in India, and are the factors for the ageing of reservoirs due to pollution impact.

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## CONCLUSION

The open defecation practices prevalent on the banks of this reservoir coupled with enriched sediments and garbage disposal were daily increasing its organic loading thus providing a rich base for continuous growth of aquatic and emergent macrophytes in the basin. If this prolific growth of aquatic weeds is not curtailed and due attention is not given then this beautiful reservoir will become a dumping ground of pollutants which will be lost forever from the history thus subsequently losing a good recreation place for tourists. The results showed that the lake basin was rich with a diverse range of aquatic weeds which were posing a grave threat of silting and losing its aesthetic value due to prolific growth of aquatic weeds

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