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Macrophytes Biodiversity Assessment of Nandgaon and Arwat Lakes of Chandrapur District, Maharashtra, India.

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ABSTRACT

The paper reports results of comparative analysis of macrophytes biodiversity assessment between two lakes, Nandgaon and Arwat lake of Chandrapur District, [M.S.] India. Both the lakes have different entity from each other with respect to inflow source, depth, vegetation and surroundings. The present investigation carried out to study macrophytes biodiversity from the period February 2016 to January 2017. Result shows both the lake has floristic differences. Total 22 species of macrophytes were recorded during study period. In Nandgaon Lake 9 species of macrophytes were reported and In Arwat Lake 13 species of macrophytes were reported.
Keywords: Macrophytes, Biodiversity, Nandgaon & Arwat Lake, Chandrapur District.

I. INTRODUCTION

Macrophytes are the diverse naked aquatic photosynthetic plants which include various algae, bryophytes, pteridophytes as well as spermatophytes and they grow seasonally or permanently grow in the vicinity of water. Macrophytes play a key role in the functioning of an aquatic ecosystem. Macrophytes is an aquatic plant that play an important role in aquatic ecosystems functioning (Deshmukh, 2016). They serve as a source of oxygen, provide a substratum for algae as well as shelter for invertebrates. Macrophytes play an important role in aquatic ecosystem by providing food, nutrients and habitats to other aquatic organisms and thus they maintain the aquatic biodiversity (Agastinho, 2007, Theel, 2008).

Aquatic macrophytes also used as bio- indicators of water pollution as they respond to the changes in water quality and also play significant role in mineral cycling and organic components of aquatic ecosystem. Macrophytes having potential to accumulate the heavy metals in water bodies (Devlin, 1967). Aquatic macrophytes are also useful to evaluate and determine anthropogenic activities and their impact on aquatic ecosystem (Solak et al. 2012).

Several workers have been studied on macrophytes from different freshwater bodies of India and abroad such as, Shimoda, et al.(1984), Wadhave, et al. (2010), Tijare, et al. (2011), Harney (2015), Murkute, et al. (2015), SAVA (2015), Deshmukh, et al. (2016) and Reddy, et al. (2016) and so on.

Study Area:
Chandrapur district is located between Latitude $19^0$27'1N and Longitude $78^0$10'9E occupies an area of 11,443 Km² which constitutes 3.72 percent of the total area of the state. Arwat lake is a perennial water body which has been formed due to the inflow of Irai river in mines pit, which spreads over 9.95 hectares area. The main source of water is Irai river and surface drainage. Arwat lake is 5 Km away from Chandrapur and is situated South–West part of the Chandrapur district, Maharashtra.

Nandgaon Lake is a perennial water body since British time. The main source of water is rain and surface drainage. This is spread over 29.4 hectares area. Nandgaon Lake is 19 Km away from Chandrapur and is situated South–West part of the Chandrapur district, Maharashtra, India. Villagers are using water from both

the lakes for domestic, irrigation as well as for fishing purpose.

II. MATERIALS AND METHODS

The macrophytes were collected from both the lakes once in a month at regular interval from February 2016 to January 2017.Macrophytes in shallow water were collected by hand directly while those from deep water with the help of long handled hook net. After collection, the specimen were thoroughly washed to remove mud and debris, excess water soaked with filter paper, sample specimens stored in polythene bags and brought to the laboratory and was preserved in 10 % formaldehyde solution. The specimen identified using standard literature, Trivedi and Goel, (1960), Prescott (1982), as well as help were taken from expert of this area.

III. RESULT & DISCUSSION

In the present study, total 22 species of macrophytes belong to 16 families. Among these, 3 are algae i.e. Chara, Nitella and Hydrilla and 1 Pteridophyte i.e. Marsilea while other 18 were angiosperms. Macrophytes are broadly divided into 5 groups. Such as 4 rooted floating leaves weeds, 4 submerged floating weeds, 3 rooted submerged hydrophytes, 6 free floating suspended submerged and 3 rooted emergent weeds are as in the following table 1.

Table 1. Macrophytes Biodiversity of Nandgaon and Arwat Lake

Sr. No.	Name of Macrophytes	Family	Life Forms	Nandgaon	Arwat
1	Nymphaea tuberosa	Nymphaeaceae	Floating weeds with roots	+	-
2	Trapa natans	Trapaceae	Floating weeds with roots	+	-
3	Marsilea quadrfolia	Marsileaceae	Floating weeds with roots	+	+
15	Polygonum glabrum	Polygonaceae	Floating leaves weeds	-	+
4	Vallisneria spirallis	Hydrocharitaceae	Submerged weed	+	-
16	Chara globularis	Characeae	Submerged weed	+	-
17	Nitella sp.	Characeae	Submerged weed	+	-
19	Najas minor	Najadaceae	Submerged weed	-	+
5	Hydrilla verticillata	Hydrocharitaceae	submerged hydrophytes with roots	-	+
6	Ipomoea aquatica	Convolvulaceae	submerged hydrophytes with roots	-	+
7	Ipomoea carnea	Convolvulaceae	submerged hydrophytes with roots	+	-
8	Lemna minor	Lemnaceae	Free floating suspended submerged	+	-
9	Salvinia rotudifolia	Salviniaceae	Free floating suspended submerged	-	+
10	Pistia stratiotes	Araceae	Free floating suspended submerged	-	+
11	Wolfia sp.	Lemnaceae	Free floating suspended submerged	-	+
13	Eichhornia crassipes	Pontederiaceae	Free floating suspended submerged	-	+
14	Jussiaea repens	Onagraceae	Rooted bank weed	-	+
18	Typha sp.	Typhaceae	Rooted emergent weeds	-	+
20	Eriocaulon brownianum	Eriocaulaceae	Rooted emergent weeds	-	+
12	Sagittaria sp.	Alismataceae	Rooted emergent with hetrophile weeds	+	+
			Total	**9**	**13**

Both the lakes have different floristic biodiversity, only 2 species that are Marsilea and Sagittaria sp. are found common while remaining macrophytes are different. Arwat Lake has Eichhornia sp. dominant while Nandgaon Lake has Chara, Ipomea and Nitella are dominant respectively. Nandgaon Lake has less macrophyte as compare to Arwat Lake. This is due to both the lakes have different entity from each other with

respect to inflow source, depth, vegetation and surroundings.

Arwat lake have more macrophytes than Nandgaon lake. This result clearly shows Nandgaon Lake has more organic deposition due to high anthropogenic activities as well as agricultural runoff. In Arwat Lake two different species such as Eriocaulon brownianum and Jussiea repens are found which is not yet recorded in Chandrapur district.

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V. REFERENCES

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