



Diversity Of Aquatic Macrophytes Of Lakes Of Bhadrawati, District Chandrapur, Maharashtra State , India

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Abstract: In the present research paper, Macrophytic study in different five lakes [Gaurala Lake, Shivaji Lake I, Shivaji Lake II (Pinduni Lake), Vijasan Lake and Nagrala Lake] was carried out during study period from September 2023 to August 2024. During the study, total 18 species of aquatic macrophytes belonging to 04 groups including, 04 free floating, 07 free floating suspended submerged, 02 rooted floating leaves, 02 rooted submerged, 03 rooted emergent were recorded in five different lakes. Presence of Aquatic Macrophytes plays an important role in maintaining ecological balance of ecosystems.

Keywords: Aquatic macrophytes, Lakes, Bhadrawati, Diversity.

I. INTRODUCTION

Aquatic macrophytes play crucial role in balancing water quality, mineral cycling regulation and good bioindicator for water pollution. Natural habitat consists of biotic and abiotic components such as soil, water, and air. Water present in form of water bodies in nature. Macrophytes is also known as hydrophytes or aquatic plants which play an important role in balancing ecosystem of lake. They provide us food, shelter, habitat and influencing mineral cycle and quality of water of lakes and good indicator for pollution.

Bhadrawati (formally known as Bhandak) is Tehsil place 26 km north from Chandrapur and 125 km south. It is situated at about 211 m above the mean sea level and is at 20.06'35 .67 N latitude and 79'7.33 E longitude. It is 18 km from Anandwan.

In India, many workers carried out work on aquatic plants such as Wadhave *et al.* (2010) [1], Das (2013) [2], Arya *et al.* (2018) [3], Rahangdale *et al.* (2021) [4]. Aquatic macrophytes also reported from Chandrapur district was carried out by many researcher like Harney *et al.* (2013) [5], Sitre (2014) [6 a], Sitre *et al.* (2014) [6 b], Harney (2014) [7], Deshmukh *et al.* (2016) [8], Pimalshende (2021) [9 a], Reddy (2020) [10], Raha (2022) [11], Nasare (2022) [12], Harney (2022) [13], Harney (2023) [14], Harney (2024) [15].

II. MATERIALS AND METHODS

Aquatic macrophytes were observed in five lakes of Bhadrawati region for the period of one year i.e. September 2023 to August 2024. Five lakes were selected for the study of macrophytes which are Gaurala Lake, Shivaji Lake I, Shivaji Lakell (Pinduni lake), Vijasan Lake, Nagrala Lake. Macrophytes were observed and photographs of aquatic plants of five lakes were taken and identified on the basis of morphological characters by using Standard literature.

III. RESULT AND DISCUSSION

Macrophytes serves as food, shelter and source of medicine which are use by tribal communities. Aquatic macrophytes provide healthy natural habitat for organisms and important as bio-indicator for water pollution, indicate changes in ecosystem due to turbidity, salinization, herbicides, pesticides, anthropogenic activities etc.

In the present study, 18 species belonging to 10 family such as 04 free floating, 02 rooted submerged hydrophytes, 02 rooted floating leaves weeds, 07 free floating suspended submerged hydrophytes, 03 rooted emergent hydrophytes were found and list of macrophytes are given in table no. 01 and 02 below.

Table No. 01: List of Aquatic macrophytes of Bhadrawati lakes

Sr. No.	Botanical name of plants	Vernacular name of plants	Family	Life form
1.	<i>Azolla pinnata</i> R.Br.	Ajola	Salviniaceae	Free floating
2.	<i>Lemna minor</i> L.	Khudepana, Gurihudi	Lemnaceae	Free floating
3.	<i>Trapa natans</i> L.	Paniphal, Singhara, Singhada	Trapaceae	Rooted floating leaves weed
4.	<i>Nymphoides hydrophylla</i> (Lour.) Kuntze	Pansewali	Menyanthaceae	Free floating suspended submerged
5.	<i>Nymphoides indica</i> (L.) Kuntze	Kumudini	Menyanthaceae	Free floating suspended submerged
6.	<i>Nymphaea</i> sp.	Nilkamal, Kamal, Nilpadama	Nymphaeaceae	Rooted floating leaves weed
7.	<i>Pistiastratiotes</i> L.	Akashmuli, Tokapana, Golappana	Araceae	Free floating suspended submerged
8.	<i>Wolffia</i> sp.	Postupana, Sujipana	Lemnaceae	Free floating
9.	<i>Ceratophyllum demersum</i> L.	Kanta jhaji, Sevar	Ceratophyllaceae	Rooted submerged
10.	<i>Spirodella polyrhiza</i> (L.) Schleid.	Tipapana	Araceae	Free floating
11.	<i>Salvania natans</i> (L.) All.	Kapipana, Jalfarn	Salviniaceae	Free floating suspended submerged
12.	<i>Salvania molestra</i> Mitchella	Kapipana	Salviniaceae	Free floating suspended submerged
13.	<i>Marselia quadrifolia</i> L.	Susnisak	Marsileaceae	Rooted emergent
14.	<i>Hydrilla verticillate</i> (L.f.) Royle	Jhsnji, Baichcha	Hydrocharitaceae	Rooted submerged
15.	<i>Nelumbo nucifera</i> Gaetn.	Kamal, Kanwal, Padma	Nelumbonaceae / Nymphaeaceae	Free floating suspended submerged

16.	<i>Utricularia vulgaris</i> L.	Kanta jhanji, Rakshuse	Lentibulariaceae	Free floating suspended submerged
17.	<i>Ipomoea aquatic</i> Forssk.	Kalmi	Convolvulaceae	Rooted emergent
18.	<i>Sagitaria obtusifolia</i> L.	Chhotakut, Tirpata	Alismataceae	Rooted emergent

Table No. 02: A list of macrophytes werewhich present during study period

Sr. No.	Botanical name of plants	Gaurala Lake	Shivaji Lake I	Shivaji Lake II (Pinduni Lake)	Vijasan Lake	Nagralla Lake
1	<i>Azolla pinnata</i> R.Br.	+	+	+	+	+
2	<i>Lemna minor</i> L.	+	+	+	+	+
3	<i>Trapanatans</i> L.	+	+	-	+	+
4	<i>Nymphoideshydrophylla</i> (Lour.) Kuntze	+	+	+	+	+
5	<i>Nymphoidesindica</i> (L.) Kuntze	+	-	-	+	+
6	<i>Nymphaea</i> sp.	+	+	+	+	+
7	<i>Pistiastratiotes</i> L.	+	+	+	+	+
8	<i>Wolffia</i> sp.	+	+	+	+	+
9	<i>Ceratophyllumdemersum</i> L.	+	+	+	+	+
10	<i>Spirodellapolyrhiza</i> (L.) Schleid.	+	+	+	+	+
11	<i>Salvanianatans</i> (L.) All.	+	+	+	+	+
12	<i>Salvaniamolestra</i> Mitchella	+	-	-	+	+
13	<i>Marseliaquadrifolia</i> L.	+	-	-	+	+
14	<i>Hydrillaverticillate</i> (L.f.) Royle	-	-	-	+	+
15	<i>Nelumbonucifera</i> Gaetn.	-	-	-	-	+
16	<i>Utricularia vulgaris</i> L.	+	-	-	+	+
17	<i>Ipomoea aquatic</i> Forssk.	+	+	+	+	+
18	<i>Sagitariaobtusifolia</i> L.	+	+	+	+	+



***Hydrilla verticillata* (L.f.) Royal**



***Salvinianatans*(L.) All**

*PistiastratiotesL.**Ipomoea aquatic Forssk.**SagitariaobtusifoliaL.**SagitariaobtusifoliaL.**Nymphaoides indica(L.) Kuntze**Trapnatans**Marselia quadrifolia L.**Utricularia vulgaris L.*

*Nelumbonucifera* Gaetn.*Azolla pinnata* R.Br.*Nymphaea* sp.*Ceratophyllum demersum* L.*Azolla pinnata* R.Br.*Spirodella polyrhiza* (L.) Schleid.*Nymphaea* sp.*Lemna minor* L.

Sitre (2013) recorded total 17 macrophytes species in littoral, sublittoral and the catchment zone of the Ghotnimabala reservoir. He found rooted floating, submerged emergent macrophytic plants species in Ghotnimabala lake of Bhadravati Tehsil in Chandrapur district. Sitre (2014) recorded 18 different plants species of Aquatic weeds in Lakes of Bhadravati town of Chandrapur district (M.S.) India. Dhore (2014) [16] observed 15 species of plants belonging to 11 families. The most abundant macrophytes was chara sp. which is macroscopic algae belonging to family Characeae. Bhute and Harney (2017) [17] recorded 15 species of

macrophytes belonging 05 graphs. Deshmukh *et al* (2017) documented 57 aquatic macrophytes belonging to 32 families and 46 genera and they belonging to different graphs like Angiosperms, Pteridophytes and algae from Mohabala lake of Bhadrawati tehsil of Chandrapur district. Arva *et al* (2018) recorded total 16 macrophytes plants species. Among 16 plants species, 09 species were free floating, 04 species were submerged hydrophytes and 02 species were marginal hydrophytes in Sakya Sagar Lake, Shivpuri, Madhya Pradesh, India. Dalasingh *et al* (2019) [18] reported 60 species of hydrophytes belonging to 39 genera and twenty-five families. They found Cyperaceae was the dominant family comprising 17 species, pteridophyte represented by 02 species, 06 submerged, 06 free floating and 05 fixed floating species were recorded in different habitats of Puri district, Odisha, India. Harney (2020) recorded 26 species of macrophytes belonging to 17 families and observed 03 submerged floating weeds, 03 rooted floating leaves weeds, 01 rooted emergent, 06 free floating suspended submerged, 03 rooted submerged hydrophytes, 02 emergent weeds, 02 submerged weeds in Waigoan, Tukum lake near, Bhadrawati, Dist- Chandrapur (M.S.) India. Reddy Mallesh (2020) recorded 25 hydrophytes. He observed 01 algae, 02 pteridophytes and 22 angiosperms among them in Bamanwada Lake, Dist- Chandrapur, Maharashtra, India.

Pimpalshende (2021) recorded 16 different species of aquatic weeds. the aquatic plants were represented by six different types as free floating, submerged floating, rooted floating, rooted submerged, rooted emergent and marginal weeds in Kosari lake of Chamorshi tehsil of Gadchiroli district, MS, India. Pimpalshende *et al* (2021) [9 b] recorded 16 different species of aquatic weeds out of 16 different aquatic weeds, he found that 03 free floating, 03 submerged floating, 03 rooted submerged, 02 marginal weeds and 06 emergent weeds in Dongrar Haldi Village Lake in Pombhurna Tehsil of Chandrapur district in Maharashtra state. Harney (2022) recorded 17 species belonging to four graphs as 06 free floating suspended submerged, 05 rooted floating leaves weeds, 02 rooted submerged hydrophytes and 04 submerged floating weeds in Gudgaon lakes of Bhadrawati Tehsil, Dist- Chandrapur, (M.S.), India. Harney (2023) recorded 04 graphs of macrophytes in Chora Lake of Bhadrawati Tehsil, Dist- Chandrapur (M.S.) India. Harney (2024) recorded 24 species of Macrophytes including 07 submerged floating weeds 07 rooted submerged hydrophytes and 07 free floating suspended in Popatkhed Dam near Akot tehsil, Dist- Akola (M.S.) India.

IV. CONCLUSION

In aquatic macrophytes study, among selected Lakes for study during last 12 months, maximum aquatic macrophytes were observed in January and minimum were observed in April, May, and July 2024. Macrophytes are considered as an important component of the aquatic ecosystem not only as the habitat and food source for aquatic life. Thus, they are playing an important role in balancing environment of ecosystems.

V. CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this work.

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