INTERNATIONAL JOURNAL FOR INNOVATIVE RESEARCH IN MULTIDISCIPLINARY FIELD
ISSN(O): 2455-0620 [Impact Factor: 9.47]
Monthly, Peer-Reviewed, Refereed, Indexed Journal with IC Value : 86.87
Volume - 11, Issue - 09, September - 2025

DOIs:10.2015/IJIRMF/202509018 --:-- Research Paper / Article / Review

Study of Macrophyte Diversity in Managad Dam and the Nearby Water Body of Managad Village, Salekasa, Dist. Gonidia (M.S.)

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Abstract: *This study is related to macrophytes in Managad Dam. Phytoplankton and zooplankton reflect the quality of water; some aquatic plants and animals are present in the dam and nearby water bodies throughout the seasons. The presence of all these aquatic diversities is very important for the maintenance of physico-chemical parameters and the purity of water. Phytoplankton and macrophytes are the primary food for aquatic animals. This diverse flora is essential in the water because certain organisms are born in different seasons of the year and require food. This diversity in flora is necessary to meet the food requirements. They are good indicators of changes in water as they are strongly affected by environmental conditions and respond quickly to changes in water quality. In this study, 18 macrophyte species of 4 different types were recorded in this dam during the study period 2023-24. The types of flora are: 1. Free-floating suspended submerged weeds, 2. Submerged floating weeds, 3. Submerged floating and Rooted weeds and 4. Floating leaf weeds with roots.*

Keywords: *Managad Dam, Diversity, Macrophytes, and Phyto and Zooplankton.*

1. INTRODUCTION:

A plant is an aquatic or terrestrial species that grows near water or in water, either permanently or seasonally. It can be seen with the naked eye and is called a macrophyte. These species are adapted to grow exclusively in these environments. They include permanently or temporarily submerged, floating, or emergent aquatic plants, as well as filamentous algae. Cronk and Fennessy divided macrophytes into four ecological groups: emergent, rooted submerged, submerged, and free-floating hydrophytes. Chambers and others analyzed the distribution of aquatic macrophytes based on their diversity and habitat, classifying them into seven plant groups: Chlorophyta, Cyanophyta, Xanthophyta, Rhodophyta, Bryophyta, Pteridophyta, and Spermatophyta.

Macrophytes grow in freshwater, brackish water, and marine aquatic habitats and are adapted to the physical and chemical parameters of their surroundings. They are influenced by their surroundings and, in turn, affect the growth of various life forms around them. Mycophytes are crucial for ecology because they are producers and have diverse value in the form of food, medicine, oxygen, protection, and habitat for various organisms, like invertebrates, vertebrates, and microorganisms. They are an important source of livelihood for local people. Macrophytes are important bioindicators as they respond to various environmental conditions. Their role in controlling the eutrophication of water and its purification is also well established. These work as a bioindicator for monitoring the change in the aquatic ecosystem.

Macrophytes are used as bioindicators of water pollution because they can respond to changes in organic, mineral, and water quality, which serve as indicators for monitoring changes in aquatic ecosystems. Due to their ability to reduce biological oxygen demand, aquatic macrophytes are increasingly being used for biofiltration in wastewater treatment systems. Macrophytes can be used as vermicompost, biochar, and biofertilizer. Many of these macrophytes can be harmful to aquatic ecosystems if present in large numbers. Nowadays, freshwater ecosystems are losing their original biodiversity faster than most terrestrial ecosystems due to increasing pollution, anthropogenic activities, acidification, invasion of alien species, eutrophication, and climate change. Aquatic ecosystems are also important to humans. However, several factors, such as pollution, the introduction of alien species, habitat degradation, and overgrazing, are currently destroying these ecosystems. Therefore, understanding the potential and importance of

aquatic biodiversity is urgently needed if we want to protect and conserve native species. Macrophyte diversity and its ecosystem services have been systematically studied at various locations in India and abroad. This article reviews the various roles of macrophytes.

2. MATERIALS AND METHODS:

Study Area:

"Managad" is a village located under Salekasa Tehsil (or Taluka) of Gondia district in Maharashtra. The village is a part of the larger Salekasa block and falls under the jurisdiction of the Gondia district. The village falls under the jurisdiction of Managad Gram Panchayat. The nearest town is Gondia, which is 51 km away. The state government has made arrangements for irrigation here, and our study center is the Managad Dam.

Managad Dam is a perennial reservoir. The water is used for large-scale irrigation, such as washing clothes, washing animals, agriculture, and fishing. Managad Dam is surrounded by hills, on all sides. To the east of this dam is Managad (old village), to the north is the rehabilitated Managad (Gandhi Dham) and Pandhari Pat Mahadev Temple, to the west is Shikaritola village, and to the south is a hill. During the monsoon, the main source of water is rainwater. Most of the water comes from the mountains, while water enters this dam from the fields on the edge of Managad (old village).

Sampling and Identification:

Visits were made at regular intervals every month for the entire study period, 2023-24. Macrophytes found in shallow water and deep water were photographed (Plates 1). Macrophytes were identified based on morphology with the help of standard plants and literature. Macrophytes are classified according to their life form, habitat, and habits (Table 1). Number of plants according to types of plants (Table 2).

Table 1: Macrophytes are classified according to their life form, habitat, and habits.

Sr. no.	Name of Macrophytes	Plant type	Taxonomic Classification
1	*Alternanthera philoxeroides*	Submerged, floating, and Rooted weeds	Angiosperms
2	*Azolla filiculoides*	Free-floating suspended submerged weeds	Pteridophytes
3	*Azolla pinnata*	Free-floating, suspended, submerged weeds	Pteridophytes
4	*Ceratophyllum echinatum*	Submerged floating weeds	Angiosperms
5	*Eichhornia crassipes*	Submerged floating weeds	Angiosperms
6	*Hydrilla verticillate*	Submerged floating weeds	Angiosperms
7	*Ipomea aquatica*	Floating leaf weeds with roots	Angiosperms
8	*Ipomea carnea*	Floating leaf weeds with roots	Angiosperms
9	*Lemna minor*	Free-floating, suspended, submerged weeds	Angiosperms
10	*Marsilea quadrifolia*	Floating leaf weeds with roots	Pteridophytes
11	*Nelumbo nucifera*	Submerged, floating, and Rooted weeds	Angiosperms
12	*Nymphaea alba*	Floating leaf weeds with roots	Angiosperms
13	*Nymphaea odorata*	Submerged floating weeds	Angiosperms
14	*Pistia stratiates*	Free-floating suspended submerged weeds	Angiosperms
15	*Salvinia sp.*	Free-floating suspended submerged weeds	Pteridophyta
16	*Spirodella polyrrhiza*	Free-floating suspended submerged weeds	Angiosprmas
17	*Typha L.*	Floating leaf weeds with roots	Angiosperms
18	*Utricularia vulgaris*	Submerged, floating, and Rooted weeds	Angiosperms

Table 2: Number of Plants according to types of plant.

Sr. No.	Types of plants	Number of types
1	**Free-floating suspended submerged weeds**	**06**
2	**Submerged floating weeds**	**04**
3	**Submerged, floating, and Rooted weeds**	**03**
4	**Floating leaf weeds with roots**	**05**

3. RESULTS AND DISCUSSION:

In the research, different types of macrophytes were observed in the study area. The total number of the collected 18 macrophytes was divided into four plant types. Among those are free-floating suspended and submerged weeds are 6 in number. There are 4 submerged floating weeds. Submerged, floating, and Rooted weeds are 03 in number, and floating leaf weeds with roots are 05 in number. In the above Tables and Plates, we can see the types of plants. We found out that there are six types of Free-floating suspended submerged weeds, five types of plant are submerged floating weeds, five types of plants are rooted floating leaves weeds, and four types of plants are submerged floating and Rooted weeds. Collected macrophytes are 14 are Angiosperms (Monocotyledon and Dicotyledons), and remaining 4 are Pteridophytes.

Plate 1: Macrophytes Photograph taken from the study area.

Fig. Aquatic Macrophytes

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