

Macrophytes Diversity of Nilona Dam, Yavatmal, Maharashtra

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Abstract

Studies on the macrophytes diversity of Nilona dam were undertaken during 2009-10. Fourteen species were observed belonging to different classes, out of which *Hydrilla verticillata*, *Potamogeton diversifolius*, *Potamogeton crispus*, *Ipomoea aquatica*, *Vallisneria spiralis*, *Polygonum amphibium* L., *Najas minor*, *Eleocharis plantaginea* and *Cladophora* spp. were dominated. Other macrophytes found in the dam were *Typha* spp., *Chara zeylenica*, *Lemna minor*, *Scirpus articulatus* and *Anabaena* spp. In the dominated area, they reduced water storage capacity in the dam. They also caused for tremendous loss of surface water through evapo-transpiration. Therefore, the rapid spread of aquatic weeds in the Nilona dam by vegetative and other means is creating serious socio-economic problem. Biota in this water body may lose their natural home and survival is the key problem for them. So management is important to improve the availability of water because it is only the source, which is used for drinking purposes for the Yavatmal city.

Key words : Aquatic weeds, Diversity, Effect, Nilona dam.

Aquatic weeds referred to as macrophytes constitute an important component of an aquatic ecosystem. Aquatic weeds are those plants growing in or near water and complete at least a part of their life cycle in water resources. Their diversity and biomass influence primary productivity and complexities of trophic states (1). An ecologically well balanced ecosystem supports fairly wide variety of macrophytes, but excessive growth of macrophytes hinder navigation, choking rivers irrigation channels, dams and lakes, impede drainage, interfere swimming recreation on water bodies, bathing and fishing, increase silt-deposition, harbor specific vectors of human diseases like mosquitoes (2). The quality of water should be assessed on the basis of physico-chemical parameters to provide information for the purpose of water management. The fresh water resources are dynamic in nature of physico-chemical status due to environmental and anthropogenic pressure.

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Methods

The water body selected for the present investigation is situated on east-south of the Amolakchand

college campus, Yavatmal. It is at 78° C, 8° E longitude and 20-33' N latitude. The dam is surrounded by open hills, which drain water during monsoon. The main source of water is Waghadi River on which a dam is constructed. The submerged area is 452 acres. Macrophytes in shallow water can be collected while those from deeper waters with the help of long handed hook. On collection specimen are thoroughly washed and excess water soaked with a filter paper, kept in polythene bag and brought to the laboratory. The macrophytes were classified into floating emergent, emergent and identify with the help of literature and taking photographic images.

Results and Discussion

The presence of excessive aquatic vegetation influences the management of water in natural waterways. All the weeds are documented as follows (Table 1).

All the aquatic weeds interfere with the static and flow water system (3). In a very few location, weeds were limited in number they show some advantages like, they maintain O₂-CO₂ balance, provide food to some herbivorous fishes and they also provide protection to tiny fishes from aggressive varieties.

Table 1. Aquatic weeds recorded in Nilona dam.

Family	Scientific name	Type of macrophytes / characters
1. Hydrocharitaceae	<i>Hydrilla verticillata</i>	Rooted submersed. Hydrilla alone dominated the other plants; it does not allow other weeds to grow in dam water. They restrict the movement of organisms mainly the fishes and provide shelter to small size predatory fishes and insects.
2. Potamogetonaceae	<i>Potamogeton diversifolius</i>	Rooted floating leaf. They are mostly vascular plants that produce most of its vegetation under the water surface. Severe competition exists with planktonic algae for nutrients and results in decreased production and disturbs water quality.
3. Potamogetonaceae	<i>Potamogeton Crispus L.</i>	Rooted floating leaf form species. The distinctive wavy leaf margins, rhizomes, and stolons of this weed make it easy to distinguish from most other submerged aquatic plants. They are capable of absorbing nutrients through leaves, stems and roots.
4. Convolvulaceae	<i>Ipomoea aquatica</i>	Rooted hydrophytes with floating leaves. The plant is Free-floating leaves are heart shaped trilobed flowers pink pretty large and tubular. It grows along with the shore of water body. They choke up the water body and responsible to reducing dam productivity. They make loss of water through eva-transpiration in addition to impediment caused in flow of water and also responsible for pollution.
5. Hydrocharitaceae	<i>Vallisneria spiralis</i>	Shallow water : Submerged species. It is grass like perennial plant with ribbon like leaves 1 to 2 m long resembles a grass in general appearance. It grows well in quiet fresh water, not more than 3 m deep. This weed damage maximum, because it can not visible on the surface and impedes the flow of water varying upon the degree of their intensity and growth.
6. Polygonaceae	<i>Polygonum amphibium L.</i>	Rooted emergent (marginal). They can grow under saturated and emerged soil–water condition of the dam. They grow in soil from saturated moisture on the dam into water up to depth of one meter. It has been observed in and around water-bodies. The ecological environment of this region is highly congenial for growth, reproduction and dissemination of this weed.
7. Najadaceae	<i>Najas minor</i>	Shallow water rooted submerged. The entire plants body lies below the surface of water i.e. (column water) in most of the area of the dam. They compete for space with the fishes and also disturb dissolved O ₂ -CO ₂ of pond water.
8. Cyperaceae	<i>Eleocharis plantaginea</i>	Rooted emergent. Annual sedge found in low lying areas, in shallow water ditches. The culms are 10–15 cm long thread shaped often branched. Spike found on culm terminal. It forms a dense mat from the small stems in that profile of a dam where the photosynthetic biomass is concentrated just above the basal area.
9. Cladophoraceae	<i>Cladophora spp.</i>	The filamentous algae is irregularly branched, it has hair like strands colonies, to form scum's and floating mats of algae. This scum resembles of mass of cotton mat type and gives an undesirable appearance. The filamentous alga produces undesirable odors and also spoils the taste of drinking water.
10. Typhaceae	<i>Typha spp.</i>	Marginal hydrophytes species. It is tall, grass like with fleshy leaves having no mid vein. it is very gregarious and robust grass, 2 to 4 m tall; multiplied rapidly by underground rhizomes and through air-borne propagation. Plants are found along the shoreline of water body. They provide shelter to small size predatory fishes and insects.
11. Characeae	<i>Chara zeylenica</i>	Shallow water submerged species. There are branched filamentous algae, when crushed emit a musky odor similar to garlic and give a noxious smell. Densely grow and impede water flow in canals and interfere with fishing.
12. Lemnaceae	<i>Lemna minor</i>	Floating hydrophytes species. Duck weed is small, floating and

Table 1. Continued.

Family	Scientific name	Type of macrophytes / characters
		simplest of flowering plants. They are stem less and lack of true leaves; but have inconspicuous nerves, thick round fronds and number of root lets. This weed makes loss of water through eva-transpiration.
13. Cyperaceae	<i>Scirpus articulatus</i>	Rooted emergent plants. Bulrush is aquatic sedge found in shallow ponds, which grow in the mud. It has the characteristics of straight, on branching and cylindrical soft stem. The large colonics are impede the flow of water in shallow. Due to this weed vast areas remains inundated with for a long periods and may only drought in reserve.
14. Nostocaceae	<i>Anabaena</i> spp.	Shallow-water submerged species. These are unicellular phyto-planktons which are microscopic, single cell, simple form, usually called water-bloom (blue green algae). Excessive phyto planktonic booms may result to zooplanktonic developments which may deplete water of oxygen and lead to eutrification which may prove destructive to fish and other aquatic wild life.

ies. But most of the area of dam was covered by weeds and damage maximum. Fourteen species were observed belonging to different classes, out of which *Hydrilla verticillata*, *Potamogeton diversifolius*, *Potamogeton crispus*, *Ipomoea aquatica*, *Vallisneria spiralis*, *Polygonum amphibium* L., *Najas minor*, *Eleocharis plantaginea* and *Cladophora* spp. dominated. Other macrophytes found in the dam were *Typha* spp., *Chara zeylenica*, *Lemna minor*, *Scirpus articulatus* and *Anabaena* spp. They all created some disadvantages like, chocking up the water body, compete for space with the fishes, they reduced water storage capacity in the dam. They also caused tre-

mendous loss of surface water through evapo-transpiration and also disturbing some physico-chemical parameters and reducing pond productivity.

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