ISSN: 2277-5536 (Print); 2277-5641 (Online)

STUDY ON OCCURRENCE, DISTRIBUTION, IMPACT AND TAXONOMY OF MACROPHYTES IN THE FRESH WATER RESOURCES (DAM) OF YAVATMAL DISTRICT, MAHARAASHTRA

Praveen Joshi

Dept. of Zoology, Amolakchand Mahavidyalaya, Yavatmal-445001, Maharashtra, India.
(E-mail-: drpravinpjoshi@gmail.com)

ABSTRACT

Studies on the Macrophytes of Seven fresh water resources (dam) were undertaken during the year 2009-2010. Total Nineteen species of Macrophytes belonging to fifteen families were occurred in the seven fresh water bodies, out of which sixteen in Pus, fourteen in Adharpus, eighteen in Arunawati, nine in Goki, eleven in Saikheda, ten in Borgaon, fifteen in Waghadi. It was noticed that the number of weeds were more in dams which are used for drinking and pisiculture purposes. Water bodies which are places of recreational and aesthetic use are badly affected by unwanted growth of aquatic weeds. They increase water loss through absorbs and transpire more water by the process called evapotranspiration. They also affect quality of water. They can also change the taste of drinking water. The impacts of aquatic weeds that they were reducing the storage and conveyance capacity of dams. It was observed that many of these weeds survive well in their new environments and grow at a fast rate. They can be excluded native plants and could also have an impact on native animals. They may also cause reduction in oxygen levels and present gaseous exchange with water resulting in adverse fish production. When weeds occupied large areas of a water body, a reduction in the fish condition could be occurred, resulting in a stunted fish population. They can provide a favorable and protected habitat for disease vectors mainly the insects. The rapid spread of aquatic weeds in the dam's vegetative and other means is creating serious socio-economic problems. So the management of weeds is important and immediate action should be taken by the authority for to improving the availability of dam water which is mainly used for drinking, pisiculture and irrigation purposes by Taluka (where the dam is constructed) of Yavatmal District.

KEYWORDS: Aquatic macrophytes, Occurance, Distribution, Impact, Fresh water resources.

INTRODUCTION

Aquatic weeds are those plants growing in or near water and complete at least a part of their life cycle in water resources. Aquatic weeds referred to as Macrophytes constitute an important component of an aquatic ecosystem (Cook, 1996; Kumar and Singh, 1987). The aquatic weed may be classified into broadly six groups. Free floating or surface species, rooted floating-leaf species, Shallow water submersed species, Deep-water rooted submersed species, Emergent hydrophytes species and amphibious marsh species. Aquatic weeds hinder navigation, chocking rivers, irrigation channels, dams etc., impede drainage and interfere swimming recreation on water bodies. Their diversity and biomass influence primary productivity and complexities of tropic states. The fresh water resources are dynamic in nature of physico-chemical status due to environmental and anthropogenic pressure. An ecologically well balanced ecosystem supports fairly wide variety of Macrophytes but excessive growth of Macrophytes caused serious problems for water quality and pisiculture.

MATERIALS AND METHODS

The fresh water bodies selected for the present investigation are situated on different locations which are shown in map (Figure-1). Their Name, Taluka, Types of Project, Location, Area and Utility value are mention in Table-1.All dams are surrounded by open hills, which drain water during monsoon. Except Borgaon the main source of water is River on which a dam is constructed. Macrophytes in shallow water can be collected by hand while those from deeper waters with the help of long handed hook net. Collected specimens are thoroughly washed and excess water soaked with a filter paper, kept in polythene bag and brought to the laboratory. The Macrophytes were identify and classified with the help of literature.

RESULTS

Total Nineteen species of Macrophytes belonging to fifteen families were occurred in the seven fresh water bodies and their details are given Table 2.

Figure 1. Selected water bodies for investigation (Big Black dots)

There were sixteen in Pus, fourteen in Adharpus, eighteen in Arunawati, nine in Goki, eleven in Saikheda, ten in Borgaon, fifteen in Waghadi and their types are alphabetically mention in the Table-3 and Figure-2, and their names are given in Table-2. According to observations Hydrillla verticillata, Ipomoea aquatica, Vallisneria spiralis Najas minor, Chara zeylennica, Anabaena spp. and Panicum purpurascens were dominated in all the water bodies. Potamogeton diversifolius, Potamogeton Crispus L. Polygonum amphibium L., Eleocharis plantoginea and Scirpus articulates were commonly found in most of the dams. Typha spp., Lemna minor, Elodea Canadensis, Nelumbo nucifer, Pharagmites communis, Spirogyra spp. were rarely observed in some of the dams.

Table 1. Detail features of the dams

Name of the Dam	Taluka	Type of Project	Location	Area (sq.k.m.)	Utility value
Pus	Pusad	Major	19^0-59'-25" 77^0-27'-19"	597	Irrigation/Drinking/Pisiculture
Adharpus	Mahagaon	Medium	19^0-48'-45" 77^0-40'-30"	1282	Irrigation/Drinking/Industry/Pisiculture
Arunawati	Aarni	Major	20^0-16'-30" 77^0-09'-00"	1427	Irrigation/Drinking/Pisiculture
Goki	Ner	Medium	20^0-17'-00" 77^0-54'-00"	291.40	Irrigation/Industry/Pisiculture
Saikheda	Kelapur	Medium	20^0-07'-00" 78^0-28'-00"	480.83	Irrigation/Industry/Pisiculture
Borgaon	Yavatmal	Medium	20^0-27'-16" 78^0-17'-43"	50.82	Irrigation/Drinking/Pisiculture
Waghadi	Yavatmal	Medium	20^0-15'-30" 78^0-18'-10"	238.40	Irrigation/Drinking/Pisiculture

Table 2. Total Macrophytes were occurred in seven water bodies.

Family	Scientific Name	Types of Macrophytes	Common Name
A. Hydrocharitaceae	A. Hydrillla verticillata	A. Rooted submersed	A. Hydrillla
B. Potamogetonaceae	B. Potamogeton diversifolius	B. Rooted floating leaf	B. Pond weed
C. Potamogetonaceae	C. Potamogeton Crispus L.	C. Rooted floating leaf	C. Curly-leaf P.weed
D. Convolvulaceae	D. Ipomoea aquatica	D. Rooted hydrophytes	D. Kalmi
E. Hydrocharitaceae	E. Vallisneria spiralis	E. Submerged species	E. Eel weed
F. Polygonaceae	F. Polygonum amphibium L.	F. Rooted emergent	F. W. smart weed
G. Najadaceae	G. Najas minor	G. Rooted submerged	G. Naiad
H. Cyperaceae	H. Eleocharis plantoginea	H. Rooted emergent	H. Spike ruch
I. Cladophoraceae	I. Cladophora spp.	I. Filamentous alga	I. Cotton mat t. alga
J. Typhaceae	J. Typha spp.	J. Marginal s species	J. Common cattail
K. Characeae	K. Chara zeylennica	K.Submerged species	K. Musk grass
L. Lemnaceae	L. Lemna minor	L. Floating hydrophytes	L. Duck weed
M. Cyperaceae	M. Scirpus articulatus	M. Rooted emergent	M. Bulrush
N. Nostocaceae	N. Anabaena spp.	N. Submerged species	N. Blue green alga
O. Hydrocharitaceae	O. Elodea Canadensis	O. Submerged species	O. Flodea
P. Nymphaeaceae	P. Nelumbo nucifer	P. Rooted floating leaf	P. Lotus
Q. Paniceae	Q. Panicum purpurascens	Q. Amphibious m.species	Q. Para grass
R. Graminaea	R. Pharagmites communis	R. Amphibious m.species	R. Common reed
S. Chlorophyceae	S. Spirogyra spp.	S. Slimy green algae	S. Slimy green alga

Table 3. Types of Macrophytes are found in the dams.

Name of the Dam	Types of Macrophytes are to be found.
Pus	A,B,C,D,E,F,G,H,I,J,K,L,M,N,Q,P(16)
Adharpus	A,B,C,D,E,F,G,H,K,N,Q,O,P,S.(14)
Arunawati	A,B,C,D,E,F,G,H,I,J,K,L,M,N,P,Q,R,S(18)
Goki	A,D,E,G,I,K,M,N,Q(09)
Saikheda	A,B,C,D,E,G,H,K,M,N,Q.(11)
Borgaon	A,D,E,G,I,K,N,Q,R,S(10)
Waghadi	A,B,C,D,E,F,G,H,I,J,K,L,M,N,Q(15)

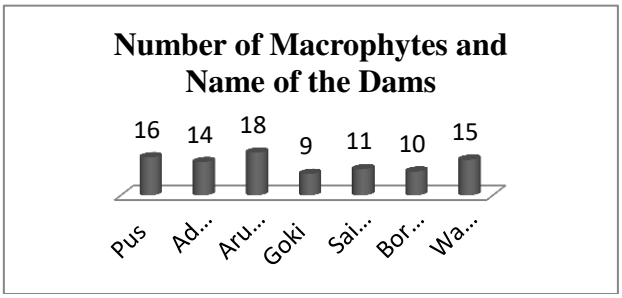

Figure 2. Distributions of Macrophytes.

Table 4. Impact of Macrophytes on fresh water bodies (Dams)

Scientific Name	Impact of Macrophytes
A. *Hydrillla verticillata*	Alone dominated the other plants. They restrict the movement of organisms mainly the fishes and provide shelter to small size predatory fishes and insects.
B. *Potamogeton diversifolius*	Serve competition exits with planktonic algae for nutrients and results in decreased production and disturbs water quality.
C. *Potamogeton crispus* L.	They were capable of absorbing nutrients through leaves, stems and roots.
D. **Ipomoea aquatica**	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.
E. *Vallisneria spiralis*	This weed damage maximum, because it cannot visible on the surface and impedes the flow of water varying upon the degree of their intensity and growth.
F. *Polygonum amphibium* L.	It had been observed in and around water-bodies. The ecological environment of this region is highly congenial for growth, reproduction and dissemination of this weed.
G. *Najas minor*	They compete for space with the fishes and also disturb dissolved O2-CO2 of pond water.
H. *Eleocharis plantoginea*	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.
I. *Cladophora spp.*	The filamentous alga produces undesirable odors and also spoils the taste of drinking water.
J. *Typha spp.*	Plants are found along the shoreline of water body. They provide shelter to small size predatory fishes and insects.
K. *Chara zeylennica*	When crushed emit a musky odor similar to garlic and give noxious smell. Densely grow and impede water flow and interfere with fishing.
L. *Lemna minor*	This weed makes loss of water through evatranspiration.
M. *Scirpus articulatus*	The large colonies are impeding the flow of water in shallow. Due to this weed vast areas remains inundated with for a long periods and may only drought in dams
N. *Anabaena spp.*	Excessive phyto planktonic booms may result to zooplankton developments which may deplete water and lead to eutrofication which may prove destructive to fish and other aquatic life.
O. *Elodea Canadensis*	It grows up to 1m. According to depth of water flowering and fruiting below the water, seeds raise and heavy buds drop to the bottom and grow in the dam and acquires large area.
P. *Nelumbo nucifer*	Lotus is a large herbaceous aquatic plant common in muddy shallow water dams.
Q. *Panicum purpurascens*	Dense stand can develops into floating mat which can create problems in drainage ditches to impede water flow.
R. *Pharagmites communis*	Culms are alga brows or smooth which sprawl on water and form dense floating mats. It interfere with boat traffic and fishing on small streams.
S. *Spirogyra spp.*	Dense growth of all these filamentous algae prevents fishing deplete oxygen, favors small insects breeding site and gives an undesirable appearance.

The impacts of aquatic weeds are they reducing the storage and conveyance capacity of dams. They increase water loss through absorbs and transpire more water by the process called evapotranspiration. They also affect quality of water regarding change the odor and taste of drinking water. When weeds occupied large areas of a water body, a reduction in the fish condition could be occurred, resulting in a stunted fish population. Aquatic weeds often reduce the

effectiveness of water bodies for fish production. It was keenly observed that they can provide a favorable and protected habitat for disease vectors mainly the insects. It was observed that many of these weeds survive well in their new environments and grow at a fast rate. Most irrigation schemes suffer infestations of exotic species. They are difficult and expensive to control, though the use of linings, shade and intermittent drying out can compliment traditional techniques of mechanical removal, careful herbicide application and the introduction of weed eating fish and insects. Annual senescence of the plant community in temperate waters will result in a gradual reduction in refuge for small fish, exposing them to predators. The individual impact of Macrophytes on the water bodies is given in Table-4.

DISCUSSION

Water bodies which are places of recreational and aesthetic use are badly affected by unwanted growth of aquatic weeds. It had been observed that all the animals and plants living within a water body were affected by the presence of a weed outbreak. The physico-chemical characteristics of dams water can be alters at some extends by the excessive vegetation. The rapid spread of aquatic weeds in the dam's vegetative and other means is creating serious socio-economic problems (Mandal, 2007; Murphy, 1998). It is very essential to verify all the problems and find suitable solution for the Aquatic weeds and fresh water bodies. So the management of weeds is important and immediate action should be taken by the authority for to improving the availability of dam water which is mainly used for drinking, pisiculture and irrigation purposes by Taluka (where the dam is constructed) of Yavatmal District.

ACKNOWLEDGMENTS

The author is grateful to UGC for financial support under the MRP.

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