



AQUATIC WEEDS AND THEIR ECOLOGICAL ROLE IN VASANT SAGAR. PUSAD. DIST. YAVATAMAL MAHARASHTRA (MS)

Rathod S.D.

P.G. Dept. of Zoology

R.A. Arts, Shri M.K. Commerce and Shri S. R. Rathi Science College, Washim-444505, (Maharashtra)

Abstracts:

Vasant sagar was constructed on the Pus River. This project comes under watershed area of Pus project, which is in Godavari Valley on 20°1'41"N and 77°27'4"E. The Official Designation of the Project is " Pusad . Locally this is also known as "Pus Dharan / Vasant Sagar, " or "Upper Pus Lake". Project was constructed as part of irrigation projects by the Government of Maharashtra in the year 1971. It is fresh water body. The dam impounds on Pus River. Nearest city to dam is Pusad and it is situated in Yavatmal District of Maharashtra .The aquatic weeds diversity of Upper Pus Reservoir was studied at four sampling stations during July. 2020 To Jan. 2022. The water body sustains heavy biomass throughout the period of research. Water is the one among the prime necessities of life required for growth and other activity of all living being. Wetland is among the most productive ecosystems in the world. Aquatic weeds always thrive in places of marshy lands and water logged areas of the world. The aquatic plants are the most important component of the aquatic ecosystem. Aquatic plants are key components for the well-functioning of wetland ecosystem for biological productivity and support diverse organisms and there by provide lots of goods and services for the dependent people. Due to rapid pace of urbanization formation of new human settlements and Industrialization weeds are in serve threat of extinction. It is there for an urgent and almost need to record and to access diversity potentially of these aquatic plant communities before they will vanish forever. No elaborate study regarding the aquatic weeds or microphytes of Pusad taluka Maharashtra has been carried out up to the date. So the present work is the first contribution to the biodiversity of aquatic weeds in Vasant Sagar. Pusad. During the present study, 8 species of fresh water aquatic weeds viz. *Hydrilla*, *Eicchornia*, *Vallisneria*, *Pistia*, *Algae*, *Typha*, *Nymphaea* have been reported.

Key word: *Aquatic weed*, *Biodiversity*, Vasant Sagar. TQ. Pusad. Dist. Yavatamal

INTRODUCTION:

The Dam is an Earth-fill Gravity Dam. Purpose of the Project is for irrigation and drinking purpose. Length of the dam is 744 m (2441.0 Feet). While the height of the dam above lowest foundation is 42 m (137.8 Feet). Project Spillways is other type. Spillway length is 261 m (856.2 feet). Spillway is ungated. Catchment area of Upper Pus Reservoir is 59.6 Thousand Hectors. Maximum / Gross storage capacity of Upper Pus Reservoir is 113.92 MCM. Live storage capacity is 91.26 MCM. Now a day's almost all the water bodies make for good picnic spots Upper Pus Reservoir / lake is also a popular Tourist attraction for its scenic beauty. During recent years there has been increasingly greater concern for inland fresh water resources, which are affected in different ways by all kinds of human activities. It is the manmade lakes and one such example of water resources, which form a part of a still larger system, the watersheds. Any human activity in the whole of the watershed is bound to influence the water in the reservoir and downstream. Deforestation, grazing and otherwise removal of vegetal in the watershed generally results in accelerated silting of the reservoir. The agricultural practices in the catchments area not only help increased silting but also responsible for addition of large quantities of nutrients, pesticides and organic matter, brought to the reservoir by the runoff through the stream. Not only the water quality in the reservoir is affected but its impact can also be left in the change in the biota, soil properties and physico-chemical status. In India, the water resources are under great stress from a plethora of human activities. Though the need for increased agricultural production, increased resource utilization, very little is known about the quality of water resources and impact of these activities thereupon. In the recent years environmental monitoring through regular assessment of water quality has become a crucial factor in the exploitation or conservation of aquatic resources. Zooplankton is abundant in the shallow areas of water body. The zooplanktons unlike phytoplankton are particularly distributed horizontally and vertically in an ecosystem. The zooplanktons forms an important group as it occupies an intermediate position in the food web, many of them feeding on algae and bacteria and in turn being eaten up on by fishes. They also indicate the trophic status of a water body, their abundance increase in eutrophic water. They are also sensitive to pollution and many species are recognized as Indicators of pollution. Water from Upper Pus Reservoir is being used for drinking, agriculture purpose and fishery activities. On the other hand, due to increasing human and animal activities in it, the water is becoming polluted. Hence, the basic information and data on the aquatic ecosystem thought to be worked out in order to evolve effective and appropriate strategies for the management of the reservoir. The study of the reservoir in respect to Insect availability is not worked our earlier. Similarly, no studies are carried out on the water quality of the lake and therefore, Aquatic ecosystems are important one which provide livelihoods for the millions of people who live around them. Man depends on ponds for most of his needs like fishing, agriculture, irrigation, and other domestic purposes. Ponds are playing a very good role in rain harvesting, storage of water and regulation of ground water level. So in order to maintain the ground water level we must conserve ponds and pond habitat. In earlier days aquatic plants are used as food, fodder, medicine etc. but with the advancement in life styles the uses of aquatic plants are foregone and are treated as mere weeds which are making the ponds useless (**Bhagyalina P.R. Gopalan 2012**). Aquatic weeds always thrive in places

of marshy lands and water logged areas of the world. In each and every water body, whether it is small or large, a variety of weeds thrives and develops. The weed biodiversity of every water body changes continuously based on nutrient supply seasonally and depending upon climatic conditions of the region during the process of succession. The aquatic weeds are unwanted vegetation which grow in ponds and lakes and hamper its use (Sushilkumar, 2011). Out of 160 aquatic weeds *Ipomoea aquatica*, *Typha angustata*, *Eichhornia crassipes*, *Nelumbo nucifera*, *Alternanthera philoxeroides*, *Vallisneria spiralis*, *Chara*, *Potamogeton*, *Hydrilla*, *Ceratophyllum* and *Salvinia* are spread in Indian water bodies to a very large extent that they are a ecological threat to the regions under which they are thriving. The aquatic weeds are also termed as macrophytes of the water body due to their large visible size. These macrophytes are broadly classified as terrestrial as well as aquatic.

REVIEW OF LITERATURE: Several research work was carried out on diversity of aquatic weeds **Anderson (2003)** gave a review of aquatic weed biology and management research conducted by the United States Department of Agriculture Agricultural Research Service. **Khan et al., (2002)** evaluated some aquatic plants from Bangladesh through mineral composition. **Mandal (1986)** studied on pollution tolerant aquatic plants of Lalbandh Lake, Santiniketan, West Bengal, India. **Bhupendra and Mani (2008)** studied floral diversity of Baanganga Wetland, Uttarakhand, India reporting a total of 178 plant species. **Kolet. et.al (2013)** Studies on the Biodiversity of Weeds from V.P.M.'s College Campus and Adjoining Areas in Thane, India The aquatic weed varieties are broadly classified as free floating, submerged, rooted floating, emergent and bank weeds. Several research work was carried out on diversity of aquatic weeds **Anderson (2003)** gave a review of aquatic weed biology and management research conducted by the United States Department of Agriculture Agricultural Research Service.

MATERIAL AND METHODS:

The sample of selected plants was collected from water bodies. The aquatic weeds were collected by hand picking and also with the help of local fishermen. The collected weeds were then brought to laboratory and identified using standard literature on weeds. Visual observations about topographic changes in the water level of pond and its surface were also recorded to assess the extent of changes in the pond basin.

GEOGRAPHY AND DEMOGRAPHICS

Pusad is located at 19.9104°N 77.5686°E. Its average elevation is 315 meters (1033 feet). it is mostly surrounded by hills. According to the 2011 Indian census, had a population of 73,046. its climate is extreme, with the temperatures reaching as high as 49 degrees Celsius (120 degrees F°) during the summer and as low as 5 degrees Celsius (41 degrees F°) during the winter. Experts believe this is the result of the "Basket Effect" (i.e. high-altitude hillside effect) since it is surrounded by hills. Two of Maharashtra's Chief Ministers, Vasantrao Naik, and Sudhakar Naik, were from Pusad.

S.No	Description	Data
1	Name of Project	Pus Project
2	Location	Taluka Pusad, District Yavatmal
3	Basin	Godavari
4	Sub Basin	Pus
5	Name of River / Nala	Pus river
6 (a)	Catchment Area (Sq.Km.)	596
6 (b)	Free Catchment area (excluding the C.A. of all U/S storages)	596
7	Type [Major / Medium / Minor / Minor (LS)]	Major
8	Year of completion	1970-71
9	Type of dam	Earthen Dam
10	Gross storage (Mm3)	113.91
11	Live Storage (Mm3)	91.26
12	Dead storage (Mm3)	22.65
13	Maximum dam height (m)	41.75

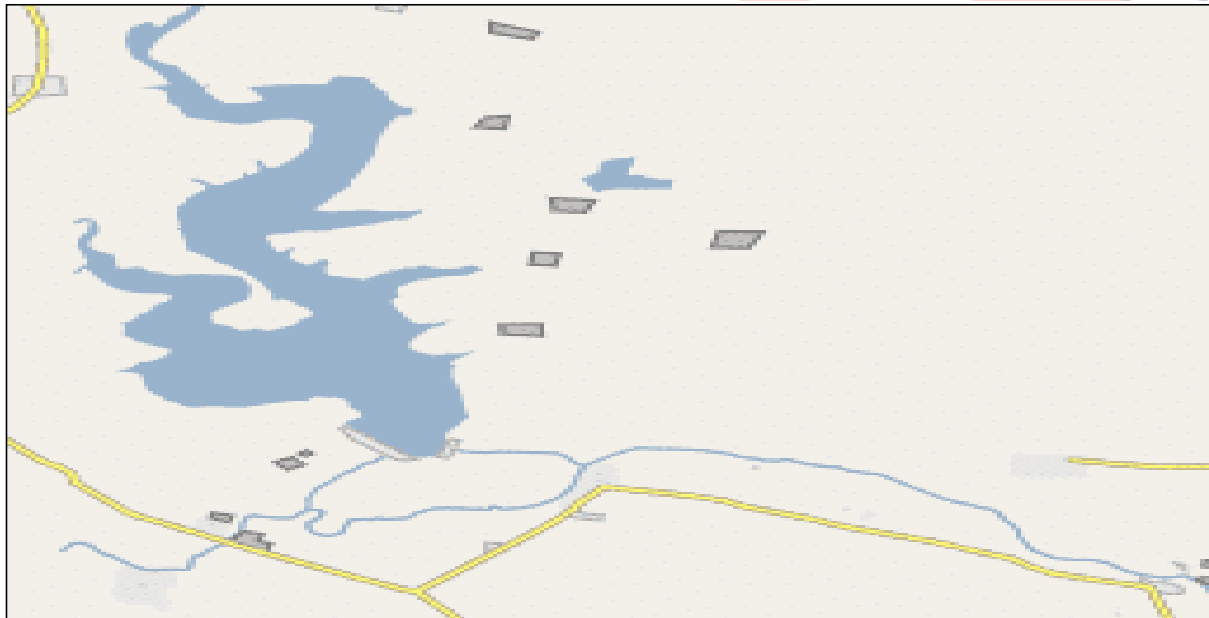


Fig. Map of the Reservoir

RESULT AND DISCUSSSSSSION

The present study reveals a total 6 microphyte species belonging to 5 families from the wetlands of the Washim region of Maharashtra represented in Observation table I. The present study shows that Hydrilla, Vallisneria were found in the reservoir

Table: Various aquatic weeds

Sr.no	Family	Aquatic weed (Scientific Name)	Common Name
1	Hydrocharitaceae	Hydrilla Vallisneria	Water thyme Eel grass/ Tap grass
2	Pontederiaceae	Eicchornia	water hyacinth
3	Araceae	Pistia	Jalkumbhi
4	Typhaceae	Typha	Punks
5	Nymphaeaceae	Nymphaea	Water lilies



HYDRILLILLA



TYPHA



VALLISNERIA



VALLISNERIA



PISTIA



ALGAE

Photoplate I: Aquatic weeds of the reservoir.**SUMMARY AND CONCLUSION**

The present study of aquatic weeds and their ecological role in Upper Pus Reservoir, Pusad, Maharashtra, gives detail idea about the structure and role of aquatic weeds. the aquatic weeds are important for the aquatic environment .They play important role in protecting and restoring the aquatic ecosystem Ie. the aquatic weeds play major role in ecosystem. Aquatic weeds also keep the water temperature, humidity in the ecosystem. Their role is important for fishes. The microscopic aquatics weeds biodiversity is of considerable interest to society because these are so important in the diet of different types of fish species that are commonly consume by humans for food ie. Aquatic weeds are important in fishing.

The present study concludes that further studies may be done to develop biodiversity of Aquatic plants are essential components of healthy aquatic systems. All plants whether in or around water play the important role in photosynthesize. They use sunlight, carbon dioxide, and water to grow and produce new plant tissue. They also produce oxygen through this process. It has been assured that aquatic weed have assumed greater awareness of the pollution in Aquatic ecosystem. The study of aquatic weeds is important in environmental monitoring as possible indicator of physiological and chemical changes in environmental ecosystem. In conclusion, biodiversity of aquatic weeds is useful biomarker for environment ecosystem. . No elaborate study regarding the aquatic weeds or mycophytes of pusad, Maharashtra has been carried out up to the date. So the present work is the first contribution to the biodiversity of aquatic weeds in pusad Maharashtra, India.

SUGGESTIONS AND RECOMMENDATIONS:

The documentation and proper assessment of aquatic biodiversity is dependent on respective areas and their habitat. Unfortunately, the study of the aquatic weeds is not yet reported in this reservoir, presently aquatic ecosystems are destroyed rapidly due to various reasons. The loss of biodiversity is mainly from habitat destruction, over-harvesting, pollution and inappropriate introduction of exotic

plants and animals. The survival of native aquatic species is threatened and hence attention on the aquatic resources. Therefore immediate steps are to be taken for their conservation and sustainable utilization. There is a need for increased legal protection, well designed management practices to conserve the aquatic biodiversity. The measure for conservation of aquatic resources should be taken up on priority by different government and non-government organizations for benefit of humanity.

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