


Janata Shikshan Sanstha's  
KISAN VEER MAHAVIDYALAYA, WAI




DEPARTMENT OF ZOOLOGY

*Certificate of Attendance*

This is to certify that Shri / Miss. Gradhave Sonali Ravindra of Class  
B. Sc. Part III Roll No. 88. Exam. Seat No. ....has attended the Study  
Visit arranged to Water Ecosystem (Mulshi Dam) on  
03/03/2019.

  
Teacher- in -Charge

Seen  
  
Examiner

  
Head, Dept. of Zoology

# Visit to Mulshi and Khadakvasla Water Reservoir

**Aim:** To visit water reservoir

**Objective:** To study fresh water ecosystem.

**Date and time of the visit:** Sunday, 03.03.2019. 8 am to 6:30 pm.

As a part of our curriculum this year we visited Mulshi and Khadakvasla water reservoir for study visit. The aim of the study visit is to get the recent information and present status of fresh water habitat and to study the faunal composition of different tropical levels of aquatic ecosystem and observation of birds and other organisms found at different tropical levels of the reservoir. Total land under the plantation is 333.87sq.km.

Mulshi Reservoir is located about 117 km east to Wai.. Mulshi is the name of a major dam on the Mula river in India. It is located in the Mulshi Taluka in Pune District of Maharashtra state.

It is about 533.38m long and 48.8m in height. Water from the dam is used for irrigation as well as producing electricity at the Bhira Hydroelectric Power Plant, operated by TATA Power. Water from this reservoir located in Krushna river basin is diverted to the Bhira Power House for generating Hydroelectricity. The total area for Hydroelectricity is about 240sq.km.

Khadakvasla reservoir is located about 83km east to Wai. Khadakvasla Dam is constructed on the Mutha river 21km away from the center of the city of Pune. Khadakvasla is the main source of water for Pune and its suburbans.It is about 1939m long and 31.79m in height.

## Functions of Aquatic Ecosystem:

Fresh water ecosystems cover 0.80% of the Earth's surface and inhabit 0.009% of the total water. They generate nearly 3% of its net primary production.

Aquatic ecosystem perform many important environmental functions. For ex., they recycle nutrients, purify water, attenuate floods, recharge ground water and provide habitats for wild life. Aquatic ecosystem are also used for human recreation and are very important to the tourism industry, especially in coastal regions.

The health of an aquatic ecosystem is degraded when the ecosystem's ability to absorb a stress has been exceeded. A stress on an aquatic ecosystem can be a result of physical, chemical or biological alternations of the environment. Physical alterations include changes in water temperature, water flow and light availability. Chemical alteration includes changes in the loading rates of bio stimulatory nutrients, oxygen consuming materials & toxins. Biological alteration includes over-harvesting of commercial species and the introduction of exotic species. Human populations can impose excessive stresses on aquatic ecosystems.

There are main two types of aquatic ecosystems i.e. Marine and Fresh water ecosystems are spread on the earth. The fresh water ecosystem are further divided into three basic types.

**Lentic:** Slow-moving water include pools, ponds and lakes.

**Lotic:** Rapidly moving water, for ex. streams and rivers.

**Wetlands:** Areas where the soil is saturated or inundated for at least part of the time.

1	<b>Phytoplanktons:</b> Pediastrum simplex  Melosira sp.  Microcystis sp.  Chlorella sp.	Geometrically symmetrical star shaped arrangement of the cells Rectangular cells, filamentous with chloroplast and nucleus. Spherical cells mass in gelatinous secretion. Group of cells with nucleus and chloroplast.	Limnetic zone
2	<b>Zooplanktons:</b> Daphnia sps. Euglena sps. Spongilla sps.	Sessile, colonial observed of the littoral zone of the reservoir. Sessile, colonial observed on the rocks of the littoral zone of the reservoir.	Limnetic zone Sessile, live an dried colony in the littoral zone.

## **Abiotic characteristics**

An ecosystem is composed of biotic communities that are structured by biological interaction and abiotic environmental factors. Some of the important abiotic environmental factors of an aquatic system include substrate type, water depth, nutrient level, temperature, salinity, and flow. It is often difficult to determine the relative importance of these factors without rather large experiments. They may be complicated feedback loops. For e.g., sediment may determine the presence of aquatic plants, but aquatic plants may also trap sediments, and add to the sediment through peat.

The amount of dissolved oxygen in a water body frequently is the key substance in determining the extent and kinds of organic life in the water body. Fish need dissolved oxygen to survive, although their tolerance to low oxygen varies among species. Nutrient levels are important in controlling the abundance of many species of algae. The relative abundance of nitrogen and phosphorus can affect and determine which species of algae become dominant.

## **Biotic characteristics:**

The biotic characteristics are mainly determined by the organisms that occur. It is composed of autotrophic and heterotrophic organisms.

- **Autotrophic organism :**

Autotrophic organisms are producers that generate organic compounds from inorganic materials. The fresh water habitat consists of following major groups of phytoplankton communities.

A ] Chlorophyceae B ] Bacillariophyceae C ] Myxophyceae D ] Euglenophyceae

The more shallow water shows greater biomass contribution from rooted and floating vascular plants. These two sources combine to produce the extraordinary production as this autotrophic biomass is converted into fish, birds, amphibians and other aquatic species ..

- **Heterotrophic organisms**

Heterotrophic organisms consume autotrophic organisms and use the organic compounds in their bodies as an energy source and as a raw

material to create their own biomass. These include „ zooplankton [ Copepod , Cladocera, Ostracoda , rotifera and protozoa ]reptiles ,birds, amphibian small fishes ,large carnivorous fishes etc. Forming a complex food chain in the aquatic environment .In present study visit along with the basic information regarding the biotic and abiotic components the actual organism observeed from different tropic levels , their diagnostic features and habitat are list below.

## **Observed Birds**

- 1] **Sandpiper** : Sandpiper belongs from family Scolopacidae .They are small shore birds. They are relatively long legs and long slender bills for probing in sand or mud for their prey. Their color plumage is dull brown or gray.
- 2] **Heron** : The Herons are long legged freshwater and coastal birds in the family Ardeidae .Almost all species are associated with water. They feeds on the margins of lakes, rivers ,swamps ,ponds and sea.Bill is massive, broad ,scoop like to catch prey.
- 3] **Kite** : Kite belongs to family Accipitridae .Typically a kite is lightly built , with a small head ,partly bare face ,short beak ,and long narrow wings .Kite eat mostly flying insects.
- 4] **Red vented bulbul** : It belongs to family Pycnocotidae.They are mostly aerborial and on electric wires or trees. Beak is short to medium. They mostly feed on insects, bees, nectar of flowers .
- 5] **Sunbird** : It belongs to family Nectarinidae .Its beak is long lenth curved pointed .Legs are short with sharp claws .It feeds on insects, bees ,nectar of flowers.
- 6] **Crane** : It belongs to family Gruidae .They has large ,long leg and long neck. They are opportunistic feeders that change their diets according to the season and their own nutrient requirements .They mainly feeds on small sized rodents ,fish, amphibians and insects.

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