

STUDY OF PLANKTONS AT BADA TALAB, PARASI, REWA (M.P.)

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ABSTRACT: - Water is the most essential element of life and without it life cannot exist. The body uses water for digestion, absorption, transporting nutrients, and building tissues and all other activities. Monthly zooplankton samples were collected. Zooplanktons are the primary consumers of the process of food chain. Aquatic ecosystem consists of physical, chemical and biological factors. Physical chemical factors are not alike in all water bodies; they change either due to natural or artificial processes. Zooplanktons are good indicators of the change in water quality because they are strongly affected by environmental conditions and by other living species within water body and respond quickly to changes in water quality. Various zooplanktonic faunal species were found which were typically adapted for the given conditions of existence.

KEYWORDS: Zooplankton, Bada Talab, Parasi.

INTRODUCTION

Water is the most precious component of the earth. It is found in a large quantity in all living organisms. Therefore, it should be free from any artificial contamination. Researchers now take into consideration the physico-chemical and biological factors in order to prevent further pollution of our limited fresh water resources.

Limnological study of the Bada Talab, Parasi, Rewa may be helpful up to a certain extent, to create a general awareness among the people about the proper use of the fresh water for agriculture, fish resources and domestic use.

Macrozoobenthic organisms form an important aspect of benthic studies in various fresh water ecosystem belong to the secondary consumer trophic level. They are highly important as aquatic organism's food and generally have high rates of reproduction. These organisms belong to the phyla Protozoa, Porifera, Coelenterata, Annelida, Arthropoda, Mollusca and Minor Phyla. The periphytonic, epiphytic and aquatic communities may also be classified in vertebrate fauna. Work on the dynamics of these populations and even their species diversity indices are not on record in majority of aquatic bodies in our country. Available work in this regard belongs to the areas in Europe and N. America, which have temperate climates.

MATERIALS AND METHODS:

Bada Talab, Parasi, Rewa (M.P.) is situated towards the south part of Mangawan Tahsil, Distt. Rewa and is about 43 kms. from Rewa. It is a perennial water body of the Distt. Rewa. Water of the Talab is used for drinking, bathing, irrigation and cattle use. Rewa is commissionerary head quarter, situated at 24⁰32' N latitude and 81⁰18' E longitude. It is 365.7 above the mean sea level. It is situated in the north-east corner of Madhya Pradesh.

A periodical survey of physical, chemical and biological parameters was made during 2014 to 2015. Five sampling stations S₁-S₅ were selected for the study and 3-5 samples were collected monthly from each stations at different depths i.e. surface, 1 meter, 2 meters and 3 meters. Limnological studies with regard to the physico-chemical and biological characteristics of Macrozoobenthos were conducted at five selected study sites.

Monthly samples were collected from different selected five S₁-S₅ sampling stations from 2014 to 2015 and analyzed for various physico-chemical characteristics such as Temperature, Turbidity, pH, Alkalinity, Chloride, Hardness, Dissolved Oxygen, Biochemical Oxygen Demand, Chemical Oxygen Demand according to APHA, 1985.

Mallet (1869) and Odham (1901) described the Geology of Vindhyan Plateau. Rewa is a part of major Vindhyan basin. It lies amidst the vast hilly expanse of central India. The soil of Rewa derives its origin from rocks of upper Vindhyan system, which are more or less horizontal alternating with stratification of hard and soft bands of sand stone, lime stones and shales. The soil of experimental sites is a typical medium black soil with pH 7.8.

OBSERVATION:

The physico-chemical characteristics of water is a reflection of bottom soil. In this way the chemical factor like pH, bulk density and true density and physical factors like sand, silt, clay, electrical conductivity, water holding capacity and infiltration, which were studied during present investigation.

The specific flora and fauna inhabiting soils are dependent upon many factors. The climate in turn the vegetation greatly influence which organisms are dominant. Soil, pH, acidity, moisture relations are

also factors which govern the activity of the flora and the fauna of the area.

RESULT AND DISCUSSION:

Zooplankton exerts aggrazing pressure on phytoplankton. Therefore, their growth and abundances have an direct influence on the productivity of water body. Some planktons are pollution indicators of water bodies. It is true that plankton have attracted much attention of number of limnologists all over the world. However, very little knowledge about population dynamics of river water is found. The studies on the riverine ecology have been made in India and abroad by various workers, Vass et. al. (1997), Hynes (1979), Badola and Singh (1981), Dobriyal and Singh (1989), Khanna et. al. (1993), and Green (1960) have also done the work on river Skoto.

Climate of the Bada Talab, Parasi, Rewa (M.P.) is monsoonic. The minimum (2.3 to 8.3°C) and maximum (31.0 to 42.0°C) atmospheric air temperature was recorded in May-April and June 2014 respectively. Maximum rainfall 37.5 was recorded in August 2015 rainfall was nil in October to December months. Physicochemical data recorded during this investigation have shown a water temperature range of 17.4 to 38.8°C at all the 5 study sites. The highest values recorded during the springs and the lowest during the winters. A narrow pH range of 5.9 to 10.6 at Bada Talab was observed. The pH values for all five sampling stations were found to be on alkaline side throughout the period of study.

The transparency value of the Talab ranged from 85 to 158.2 c.m. The maximum value 158.2 c.m. and minimum value 85 c.m. was recorded. Conductivity values of the tank ranged from 95.6 to 152 UMhow. The dissolved oxygen concentration varied from a minimum of 1.6 mg/l to a maximum of 9.6 mg/l in all the study sites. The BOD values ranged between 8.0 to 1400 in all five stations. The BOD values of Talab are comparatively less and show a good quality of water.

The alkalinity levels have ranged from 76 to 316 mg/l at all five study sites. The chloride concentration was found to vary from a minimum of 22 mg/l to a maximum of 170 mg/l. Chemical oxygen demand was estimated to range from 20.0 mg/l to 16.32 mg/l during this investigation of the research work. The hardness contents of all five stations varied from a minimum of 179 mg/l to a maximum of 2004 mg/l. The calcium values ranged from 100 mg/l to 200 mg/l, when compared to other tanks. The magnesium concentration varied from a minimum of 10 mg/l to a maximum of 122 mg/l.

The carbonate alkalinity ranged from 10 mg/l to 40 mg/l at S1 and bicarbonate alkalinity ranged from 72 mg/l to 154 mg/l at S1. Similar pattern was also reported from station S2 to S5.

Table-1 : Comparative qualitative occurrence of Phytoplankton diversity at five study sites of Bada talab during 2014-2015

S.No.	Phytoplankton Classification	No. of species collected
1.	Bacillariophyceae	21
2.	Chlorophyceae	29
3.	Cyanophyceae	12
4.	Euglenophyceae	05
	Total	67

Table-2 : Comparative qualitative occurrence of Zooplankton diversity at five study sites of Bada talab during 2014-2015

S.No.	Zooplankton Classification	No. of species collected
1.	Protozoa	13
2.	Porifera	03
3.	Coelenterata	02
4.	Platyhelminthes	01
5.	Rotifera	14
6.	Ostracoda	04
7.	Copepoda	10
8.	Cladocera	12
	Total	59

Among the plankton, phytoplankton dominated the zooplankton at all the study sites. Total phytoplankton species were found 67 at this Talab and the zooplankton species 59 were also recorded at the Talab.

The species diversity indices of zooplanktons of tank water were calculated with the computational formula of Lloyd *et al.* (1968). The species diversity indices studied in different families was recorded that the minimum was found in dinophyceae (0) while the maximum was recorded in Chlorophyceae (5.11). On the population density studies, it is clear that macrozoobenthos were high in number at stations S₁ and S₂ and Lesser at station S₃. David (1984) correlated the macrobenthic density with BOD. In present study station S₂ and S₃ had high value of BOD with low population density of macrozoobenthos.

Table-3: Comparative qualitative occurrence of Macrozoobenthos diversity at five study sites of Bada talab during 2014-2015.

S.No.	Macrozoobenthos	No. of species collected
1.	Oligocheates	11
2.	Hirudinea	01
3.	Diptera	09
4.	Coleoptera	07
5.	Eplaemeroptera	05
6.	Hemiptera	02
7.	Mollusca	08
	Total	43

Total 43 species of macrozoobenthos including above seven groups were identified from Bada talab during 2014-2015.

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