HYDROBIOLOGICAL STUDIES OF MANIKDAUNDI DAM
FROM PATHARDI TAHSIL, (MS), INDIA.

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ABSTRACT

Water is one of the most essential substances available on earth. Water is needed for existence of life. It is essential and most abundant inorganic bimolecular in protoplasm of the living organism, it might be said that all life is aquatic. The water is principle external medium for an aquatic habitat. All living organism are composed of cell that contain at least about 65 to 75 percent of water. Organism can exist, where there are accesses to adequate supplies of water. Water is essential for life. The present paper deals with the result of water analysis of manmade reservoir Manikdaundi dam from pathardi Tahasil of Ahmednagar District, (MS), India.

Keywords: Organism, Manikdaundi dam, Reservoir, Parameters.

INTRODUCTION

The quality of available fresher is the problem of greater and immediate concern. The present hydrobiological studies are the first attempt to investigate the status of these four reservoirs of this region. This comprehensive work provides database for future development. The results of this work are expected to generate data forming basis for remedial measures in effective management of aquatic resources. This type of study is useful for various projects connected with limnology of reservoirs. Since agriculture and agriculture related sources are is income of this area, the assessment of surface water resources is very much important to decide the appropriate cropping pattern in particular locality. The present hydrobiological studies have been undertaken to explore this unexplored region with a view to bring about a comprehensive limnological account of these reservoirs. However there are no such studies from this region therefore present work is under taken.
Water sample collected in Manikdaundi dam located in southern part of Pathardi Tahasil, District-Ahmednagar (MS). The physiochemical parameters are Atmospheric Temperature (AT), Water Temperature (WT), Electrical Conductivity (EC), Total Dissolve Solid (TDS), Acidity (Acid), Alkalinity (Alk), Carbon dioxide (CO₂), Dissolve Oxygen (DO), Total Hardness (TH), were mentioned on monthly basis for period of one time annual cycle i.e. June 2011 to December 2011. The result revealed that the reservoir water is safe for human use.

STUDY AREA:

The present study was conducted for one year i.e. June 2011 to Dec 2011 through the monthly sampling of Manikdaundi reservoir. Manikdaundi dam located in western part of (19° 9’ N, 75° 10’ E) Pathardi Tahasil, which falls in Arangaon range of Balaghat, District: Ahmednagar. The reservoir is situated in southern part of Tahasil, which is hilly area with drought condition. The Manikdaundi reservoir is Minor irrigation project type of reservoir near Manikdaundi, about 12 km from Pathardi Tahasil. It is constructed during the year 1972 having height of 28.5 meter. The catchment area is 4.5 square miles, which stores 43.00 mcft water and area under submergence is 475 acres.

MATERIALS AND METHODS

The water sample was collected monthly. The physiochemical parameters are Atmospheric Temperature (AT), Water Temperature (WT), Electrical Conductivity (EC), Total Dissolve Solid (TDS), Acidity (Acid), Alkalinity (Alk), Carbon dioxide (CO₂), Dissolve Oxygen (DO), Total Hardness (TH) were carried out on field. The analysis was carried out by slandered method as described by Trivredy et al.¹⁵ (1987), and Maiti.⁹ (2001).
RESULTS AND DISCUSSION

<table>
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<th>Month</th>
<th>AT(^0)C</th>
<th>WT(^0)C</th>
<th>pH</th>
<th>Ecs/cm</th>
<th>TDS mg/l</th>
<th>ACID mg/l</th>
<th>Alk mg/l</th>
<th>CO2 mg/l</th>
<th>DO mg/l</th>
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Table- Monthly Average value of physic-chemical characteristics from of Manikdaundi reservoir. (Jan. 2011-Dec. 2011)

Graph:- Graphical monthly average value of physic-chemical characteristics from of Manikdaundi Reservoir. (Jan 2011-Dec 2011)

Temperature:

Atmospheric temperature of surface water ranges from 23.2\(^0\)C to 42.1\(^0\)C during the study period. Minimum (27.0\(^0\)C) and Maximum (42.1\(^0\)C) atmospheric temperature (AT) were recorded during the winter and summer season respectively. The water temperature was maximum during summer (39.1\(^0\)C) and minimum during winter (22.20\(^0\)C). The result
show that water temperature varies with the atmospheric temperature, similar result were found by Singhai et al.; \(^{14}\) (1990), also found by a direct relationship between air and water temperature. During the summer season, solar radiation is and clear sky condition enhanced the atmospheric temperature. Where the during monsoon season, rainfall and cloudy-skies brought down the atmospheric temperature and subsequently the water temperature to minimum by Govindswamy et al.; \(^{5}\) (1991).

**pH:**

*\(pH\) value of all sample lies in the range of 7.5 to 8.8 are slightly alkaline and suitable to irrigation purpose i.e. there is no alkalinity hazard. The \(pH\) (7.5 to 8.) during winter and higher value (8.1 to 8.8) during summer. Higher \(pH\) is normally associated with a high photosynthetic activity in water by King, \(^{8}\) (1970), Pearsall: \(^{10}\) (1930) and Zafer; \(^{18}\) (1966) observed that \(pH\) of the water appear to be dependent upon the relatives quantities of calcium carbonite and bicarbonites, being alkaline when disposal of wastes also bring about changes in the \(pH\).*

**Electrical Conductivity (EC):**

Electrical Conductivity (EC) is a measure of the salt content of water in the form of ion. EC value ranges from 189 µS/cm. to 294 µS/cm. With an average of 235µS/cm. The month wise value shows the minimum during December. The concentration of EC increase during summer and reaches maximum in July. The increase in EC during pre monsoon period may be due to evaporation. This is in agreement with result obtained by Sankar et al.; \(^{12}\) (2002).

**Total Dissolve Solid (TDS):**

Total Dissolve Solid (TDS) are various kinds of minerals substances present I water. Some dissolve organic matter may also contribute to total dissolve solid. TDSA value ranges from105 mg/l to 160 mg/ l. The season wise value shows the minimum during winter. The concentration of TDS in water gives an idea about suitability of this water for various uses including potable water by Trivedy; \(^{16}\) (1995). All the values of TDS were within the (500 mg/l) highest desirable limit by WHO; \(^{17}\) (1971).

**Acidity (Acid):**

Acidity is found maximum during winter and minimum during summer. Acidity value s of all sample lies in the ranges of 17.1 mg / l to 34.2 mg/l. Acidity of water is its quantitative capacity to react with a strong base to designated pH. Value of the acidity is about 200 mg/l Dwivedi and Sonar; \(^{3}\) (2004) and observed value are far less than this, indicating that acidity of sample water is a safe range.
Alkalinity (Alk):
Total Alkalinity shows seasonal variation in the study. Alkalinity value ranges from 224 mg/l to 284 mg/l. The value were high during the summer and low during winter. The fall in values during monsoon may be due to dilution of water. The high value of alkalinity indicates the presence of weak and strong base such as carbonate and hydroxide in the water body (Jain et al; 7, Abhasi et al; 11 1999).

Carbon Dioxide:
The carbon dioxide level fluctuated between 1.8/l to 2.5mg/l. The seasonal value was 3.82 mg/l in winter, 2.27 mg/l in summer and 3.22 mg/l in rainy season. Low value of free CO\textsubscript{2} as observed during summer are mainly because of CO\textsubscript{2} is utilized in the polysynthetic activities (Sahal and Sinha; 11 1969). The concentration increases in rainy season, because rate of photosynthesis being low due to cloudy weather (Sharma; 13 2004).

Dissolve Oxygen (DO):
The dissolve oxygen is most important factor in fresh water life. In present study DO is ranged between 3.4 mg/l to 4.3 mg/l. The average DO value were 3.56 mg/l in summer, 4.05mg/l in winter and 3.95 mg/l during rainy season The value of DO was obtained as following order, winter> rainy> summer season in present study. The result are similar and co related with investigation of Dwivedi and Pandey; 4 (2002). The phenomenon of re-oxygenation of water during monsoon may be due to the circulation and mixing by in flow water monsoon rains Hannam; 6 (1979). It further r progressed in winter may be due to the circulation by cooling and draw down the DO in water.

Total Hardness (TH)
Total hardness is a fundamental requirement for all life. The hardness (TH) of water range from 62 mg/l to 98 mg/l. for manikdaundi, reservoir during the study period.
Bhattacharyya et. al. 2 (2003) noted the total hardness of bore well water samples of Bhiloda taluka region North Gujarat ranged from 3.1 to 12.3 meq/L. The lowest value was recorded from Sunokh and the highest value from Kebava. The values of total harden of 77% samples are within the permissible range i.e. 30 mg/L (ICMR 975). This might be due to mixing of rainy water from surrounding region in the pond.

CONCLUSION
In Inland water study of lakes, ponds or dams usually seem to receive nutrients from bottom sediments. Interaction between sediments and over
water mass usually govern the productivity potential of water body. Human beings by their anthropogenic activity are making fresh water as dumping grounds for receiving solid and liquid waste from nearby human settlement. Eighty percent of water supply of cities finds its way to drainage system as domestic and industrial waste. Most of the precipitation takes place during rainy season which contributes substantially to the surface flow. During this period of time a heavy inflow of water results in to the natural aquatic systems and result in to exposing benthic substratain to main chain. Lakes are locked up systems and basin soil plays a predominant role in determining water quality. In tropical reservoirs phosphate level in water usually govern ecology of lakes. Usually there is a quick recycling and rapid turnover of nutrients in lakes.

ACKNOWLEDGEMENTS

We are thankful to the “Shri Dada Patil Rajale Shikshan Sanstha’s”, Hon. Rajivji Rajale, Rahulji Rajale, Secretary, Shri. Pawar J.R., and principal of D.P.R. college, Adinathnagar, Tal-Pathardi, Dist. Ahmednagar to providing laboratory and library facilities. I also thankful to my friends my family member to my encouragements and co-operation during completion of this research work.

REFERENCES


HYDROBIOLOGICAL STUDY OF MANMADE RESERVOIR
(MOHARI DAM) FROM PATHARDITAHASIL, (M.S.) INDIA

Prof. B.B. Tilekar
Research Scholar JJT University, Vidyanagari, Jhunjhunu, Rajasthan
Mob: 09881170142

Abstract

Water, air & soil pollution considerably reduce the biodiversity. Detergent used for washing of clothes is a major pollutant in all water bodies. Untreated domestic sewage flow into pond and water quality is affected. Indiscriminate use of pesticides and chemical fertilizer for boosting up agricultural productivity has substantially contributed to soil, water and air pollution. The pesticide residues move from croplands to streams and rivers through surface run off and then flow into oceans making water polluted in oceans. When water is polluted by various ways that affects flora and fauna of that area. The villagers mainly used it for irrigation and pisciculture activities. Water sample collected in Mohari dam located in southern part of Pathardi Tahasil, District-Ahmednagar (MS).

The physiochemical parameters are Atmospheric Temperature (AT), Water Temperature (WT), Electrical Conductivity(EC), Total Dissolve Solid(TDS), Acidity(Acid), Alkalinity(Alk), Carbon dioxide(CO\textsubscript{2}), Dissolve Oxygen(DO), Total Hardness(TH), were mentioned on monthly basis for period of one time annual cycle i.e. June 2011 to May- 2012. The result revealed that the reservoir water is safe for human use.

Key words: Irrigation, Mohari dam, Parameters.

Introduction

Artificial dams are constructed in some rivers for providing irrigation to crop fields. Dam is constructed over a large area causes biodiversity loss in that area. Beside this inundation of adjacent lands withes over flowing water from dam sometimes causes great havoc to the inhabitatants and also causes loss of biodiversity in surrounding area of the dam. However there are no such studies from this region therefore present work is under taken. The present paper deals with the result of water analysis of manmade reservoir Mohari dam from pathardi Tahasil of Ahmednagar District, (MS), India.

Study area:

The present study was conducted for one year i.e. Sup-2010 to Oct-2011 through the monthly sampling of Mohari reservoir. Kutterwadi dam located in western part of (19\textdegree 9’ N, 75\textdegree 10’ E) Pathardi Tahasil, which falls in Arangaon range of Balaghat, District: Ahmednagar. The reservoir is situated in southern part of Tahasil, which is hilly area with drought condition. The Mohari reservoir is Minor irrigation project type of reservoir near...
Kutterwadivillege, about 23 km from Pathardi Tahasil. It is constructed during the year 1972 having height of 28.5 meter. The catchment area is 4.5 square miles, which stores 43.00 mcf ft water and area under submergence is 475 acres.

The densities of diversity of zooplanktons are depending on water quality of reservoir. The zooplanktons is microscopic free living floating organism, which occupy a central position between the autotrophy and other heterotrophs and from an important link in aquatic fold web. Human life is living pattern without the presence of aquatic animals. All over the world all fresh water habitats lakes, ponds, reservoir, dams etc. The present paper deals with the result of water analysis of manmade reservoir Mohari from Pathardi Tahasil of Ahmednagar District, Maharastra State, India.

**Materials And Methods**

The water sample was collected monthly. The physiochemical parameters are Atmospheric Temperature (AT), Water Temperature (WT), Electrical Conductivity (EC), Total Dissolve Solid (TDS), Acidity (Acid), Alkalinity (Alk), Carbon dioxide (CO2), Dissolve Oxygen (DO), Total Hardness (TH) were carried out on field. The analysis was carried out by slandered method as described by Trivredyet al (1987) Maiti; (2001)

**Results And Discussion**

**Temperature:**

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**Conclusion**

In Inland water study of lakes, ponds or dams usually seem to receive nutrients from bottom sediments. Interaction between sediments and over water mass usually govern the productivity potential of water body. Human beings by their anthropogenic activity are making fresh water as dumping grounds for receiving solid and liquid waste from nearby human settlement. Eighty percent of water supply of cities finds its way to drainage system as domestic and industrial waste. Most of the precipitation takes place during rainy season which contributes substantially to the surface flow. During this period of time a heavy inflow of water results in to the natural aquatic systems and result in to exposing benthic substratain to main chain. Lakes are locked up systems and basin soil plays a predominant role in determining water quality. In tropical reservoirs phosphate level in water usually govern ecology of lakes. Usually there is a quick recycling and rapid turnover of nutrients in lakes.

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Fig: 1. Temperature(°C)  Month (Sup-2010 to Oct-2011)

Fig: 2. pH  Month (Sup-2010 to Oct-2011)

Fig: 3. Electrical Conductivity (EC) Month (Sup-2010 to Oct-2011)

Fig: 4. Total Dissolve Solid (TDS) Month (Sup-2010 to Oct-2011)
Fig: 5. Acidity (Acid) Month (Sup-2010 to Oct-2011)

Fig: 6 Alkalinity (Alk) Month (Sup-2010 to Oct-2011)

Fig: 7. Carbon dioxide (CO2) Month (Sup-2010 to Oct-2011)
**Fig: 8. Dissolve Oxygen (DO) Month (Sup-2010 to Oct-2011)**

**References**


