

CHAPTER – V
GENERAL SUMMERY
AND CONCLUSIONS

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Water is not only major component of environment but also the best solvent and a medium on which all organisms depend for their existence. A fresh water body, which fulfills a variety of human needs is full of value, only when if it is not abused and polluted. Water reservoir present at Triputi near Satara city in Maharashtra is present in the vicinity of Shrinath temple. This reservoir is old and historical importance built in 1743 and is the only source of water for the entire population (approximately 3000) of the village Triputi, Dist. Satara, Maharashtra. Triputi village is situated 13 km. east of Satara city.

In the present investigation an attempt has been made to evaluate the physico-chemical parameters and biotic components, including phytoplankton, zooplankton, fish fauna and present fishery status of fresh water, perennial reservoir at Triputi. This reservoir is named as “Gopal Sarovar” by temple management. The study was carried out for the period of Nov. 2006 to Oct. 2007.

Physico-chemical parameters were studied monthly to understand the reservoir ecosystem with seasonal variations in response to physico-chemical and biological factors during different seasons of the year. The interesting findings observed during the investigation period are summarized as below.

The temperature of the reservoir varies from 25.2⁰C to 28.5⁰C. There is gradual decline in the temperature of the water from September to January (2006 to 2007) and it increased till May (2007). The temperature of the water was clearly influenced by the seasonal changes in ambient temperature. The water transparency drops gradually after September 2007 and again it gradually increased and reached to maximum in May 2007 indicating not much variations in transparency through out year. ✓

The pH of water was observed to be in the range 7.8 to 8.2 for the period of investigation. Hydrogen ion concentration is an important factor in maintaining the bicarbonate and carbonate system of fresh water and contributes significantly to the formation of algal bloom. The pH was found to be positively correlated with dissolved oxygen. ✓

Dissolved oxygen content ranged from 11.63 mg/l to 14.08 mg/l. High values of dissolved oxygen were observed in rainy and winter seasons where as low dissolved oxygen content was observed during summer. Dissolved oxygen is essential for metabolism of all aquatic organisms and DO content is influenced by aquatic vegetation and planktonic population along with temperature and organic matter. High DO content in winter and rainy season was probably due to low water temperature and increased phytoplankton density. ✓

During the period of investigation free carbon dioxide was found drastically reduced in winter season and was mostly absent in the samples. Free CO₂ with higher values in summer and early rainy season not exceeding 10 mg/l in this fresh water body. Free carbon dioxide is generally recorded where dissolved oxygen content is low or absent. Hence free carbon dioxide content is an index of pollution. The observation indicated low to nil pollution level in the reservoir under study.

In the present investigation the highest chloride content was recorded 19.88 mg/l during rainy season and minimum chloride content was observed in winter season, 17.04 mg/l. Chloride in the natural water bodies are mainly due to discharge of waste water. Not much variations are observed in chloride values. Large contents of chloride in fresh water is an indication of organic pollution. The average 18.58 mg/l chloride content of the Triputi reservoir is well below maximum safe level of chloride content i.e. 250 mg/l for human consumption as potable water.

In the present investigation the hardness of water ranges from 104.75 mg/l to 151.75 mg/l which is well within the acceptable limit. Hardness has great effect on biotic diversity and also restricts the use of water. The total hardness values in the present study i.e. 133 mg/l were within the unobjectionable range (200 – 600 mg/l). Not much variations are observed in the total alkalinity during various seasons.

Phosphate and nitrates recorded in present investigation are in very small quantities i.e. 0.08 mg/l and 0.34 mg/l respectively. The phosphate more than 2 mg/l in open water indicates organic pollution (Pomeroy *et. al.*, 1965). As a nutrient excess phosphate stimulates development of algal blooms, from which blue green algae like *Microcystis* are toxic in nature. Phosphate and nitrate contents of this water reservoir are in acceptable limits. ✓

Phytoplankton and Zooplankton Identification :

In present study, the biota of the reservoir was surveyed during the period of investigation and listed. The phytoplankton was represented by 23 species whereas, zooplankton consists of 19 species. These species were observed throughout the period of investigation. In zooplankton samples, protozoans, rotifer, copepods and cladocerans species were observed.

Due to advancement of science and technology and by interference of human activities rural water reservoir are also being polluted by plenty of pollutants in the form of microvegetation or domestic effluents, which directly influence the biochemical status of the water reservoir. ✓

Present historic Triputi water reservoir is unique, showing almost no signs of pollution because of its maintenance. Triputi water reservoir provides ideal example as how to protect water reservoir by meticulous maintenance and can be used as only source of water for entire population of village which is about 3000.