

STUDY OF CHINCHPUR LAKE IN SANGAMNER TALUKA OF AHMEDNAGER DISTRICT OF MAHARASHTRA STATE, INDIA FOR ASSESSING ITS PISCICULTURE POTENTIAL

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ABSTRACT

Lake water can be used for various purposes. Fish rearing is one of the important possible activity for which it can be used. For assessing the aquaculture potential of any lake it is important to study its physicochemical parameters. In the present study water samples were collected from lake in Chinchpur village, Sangamner Taluka, District-Ahemadnagar, (M.S.), India. The physicochemical parameters like Alkalinity, Acidity, dissolved Oxygen, CO₂, Hardness, pH and temperature were studied. The study was also done to know the zooplankton diversity. It was found that alkalinity was in the range of 42 to 275 mg/l. It was lowest in the month of March i.e.42mg/l and highest 27mg/l in the month of January. . Acidity was in the range of 35 to 62mg/lit. . Dissolved oxygen was in the range of 8mg/l to 9.2 mg/l. It was lowest in December i.e.6.5mg/l and highest in the month of September i.e. 9.2 mg/l. .CO₂ was in the range of 35mg/l to 72mg/l. Hardness was in the range of 45 to 135mg/l. pH was in the range of 6.4 to 8.2. . Temperature was in the range of 26 to 30⁰ C it was lowest in December i.e.26⁰ C and highest 30⁰ C in the month of March.

KEY WORDS: Pisciculture, Chinchpur Lake

INTRODUCTION

Lakes are very important sources of surface water. In agrobased state means where rural economy is mainly depend on agriculture and dairy. These two sectors provide employment to the majority of the people. For drinking water also for human population and livestock several villages are dependent on natural or artificial lakes. In Vidharbha region of Maharashtra there are several Malgujari lakes which are useful for fish culturing also. In several other places in India lakes are sources of water for aquaculture practice which generate the employment for the local people. Therefore it is very important to do research on lakes. For the water management as well as for its study for water quality and for assessing its aquaculture potential it is necessary to know its physicochemical parameters. Several researchers has done the work on lakes. Ahmednager district in Maharashtra is also a agro based district. The irrigation is mainly by rivers Godavari, Pravara, Mula, Adhala. Three major dams viz. Mula dam on Mula River near Rahuri, Bhandardara near Shendi and Nilvande near Nilvande village on Pravara. Small dams like Ozar on Pravara near village Ozar and on Adhala near Hivar gaon Amre village and few other medium and small dams are useful for the irrigation and drinking. Due to less rainfall for last few consecutive years even in catchment areas of these rivers drought conditions are prevailing. If the sustainable maintenance of the lake water is done they can be great sources. The present study is done on the Chinchpur lakes in Sangamner taluka of Ahmendnager district. From Ozar dam two canals namely the left canal and right canal of Pravara river are supplying the water for irrigation and drinking purpose. Chinchpur Lake is receiving water by the left canal of Pravara river during rotation of water. Even though other natural lakes do not have water during summer season Chinchpur have water during most of the days throughout the year. Many researchers (Jagtap *et al.*, 2012; Shaikh *et al.*, 2010; Jawale and Dama 2010. 2010a, 2012; Shaikh Yasmeen, 2012; Ganeshwade *et al.*, 2012; Bhamare *et al.*, 2012; Shaikh Afreen, 2014) have done work on, toxicity, piscicidal activity, water quality assessment by studying its physicochemical parameters, microbiological parameters, phytoplankton diversity, zooplankton diversity. Knowledge of seasonal variations in such parameters is also necessary for good Pisciculture practices. Dubey *et al.*. 2013 carried out the study of physico-chemical properties of Sahapura Lake, Bhopal.

Patel A.C. and Patel R. S. 2012 have done Comparison of the physicochemical parameters of two lakes at Lodra and Nardipur under biotic stress. Gholami 2014 studied the Identification and Investigation of the Seasonal Variations of Zooplankton in Zarivar Lake-Kurdistan, Iran. He also studied physicochemical parameters of the lake. Most of the zooplankton genera identified here was observed all year round. Vijaykumar *et al.* (2006) studied the water quantity

and quality of Mansor lake located in the Himalayan foothills in the state of Jammu and Kashmir in India. Magarde *et al.* (2011) studied limnology of upper lake of Bhopal (India) and determined the correlation between various water quality parameters and limnological characters like temperature, pH, Conductivity, Total hardness, TDS DO, BOD, COD. Roksana *et al.* (2012) studied physical and chemical factors while studying limnology of conserved manmade lake in Bangladesh. Ustad *et al.* (2012) studied Physicochemical Analysis of Triveni lake water of Amravati district in M. S. India. Ramesh and Krishna (2014) has done the assessment of physicochemical parameters of Bellandur Lake, Banglore, India. Samrat *et al.* (2012) studied physic chemical and biological status of Kagzipura lake near Aurangabad. Paul (2013) has done limnology of Ohana Lake in Nigeria. Dalvi and Ranjanna (2015) has done Water quality assessment and Biodiversity study of Phytoplanktons in Angol Water body of Belagavi (Karnataka). From their study they concluded that Angol water body is less polluted by organic waste and is unfit for drinking purpose but can be utilized for re-creation activities, domestic usage, agriculture and fish rearing. Dalvi and Rajanna (2015) studied the physicochemical parameters and Biodiversity of Freshwater algae in Kanbargi lake of Belagavi (Karnataka). From their study they observed the presence of pathogenic bacteria and concluded that the water of the lake is less polluted but unfit for drinking purpose.

MATERIALS AND METHODS

Water samples were collected from both the lakes in the months of August, September, December, January and March. The temperature was recorded by using thermometer; pH was recorded by using Hanna pen pH meter. The oxygen was fixed by using Winkler's reagent in DO bottles. Other water parameters were estimated by using method given by Maiti 2016. Observations were done for presence of fauna in these lakes. Water samples were also collected and observed for the presence of Zooplanktons.

RESULTS AND DISCUSSION

The results are shown in Table 1; Graph 1; Figure 1 and 2.

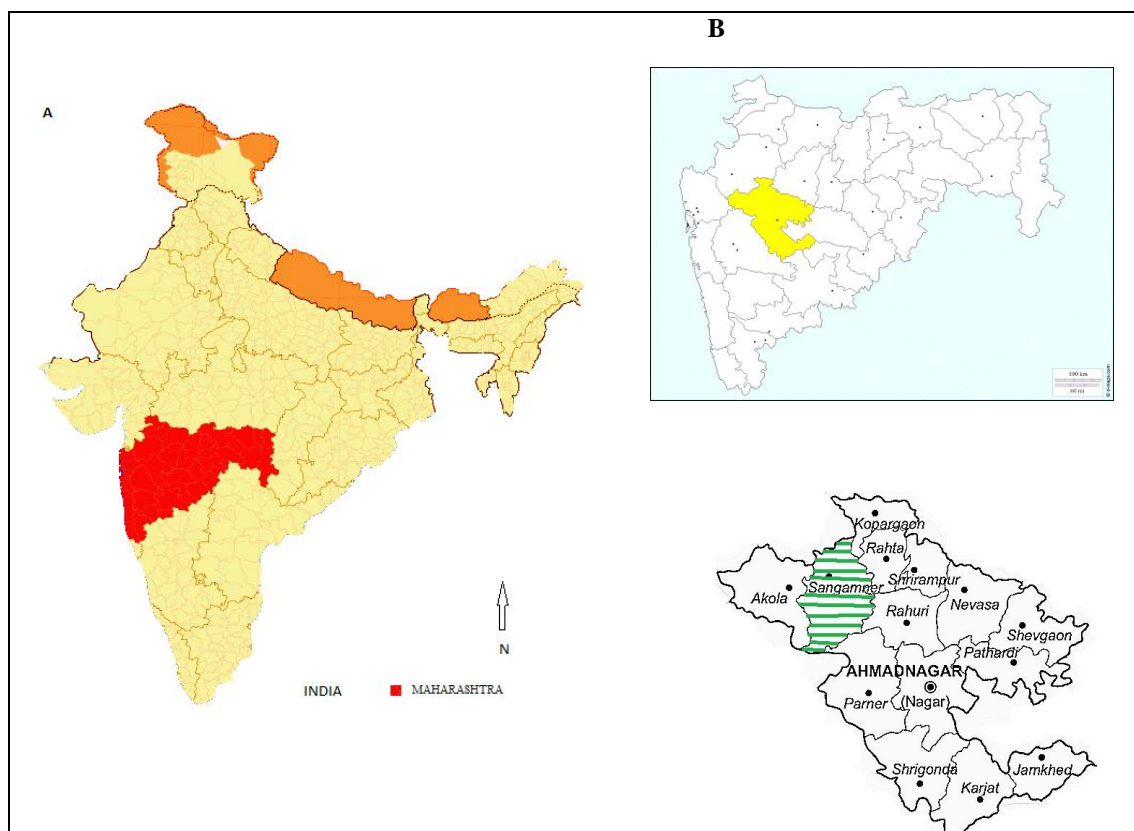


Figure 1. A- Map of India
B-Map of Maharashtra

C- Map of Ahemadnagar District (Green Color indicates: Sangamner Taluka)



A

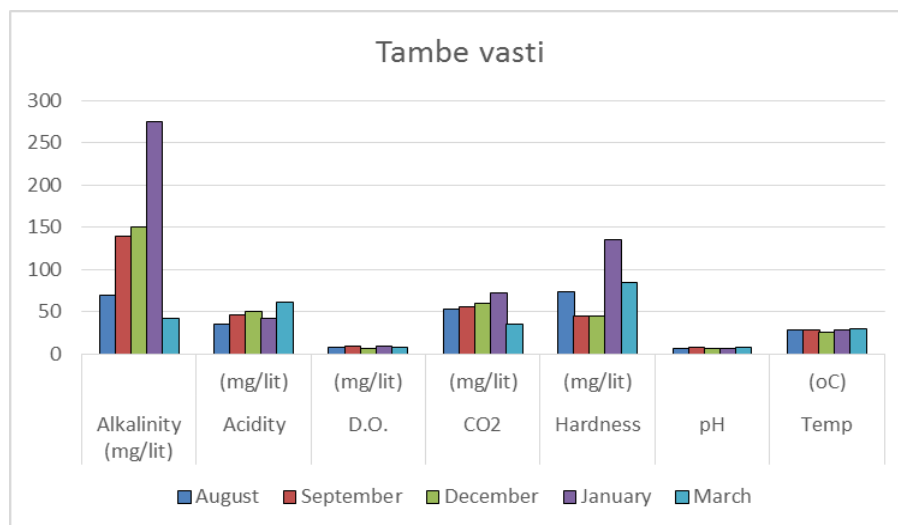


B

Figure 2. Chinchpur Lake: Sampling location A and B

Table: Shown the results of physicochemical parameters

Month	Alkalinity (mg/l)	Acidity (mg/l)	Dissolved Oxygen (mg/l)	CO ₂ (mg/l)	Hardness (mg/l)	pH	Temperature °C
August	72	35	8	52.8	74	6.4	28
September	140	47	9.2	55.6	45	8.2	28
October	150	50	6.5	60	45	6.8	26
December	275	42	9.1	72	135	7.1	29
January	42	62	8.1	35	85	7.8	30



Graph 1. Shown the results of physicochemical parameters

Alkalinity was in the range of 42 to 275 mg/l. It was lowest in the month of March i.e. 42mg/l and highest 275 in the month of January. In August 72mg/l, September it was 140mg/l, in December 150mg/l. Acidity was in the range of 35 to 62mg/l .It was 35mg/l, 47mg/l, 50mg/l , 42mg/l and 62mg/l in the months of August, September, December, January and March respectively. Dissolved oxygen was in the range of 8mg/l to 9.2 mg/l. It was lowest in December i.e.6.5mg/l and highest in the month of September i.e. 9.2mg/l. It was 8mg/lit in August, 9.1 in January and 8.1 in the month of March.CO₂ was in the range of 35mg/lit to 72 mg/l. It was 52.8 mg/l, 55.6mg/l, 60 mg/l, 72mg/l and 35mg/l in the month of August, September, December, January and March respectively. Hardness was in the range of 45 to 135mg/l. It was 74mg/l, 45mg/l, 45 mg/l, 135mg/l and 85 mg/l in the month of August, September, December, January and March respectively. pH was in the range of 6.4 to 8.2. It was 6.4, 8.2, 6.8, 7.1, 7.8 in the month of August, September, December, January and March respectively. Temperature was in the range of 26 to 30°C it was lowest in December i.e.26 °C and highest 30° C in the month of March. In August and September it was 28° C and in the month of January it was recorded 29 ° C. Few phytoplanktons, zooplanktons and aquatic algae were also present throughout the year which is important components of aquatic food web.

DISCUSSION

Studies On physico-chemical parameters and zooplankton abundance in Kolleru Lake, Andhra Pradesh, India was carried out by Reddy *et. al.* 2012.They found significant variations in water quality and zooplankton abundance in different seasons. They observed that the total zooplankton population was low in summer, moderate in pre monsoon, monsoon and high in post- monsoon. Surve *et. al.* 2004 studied physico chemical parameters of Barul reservoir Nanded district with respect to fish production. Dalvi and Rajanna 2014 has studied the Biodiversity of Phytoplankton and

Physicochemical water analysis in Fort lake of Belgaum (Karnataka). From their study they concluded that water of Fort lake is polluted by organic waste and is not suitable for drinking purpose but can be utilized for fish culturing and recreational purpose. Review of literature reveals that polluted water cannot be used for drinking or fish rearing purpose. But unpolluted water can be used for fish culturing. Soni and Ujjania (2014) have done assessment of Water Quality Index of Vallabhsagar reservoir of Gujarat, India and found that water was good, non-polluted and suitable for fish culture. In the present study it was observed that water of Chinchpur Lake is not getting polluted by any anthropological activity. Much human interference was not observed. Therefore it is suggested that this lake apart from source of water for irrigation can be used for aquaculture practices especially fish rearing. The fishes e.g. Indian Major Carps *Labeo rohita*, *Catla catla* and *Cirrhina mrigla* can be reared successfully. It can generate local employment and food source also.

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