International Journal of Global Science Research **ISSN: 2348-8344 (Online)**
Vol.2, Issue 3, April 2015, pp. 164-167
***Available Online* at www.ijgsr.com**

Research Article

Water quality and plankton diversity studies of halali reservior

Shehnaaz Khan*, and Rashmi Vyas
Department of Zoology, Government M.L.B Girls P.G., College, Bhopal - 462002 India.
*Corresponding author, Email: shehnaazk5@gmail.com

Received: 15/01/2015
Revised: 07/03/2015
Accepted: 20/03/2015

Abstract: Water quality status and diversity of plankton of Halali Reservoir was studied in this work. Physico-chemical parameters of four different stations were found not much diverse to last found value of different researchers. Ecological parameters like Dissolved Oxygen, pH, Nitrate, Phosphate, Sulphate Free CO_2, TDS, Temperature, Alkalinity, Total Hardness, Calcium Chloride, BOD and COD was also studied and found that Halali reservoirs are suitable for aquaculture and irrigation purposes. Plankton diversity is well suited for the easy ecosystem of the dam.

Keywords: Water quality, Plankton, Halali Reservoir, Diversity.

INTRODUCTION

Halali Reservoir is one of a major water body of central india. This is known as Samrat Ashok Sagar Project. Agriculture and fishing are the main source of livelihood for the people of these areas and this dam fulfill the demand of the people of this area. Species within a fish community and other species or life forms across aqua regimes are give their attendance in Halali reservoir (Tamot *et al.*, 2008). The Halali reservoir in its later part in vidisha district is known as Bais river. Water from river and drainage waste of Bhopal city through Patra Nallah joins the reservoir from South East and North East direction. Besides domestic discharge Nallah contains wastes from textiles, distillery and straw product factory of Bhopal are poured in Halali Reservoir Iqbal et.al. (2002). Considering the importance of fresh water resources in inland fishery, number of studies had been conducted in various aspects of dams and reservoir fisheries.

The present investigation conducted on physio-chemical analysis of Halali reservoir was to determine quality of the water body Baskaya (1937). Site located for such study was near Bhopal as site (H1) situated between, 23*30.245'North latitude and 77*33.062'East longitude and middle site (H2) situated between23*30.068'latitude North and 77*32.842'East longitude and saluj site (H3) 5km away from the Halali reservoir situated between 23*30'132'North and 77*33.168'East longitude and Down site (H4) situated between 23*30.134'North longitude and 77*33.180'East longitude of

International Journal of Global Science Research **ISSN: 2348-8344 (Online)**
Vol.2, Issue 3, April 2015, pp. 164-167
***Available Online* at www.ijgsr.com**

Halali Reservoir. Plankton have diverse group of organisms that live in the water column and cannot swim against the flow of water. Planktons are the major crucial source of food to many large aquatic organisms, such as fish in the water body (John, 2012). Water quality and plankton diversity of Halali dam reservoir needs to study their health status and need to make comparison with last decade studies Shukla et. al. (1989).

MATERIAL AND METHOD

Study site: Present study of Halali reservoir which is geographically located at 23'30 North latitude and 77'30 East longitude. Thesesampling stations are located in the centre of Halali dam Sudhira and Kumar (2000). The dam site is located both in the Raisen and Vidisha districts of Madhya Pradesh. It is about 40 km away from the Bhopal is considered as a test case.

Analysis: Collected samples were analyzed for a number of physico-chemical parameter. The parameters include, pH, Dissoloved Oxygen, Free CO_2, Total dissolved Solid,Total Hardness, Tempreture,Calcium,Chlorid, Alkalinity, BOD, COD, Nitrate, Phosphate, Sulphate and was studied according to APHA (1998), Adoni (1985).

RESULTS AND DISCUSSION:

Mean value of water quality of Halali reservoir and guidelines of APHA (1998) has been compared and summarized in table no.1.

Table-1 Observation of Halali Reservoir

S.NO.	Parameter	H1 (Dam-site)	H2 (Mid-site)	H3 (Saluj-site)	H3 (Down-site)
1.	pH	7	7.0	7.5	6.5
2.	Dissoloved Oxygen	3.5 mg/l	2.8 mg/l	3.2 mg/l	4.5mg/l
3.	Free CO_2	3 mg/l	4.5 mg/l	3.5 mg/l	8.5 mg/l
4.	TDS	188 ppm	159 ppm	153 ppm	176 ppm
5.	Total Hardness	2.5 mg/l	2.0 mg/l	1.6 mg/l	2.1
6	Temperature	147*C	120*C	21.6*C	23.3*C
7	Calcium	3.2 mg/l	2.8 m/l	3.5 mg/l	4.9 mg/l
8	Chloride	1.5 mg/l	2.5 mg/l	2.1 mg/l	1,8
9	Alkalinity	3.5 mg/l	1.2 mg/l	0.5 mg/l	1.2 mg/l
10	BOD	4.5 mg/l	3.8 mg/l	4.1 mg/l	4.0 mg/l
11	COD	12 mg/l	9.8 mg/l	10 mg/l	11.5 mg/l
12	Nitrate	0.21 mg/l	1.5 mg/l	0.15 mg/l	1.2 mg/l
13	Phosphate	0.25 mg/l	1.10 mg/l	2 mg/l	2.1 mg/l
14	Sulphate	7.2 mg/l	7.0 mg/l	6.2 mg/l	6.9 mg/l

sampling stations were located in the centre of Halali dam. The water samples were collected in sterile plastic containers from the surface. Water samples were filtered through plankton net of different sizes and a total 10 ml was concentrated for every sample. The samples were collected, they were fixed (formalin with a

concentration of 2 to 5% methyl alcohol / lugol`s solution) and preserved at the earliest were then preserved for zooplankton and phytoplankton studies.

Phytoplankton and zooplankton of Halali Reservoir: Distribution of phytoplankton and zooplankton species of different sampling stations of Halali Reservoir during the study period is presented in table 2 and 3. The total of 446 phytoplankton species observed in which water body of four different station like Dam site (H1) 178 species Middle site (H2) 132 species Saluj site (H3) 74 species and Down site (H4)58 phytoplankton species found in this reservoir like were Spirogyra, Zygnema, Peridinum, Ulotherixelosira,Vaucheria, Oedogonium, Actinostrum species identified during the study period in Halali reservoir Pejler (1983). Total of 115 zooplankton species were identified in Halali Reservoir to four different station like 48 species found in Dam site (H1) 26 species from Middle site (H2) and 24 species from Saluj site (H3) and 17 species from Down site (H4) found the zooplankton in this reservoir. All the species found in this place is validate the diversity of earlier studies done for different freshwater by Kausik *et al.,* (1992).

Table2: Phytoplankton diversity of different location of Halali reservoir.

Sampling station	Chlorophya	Bacillariophyta	Cyanophya	Pyrrophyta	Total
H1 (Dam-site)	59	46	40	33	178
H2 (Middle-site)	45	33	31	23	132
H3 (Saluj-site)	25	20	19	14	78
H4 (Down-site)	20	15	12	11	58
Total	149	114	102	81	446

Table 3: Zooplankton diversity of different location of Halali reservoir.

Sampling station	Rotifera	Cladocera	Copepoda	Ostracoda	Total
H1 (Dam-site)	15	11	13	9	48
H2 (Middle-site)	8	5	7	6	26
H3 (Saluj-site)	8	5	5	6	24
H4 (Down-site)	5	5	4	3	17
Total	36	26	29	24	115

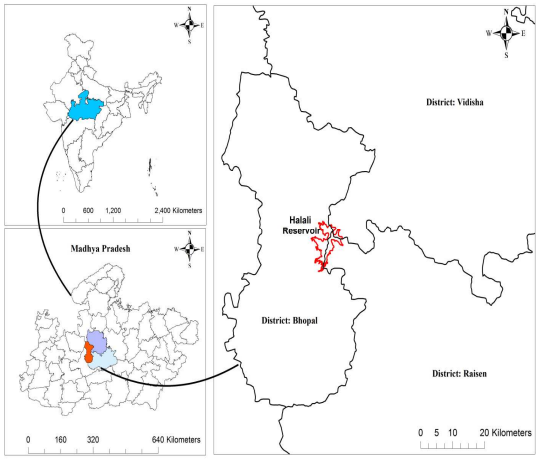

Figure 1. Position of Halali Reservoir on map of India

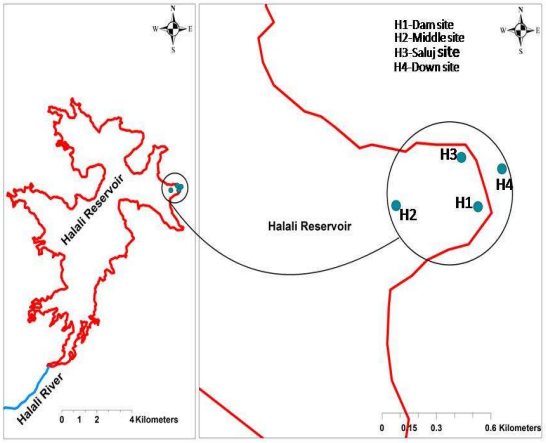

Figure 2. Location of Study area (Halali reservoir

REFERENCE:

Tambot P., Mishra R., and Somdutt. (2008) Water Quality Monitoring of Halali Reservoir with Reference to Cage Aquaculture as a Modern Tool for Obtaining Enhanced Fish Production. Proc. Taal 2007: The world lake conference. 318-324.

Iqbal S.A., Masood A., Mohd. Ibrahim and S.F. (2002) Physico-chemicalstudies of Halali River Reservoir with special reference of water quality. Orient. J. Chem. 18(1), 151-154.

Baskaya M.M. (1937) Detection and measurement of stream pollution U.S. Evaluation of physical, chemical and microbiological properties of lake Ulubat, Turke J. Environ. Biol.. 29, 205-210.

John D. (2012) Microzooplankton: the microscopic (micro) animals (zoo) of the plankton. Date de création: November 2012 Suivez toute l'actualité de l'Institut océanographique sur

Shukla S.C., Kant R., and Tripathi B. D. (1989) Ecological Investigation on physico-chemical characteristics and phytoplankton productivity or River Ganga at Varanasi. Geobios. 16, 20-27.

Sudhira H.S., and Kumar V.S. (2000) Monitoring of lake water quality in Mysore City. International Symposium on Restoration of Lakes and Wetlands: Proc. Lake. pp. 1-10.

APHA (1998) Standard methods for the examination of water and waste water (20th edition). America Public Health Association. pp. 10-161.

Adoni A.D. (1985) Work book on limnology. Pratibha Publishers Sagar. pp.1-126.

Pejler B. (1983) Zooplanktic indicators of trophy and their food. Hydrobiologia. 101, 111–114.

Kausik S., Agarkar M.S., and Sakesena, D.N.(1992)Distribution of phytoplankton in river water in Chambal area, MP. Bio-nature. 12,17.