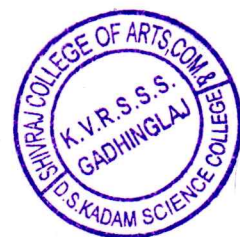


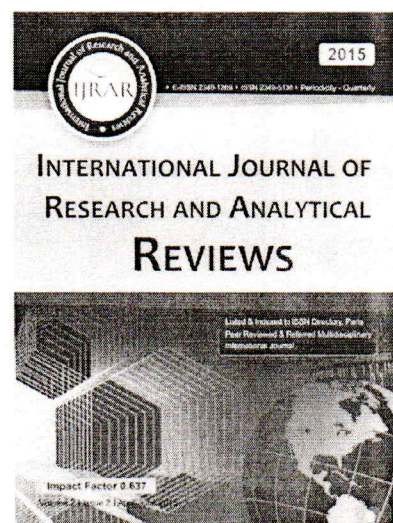
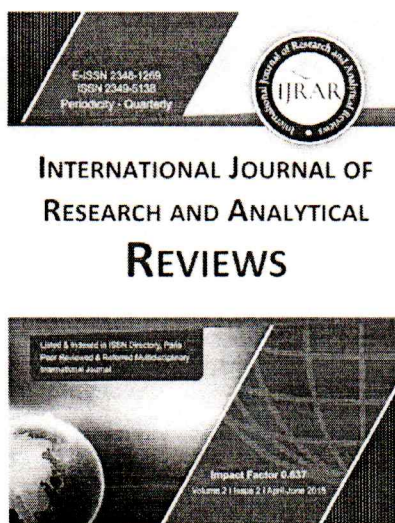
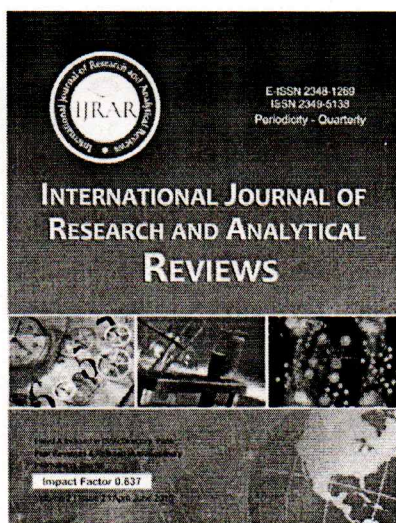
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# HYDROBIOLOGICAL STUDY OF CHIKOTRA DAM BHUDARGAD, DIST:- KOLHAPUR (M.S.)

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**ABSTRACT:** The study of physicochemical parameters of water from Chikotra dam Bhudargad was done during June 2017 to May 2018. The analysis shows that water from Chikotra dam shows seasonal variations. In present investigation it is found that dam water is slightly alkaline, moderately hard and with low value of dissolved oxygen. Water temperature varied from 19°C to 39°C being highest in the month of May and lowest during the month of November. The pH was found to be varying from 7.0 to 8.1 which were slightly alkaline. The Transparency values ranged between 70 cm to 120 cm. The TDS fluctuated between 100 to 165 mg/lit. In the month of May it was 100 mg / lit and in the month of June it was 165 mg/Lit. During May least DO was recorded 5.0 mg/lit and maximum DO was seen during rainy season June i.e. 8.5 mg/l. Total hardness ranged between 80 mg/l and 120 mg/l. Other parameters are also given in detail. The diversity of phytoplankton and zooplanktons was also observed in the Chikotra dam.

**Keywords:** Chikotra dam, Zooplankton, Physicochemical parameters.

## I. Introduction

Chikotra dam is constructed near village Zulpewadi and Begawade, which are about 15 km east to Bhudargad city. Water from this dam is being utilized by peoples of villages on the bank of the river Chikotra. Being less resources of water, this dam generally fills up to 50 to 60 percent every year. The water from this dam is used for drinking and agriculture purposes. From December water mainly used for drinking purpose because water level remains 20 to 25 % only. Since water is used for drinking purpose it is essential to check the physicochemical properties of the water in every season.

Physicochemical parameters strongly influence the aquatic organisms and many of them serves as ecological indicators of water quality (Mishra 1999). Ecological studies generally involve analysis of physicochemical parameters and reflects on status of the environment in connection with both biotic and abiotic factors (Munawar 1974). This is helpful in utilizing the resources in right manner in order to avoid the pollution and conserve the prosperity of biodiversity. Since there is constant interaction and exchange of mass and energy in an ecosystem, the quality of water becomes an important and dynamic entity. That is exactly why the ecological studies have been done on water from Chikotra dam during period June 2017 to May 2018. Similar studies were done in India by Dwivedi and Pandey (2002), Hosmani et al. (1999), Kaur et al. (2000) and in Maharashtra by Kolekar and Lohar (2012).

**Table - 01. Salient features of Chikotra dam Bhudargad.**

1	Name of the Dam	Chikotra (Kolhapur) dam
2	River	Chikotra
3	Nearest City	Bhudargad
4	District	Kolhapur
5	State	Maharashtra
6	Basin	Krishna
7	Purpose of Dam	Irrigation
8	Year of Completion	2001
9	Operating and maintenance agency	WRD, GOM
10	Seismic Zone	Seismic Zone -III
11	Type of Dam	Earthen
12	Length of Dam	983 meter
13	Maximum height above foundation	64.08 m
14	Total volume content (TCM)	5109
15	Spillway capacity	393 cumec
16	No. of Spillway Gates	3

## II. MATERIALS AND METHODS

Total ten physicochemical parameters were considered monthly during the study period of one year from June 2017 to May 2018. Temperature, PH and transparency of water studied on the spot. Selected dam was visited 1st day of every month. At the sampling site, temperature is measured with thermometer. The pH was measured on the spot using pH paper and later confirmed in the laboratory using digital pH meter. Transparency was measured with the help of secchi disk. The water samples were brought to the laboratory for physicochemical analysis in separate plastic cans. Samples were collected for analysis in laboratory to find remaining parameters. Analysis of parameters was carried out according to the standard methods. The dissolved oxygen (DO) content of water was determined and primary productivity was measured. The seasonal variations in terms of primary productivity of the selected site of Cikotra dam in Kolhapur District were determined. The values are expressed as mg/Lit. for DO, TDS, and Cm for Transparency.

## III. RESULTS AND DISCUSSION

In Chikotra dam it is clear that with increase in water temperature, DO and primary productivity decreases. Similarly it indicates that higher water temperature decreases primary productivity. Because of the shallowness of the lake, the temperature of water varies, as slightly lower or higher than those restricting maximum photosynthetic activity of phytoplankton. The records show variation in temperature, light intensity, DO and primary productivity during the day time in the month of June 2017. The Transparency values ranged between 70 cm to 120 cm. In rainy season transparency decreases, in the month of June it measures up to 70 cm and during summer it becomes 120 cm in the month of May. The TDS fluctuated between 100 to 165 mg/lit. In the month of May it was and 100 mg / lit and in the month of June it was 165mg/Lit.

The experiments were conducted between 10.00 am to 5.00 pm. Temperature and light intensity remained changing during the this period. After 2.00 pm the light intensity and temperature decrease, but DO level increased in the evening. However, the primary productivity remains high in the morning hours and low afterwards. It was perhaps due to low light intensity. The variation in temperature and light intensity shows variation in primary productivity. Roughly the change in primary productivity was parallels to the change in temperature. The maximum water temperature was noted (39°C) in May and minimum (19°C) in November. The present study indicates that temperature and Light intensity both vary during the experimental period. There are records of variations in dissolved oxygen and primary productivity (mg/l/h) for selected site.

There selected site from Chikotra dam in Kolhapur District (Maharashtra), The DO values ranged from 5.0 mg/l to 8.5 mg/l during all seasons. The highest value of 8.5 mg/l is recorded in monsoon and lowest 5.0 mg/l in summer. In general DO is lower during summer. The lower level of DO during summer may be due to higher temperature. The utilization of oxygen by micro-organisms found high levels of dissolved oxygen during monsoon. The selected site in dam show highest primary productivity during summer season. The pH recorded at that time goes to 8.1 which is slightly alkaline (Shown in Tables 2.) The present study was done on the ecological features of the tank special reference to phytoplankton and zooplankton population. Presence of abundant phytoplankton and zooplankton indicates high level of productivity of the dam. (Nazneen.S.1980) The physicochemical parameters of the reservoir are well under the prescribed limits for inland surface water and can be used for drinking and for irrigation purpose. Graph 1: Total Number of Insects Attracted Towards Different Light Traps

**Table - 02: Monthly variation in physicochemical parameters of chikotra dam in kolhapur district from June 2017 to May 2018.**

Months	Air Temp.	Water Temp.	PH	DO	Dissolved solids	Trans parency	Alkali nity	Chlorides	Hard ness	Free carbon dioxide
June 17	27	21	7.1	8.5	165	70	20	4.0	20	2.0
July 17	27	20	7.2	10.5	150	80	30	5.5	25	2.5
Aug. 17	28	20	7.0	9.5	140	85	30	8.5	34	2.2
Sept. 17	29	22	7.9	9.6	120	87	45	6.0	38	3.0
Oct. 17	26	20	7.5	9.7	120	75	50	12	39	3.4
Nov. 17	29	19	7.6	10.1	120	90	60	18	33	2.9
Dec. 17	29	20	7.3	8.5	130	100	75	22	40	3.0

Jan. 18	32	25	7.4	7.8	115	99	79	33	60	3.7
Feb. 18	32	28	7.5	7.7	115		80	30	64	3.9
March 18	40	32	7.5	7.8	110	88	99	38	80	4.0
April 18	40	32	8.0	6.5	110	89	110	40	99	4.2
May 18	42	39	8.1	5.0	100	120	120	46	114	4.6

Table - 03. Physicochemical parameters

Sr. No.	Parameters	Range
1	Air Temperature	26 to 42 <sup>o</sup> c
2	water temperature	19 to 39 <sup>o</sup> c
3	PH	7.0 to 8.1
4	DO	5.0 to 8.0 5mg / Lit.
5	Total dissolved solids	100 to. 165 mg / Lit
6	Transparency	70 to 120 cm
7	Total alkalinity	20 to 120 mg / Lit
8	Chlorides	4.0 to 46 mg/ Lit.
9	total hardness	20 to 114 mg / Lit.
10	Free carbon dioxide	2.0 to 4.6 mg / Lit.

#### IV. ACKNOWLEDGEMENT

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