

## PUBLICATIONS

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Sr. No.	Title of research paper	Nat/international	Impact factor	Name of the journal	Yr. of pub.	Citation index / hinde x	Institution affiliation
	2019-2020						
1	ENVIRONMENTAL STATUS OF DOMARI RESERVOIR TQ. AND DIST. BEED	NAT	0000	IJRAR Mar-2020 Vol.7	Mar-2020 Vol.7	---	----
2	ROLE OF FISHERY FOR WOMEN EMPOWERMENT - CHALLENGES AND RIGHT	NAT	6.3999	AJANTA VOL.IX ISSUE-I JAN TO MAR 2020	JAN TO MAR 2020	----	-----
3	PHYSICOCHEMICAL CONDITION OF DOMARI DAM	NAT	7.139	CURRENT GLOBAL REVIEWER SPL. ISSUE 22 VOL. 3 FEB 2020	FEB 2020	----	-----
	2020-2021						
1	DIURNAL FLUCTUATIONS IN SOME PHYSICOCHEMICAL FACTORS AT DOMARI DAM TQ. AND DIST. BEED	NAT	0000	Life. Sci. Bulletin Vol.17 (1&2) 2020	2020	-----	-----
2	HYDROBIOLOGY OF DOMARI DAM DIST. BEED	NAT	0000	Life. Sci. Bulletin Vol.17 (1&2) 2020	2020	-----	-----
3	AQUA POTENTIAL OF DOMARI DAM TQ. AND DIST. BEED	NAT	6.179	IJIRMF-31-01-2021-	2021	-----	-----

## 2) Book Publication-

1. FISH CULTURE PRACTICES FOR ECONOMIC PROSPERITY- (ISBN-978-93-86016-73-7)
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## DIURNAL FLUCTUATIONS IN SOME PHYSICO-CHEMICAL FACTORS AT DOMARI DAM TQ AND DIST. BEED (M.S.)

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**ABSTRACT :** Domari dam is a medium reservoir with 110.80 sq/km hectares water spread area. The dam is constructed at village Domari in 1995. The dam is present on Beed Ahmednagar road 15 km away from Beed district and 0.5 km from Domari village. Fishermen's co-operative society uses this dam water for fisheries activities. The water of this dam is also used for irrigation and drinking purpose. Diurnal changes in temperature, pH, dissolved oxygen content, carbon dioxide content were estimated. Changes are discussed in the text.

**Key words :** Diurnal fluctuations, Physico-chemical factors.

### INTRODUCTION

Dam constitutes an important inland fishery and also serves as an storage for the surface run of water various activities such as irrigation, power generation, fisheries etc. and as a means of providing employment to a sizable section of these water bodies, basic research on reservoir productivity is essential. This will help to increase production, potential and to set up target for fish production. Studies on the physico-chemical changes are helpful to find out suitability of water for fish culture and pollution status for the reservoir. Diurnal changes in physico-chemical factors from Indian limonitic environments have been studied. Ganapati (1962), George (1966), Dobriyal & Singh (1981), Sharma & Bhatt (1985), Panda *et al.* (1991), Sahu *et al.* (1991) and Shekhar *et al.* (1993).

Many aquatic organisms exhibit diurnal rhythms in their activities. The factors like, light, temperature and food are responsible for such activities. Domari dam is large minor irrigation tank, used for the fisheries activity. The details about the diurnal changes of this tank are not available, hence present work is undertaken to find out diurnal changes of some physico-chemical parameters *i.e.* temperature, pH, dissolve oxygen and free Carbon dioxide for 24 hours in the month of November, 2019.

### MATERIAL AND METHODS

For the estimation of diurnal changes of temperature pH, DO<sub>2</sub> and CO<sub>2</sub>, spot 'A' is selected near sluice gate. Changes were observed for 24 hours on date 2-3 November, 2019 from 6.00 am to 6.00 am. Trivedi and Goel (1986) methods were used for the estimation of dissolve oxygen and free carbon dioxide. Air and water temperature was recorded using the standard thermometer and pH was recorded by using pH meter.

### RESULTS AND DISCUSSION

Diurnal Changes in temperature, DO<sub>2</sub>, Free CO<sub>2</sub> and

pH are shown in Table.1. Air temperature ranged from 22°-32°C. Air temperature increased from morning up to 2.00 pm. Then decreased onward. Minimum water temperature is 18°C and maximum is 23°C. Temperature increased from morning up to 3.0 pm and it decreased afterwards. Dissolved oxygen content ranged from 8.2 mg/lit to 9.0 mg/lit. It increased up to 4.0 pm and then it decreased later on. Free carbon dioxide content ranged from 0.1 mg/lit to 1.0 mg/lit. Minimum carbon dioxide was observed in evening hours and maximum in morning hours at 4.00 am. pH ranged from 7.5-8.0.

Philips (1927) observed diurnal fluctuations in hydrogen ion activity of Minnesota lake. Kato (1941) observed temperature increased from morning to noon and then it decreased during his studies on the fresh water region of the Palau tropical biological station II. George (1961) observed increased in temperature from morning to noon in the study of diurnal variations in two shallow ponds at Delhi. Air temperature is more than water temperature. The same results were observed by Kulkarni (2002), Sahu *et al.* (1991) and Verduin (1959).

Hydrogen ion concentration was increased in afternoon hours, and then it is decreased up to evening hours. George (1966) observed increased pH after 4.00 pm. Verduin (1959) demonstrated that nocturnal decrease in pH values was usually equal to the diurnal increase indicating that community respiration replaced the carbon dioxide absorption by photosynthesis. Dissolved oxygen increased from morning 4.00 pm. It may be due to photosynthetic activities then it decreased afterwards to 5.00 pm. Sahu *et al.* (1991) also observed same changes in dissolved oxygen content.

Carbon dioxide values were observed decreasing in the evening hours. This may be due to active process of photosynthesis. Generally carbon dioxide and oxygen showed inverse relationship. The factor affecting one of them should naturally be responsible for the other also. Thus increase in dissolved oxygen and decrease in free carbon dioxide values it may due to community respiration. Newell (1957) also showed direct relationship between temperatures and dis-

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Table. 1 Diurnal fluctuations in some physico-chemical factors (2-3 November, 2019).

Date	Time/hr.	Temperature		pH	DO <sub>2</sub> mg/lit	CO <sub>2</sub> mg/lit
		Air	Water			
02/11/2019	6.0 am	24	20	7.5	8.4	0.8
02/11/2019	7.0 am	24	21	7.5	8.4	0.8
02/11/2019	8.0 am	25	21	7.5	8.4	0.8
02/11/2019	9.0 am	26	21	7.5	8.8	0.6
02/11/2019	10.0 am	28	22	7.5	8.6	0.6
02/11/2019	11.0 am	28	22	7.5	8.8	0.6
02/11/2019	12.0 am	30	22	8.0	9.0	0.8
02/11/2019	1.0 pm	31	22	8.0	9.0	0.8
02/11/2019	2.0 pm	32	23	8.0	9.0	0.8
02/11/2019	3.0 pm	31	23	8.0	9.0	0.8
02/11/2019	4.0 pm	31	22	8.0	9.0	0.8
02/11/2019	5.0 pm	31	22	7.5	8.0	0.4
02/11/2019	6.0 pm	31	22	7.5	8.0	0.4
02/11/2019	7.0 pm	29	22	7.5	8.0	0.4
02/11/2019	8.0 pm	28	22	7.5	8.0	0.4
02/11/2019	9.0 pm	26	21	7.5	8.6	0.6
02/11/2019	10.0 pm	26	21	8.0	8.6	0.6
02/11/2019	11.0 pm	25	21	8.0	8.2	0.8
02/11/2019	12.0 pm	24	20	8.5	8.4	0.8
02/11/2019	1.0 pm	24	20	8.0	8.2	0.8
02/11/2019	2.0 pm	24	20	8.0	8.2	0.8
02/11/2019	3.0 pm	23	20	8.0	8.2	0.8
02/11/2019	4.0 pm	22	19	8.5	8.2	1.0
02/11/2019	5.0 pm	22	18	8.0	8.2	0.8

solve oxygen in the water. Direct relationship exists between temperature and amount of oxygen dissolved in fresh water. Kato (1941). In the present study there is no direct relation-

ship between dissolved oxygen, water temperature and CO<sub>2</sub> content. This may be due to fluctuating cloudy weather and changes in the intensity of light during the observation.

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## HYDROBIOLOGY OF DOMARI DAM, BEED (M.S)

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**ABSTRACT :** In India major and minor dams are mainly constructed for irrigation, power generation, drinking water supply, fish culture purpose and also for industrial use. The conservation and restoration of rivers are vital for harnessing the direct and indirect benefits from such an ecosystem on a sustainable basis. The seasonal variations impacts on the ecology of major and minor reservoirs. The ecological status of such reservoir is different as the change in the region. The present investigation reports the hydrobiology and environmental status of the Domari dam.

**Key words :** Hydrobiological study, Domari dam.

## INTRODUCTION

Maharashtra state has both the marine and inland water resources. The inland water area is available in the form of dams, lakes, ponds and rivers. Several scientists have worked on hydrobiological status of minor, major dams i.e. Banergea & Roy Choudhary (1967), Motwani & Saigal (1974), Shrinivasan (1979), Sahu *et al.* (1995), Dubey & Verma (1996), Abidi & Thakur (1997), Paka & Narsingrao (1997), Gautam & Dongre (1998) and Kulkarni (2000). The dams also provides good employment source for fishery societies and provides rich sources to increase the standard of living. Majority of the dams are having utilization of water for power generation and fishery. The present study has been carried out at the Domari dam located in Beed dist. at village Shirapur tq. and dist. Beed.

## MATERIAL AND METHODS

The present dam is present in the Beed district near the village Domari. The longitude is 18-50-00 and latitude is 75-34-00 and total catchment area is 110.80 sq/km. The construction of the dam is completed in the year 1996. The study was carried out fortnightly every month and analysis was carried

out as per the guidelines given in the chemical and biological method for water pollution studies Trivedi and Goel (1986).

## RESULTS AND DISCUSSION

The biotic and abiotic factors are important in the production of pond. Water is the primary requisite for pisciculture and which offers most favourable conditions for the existence of many aquatic animals. Physico-chemical factors play an important role in the distribution and the survival of aquatic life. Fish production is also depend on these factors. Banergea and Roy Choudhary (1966) studied physico-chemical features of Chilka lake. Desilva (1977) studied limnological aspects of three main made lakes of Shrilanka.

The temperature was recorded by standard thermometer and average values of temperature was ranges between 31.41°C and 30.30°C at spot A and B, similarly the average values of water temperature ranged between spot A 21°C and 22.6°C at spot B. The pH was ranged at spot A between 8.3 and 7.7 at spot B similar results were found by earlier researcher hence water is favourable for pisciculture. The dissolved oxygen contents are expressed in mg/lit and was ranged 8.7 mg/lit at spot A and 9.03 mg/lit at spot B.

Table. 1 Hydrobiological characteristic of Domari dam, Beed (M.S)

Months	Temperature		pH		DO		Free CO <sub>2</sub>		Alkalinity		Turbidity	
	Air A	Water B	Spot A	Spot B	Spot A	Spot B	Spot A	Spot B	Spot A	Spot B	Spot A	Spot B
June	32	30	24	23	7.4	7.9	8.6	87	0.8	0.6	48.73	49
July	31	31	22	23	7.4	7.8	85	87	0.81	06	49.60	49.1
Aug	31	30	23	22	7.3	7.9	85	88	0.82	067	51.2	49.2
Sept	32	30	23	21	7.5	7.7	87	90	0.73	07	56.33	50.1
Oct	30	29	24	22	7.6	7.2	86	91	0.5	075	58	51.2
Nov	30	29	22	20	7.7	7.2	87	91	0.5	08	60.1	52.2
Dec	29	27	22	19	7.7	8	88	92	0.4	08	32.4	54.1
Jan	30	28	20	21	7.5	8	89	91	0.42	06	64	56.7
Feb	31	29	21	24	8	8.1	89	90	0.39	06	63	58.2
Mar	32	32	24	25	8	8	90	92	0.33	05	65.2	59.7
Apr	34	34	24	26	7.9	7.9	91	93	0.32	05	67.1	60.2
May	35	35	25	26	7.8	7.8	89	91	0.5	04	61	64.3
Avg.	31.41	30.30	21	22.6	8.3	7.7	8.7	9.03	0.54	0.62	58.47	58.59
											39.12	41.08

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The Alkalinity is expressed in mg/lit and it was ranged between 58.47 mgC/lit at spot A and 58.59 mgC/lit at spot B. The results of turbidity was recorded by Secchi disc method and it was more at both the spot in rainy season due to optimum rain fall and mixing of runoff water in the rainy season (Table.1).

The present results are favourable and with the ideal values. The dam is having good condition of water for drinking and for pisciculture activities.

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## Aqua Potential of Domari Dam Dist. Beed

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**Abstract:** Many aquatic animals complete their lives in water body and their survival helps to maintain the ecosystem. There is need to have conservation of these reservoirs, dams. As the change in region and states the ecology also shows the minor or major changes and these changes are showing their impact on aquatic diversity. The conservation and restoration of rivers are vital for harnessing the direct and indirect benefits from such an ecosystem on a sustainable basis. The ecological status of such reservoir is different as the change in the region. The present investigation reports the aqua potential of the dam and environmental status of the Domari dam. Dams are one the important water resources for irrigation, water supply (Adarsh Kumar et.al 2006). These also provides a habitat for invertibrates, fishes and aquatic birds. The metropolitan, industries and city waste degrades the pollution impacts the many aquatic animals. This also impact on the productivity of dam. The Physico chemical properties were studied from June 2019 to May 2020 (For one year). The details of study and results discussed in the text.

**Key Words:** Aqua potential, Domari.

### Introduction:

The Domari Dam is constructed in the year 1995 for irrigation and drinking purpose. Water is chemical and physically a very interesting elements of life. The present dam is present in the Beed district near the village Domari. The Longitude is 18°-50'-00 and Latitude is 75°-34'-00 and total catchment area is 110.80 sq. Km. The construction of the dam is completed in the year 1996. Many scientists worked on Physicochemical properties Sahu et.al (1995) Buren V.M. Walt W.E. and Marshlac. (2000) Kulkarni et.al (2003) Gerg V.K. (2004) Kulkarni et.al (2002). In the present investigation the physicochemical properties were studied and analysed and studied the Aqua potential of Domari Dam.

### Materials and Methods:

The study and analysis of Physicochemical properties were carried on the spot. For the study two spots were selected spot A and spot B. where spot A is near the enterance of river and spot B is at the waste weir. The samples were collected in morning hours at every month and analysed as per the methods given in Trivedi. R.K. and Goel. P.K. (1998): In Chemical and Biological studies Environmental Publication Karad (MS) India

### Result and Discussion:

In the study the results observed as fallows. Fish production is also depending on these factors Banergea A.C. and Roy Choudhari (1967). studied water qualities of several dams in Manipur, Assam, West Bengal, Orisa, Madhya Pradesh, Andhra Pradesh in relation to fish production. According to him pH ranges from 6.5 to 7.5 is most favorable for fish production. The total alkalinity below 20ppm is indicative of poor production. Dissolved Oxygen content below 5ppm may be considered unfavorable for fish production. Where as normal condition of Oxygen above 7 ppm is suitable for productive water body. Abidi S.A.H. and Thakur N.K. (1997) suggested the ideal values of physicochemical characteristics of fresh water some of them are as fallows.

- 1) Temperature (Tropical Climate): 25°C to 32°C
- 2) Total Alkalinity: 50-300 mg/lit
- 3) Dissolved Oxygen: 5 to 10 mg/lit
- 4) Free Carbon dioxide: more 3 mg/lit
- 5) pH :6.5 to 7.5

Sewell probably did the first study of water quality of a fish pond in India when he studied the mortality of a museum tank in Calcutta. Banergea and Roy Choudhary (1966). Has studied physicochemical features of Chilka lake. Dwiwedi and Choudhary (1977) Hydrobiology of Kettham lake. Desilva (1977)- Studied limnological aspects of three main made lakes of



Shrilanka. Trivedi R.K and Goel P.K. (1998) studied the changes in pH, Do<sub>2</sub>, free Carbon dioxide at three ponds of Mangloor (Karnataka).

**Temperature (Air and Water):** The temperature of Air and water was recorded by standard thermometer.

Average values of Air Temperature at spot A were 24.24 °C and 24.78 °C at spot B. The Average values Water Temperature at spot A was 22.65 °C and 22.85 °C at spot B.

**Alkalinity-** The Alkalinity expressed in mg/CaCO<sub>3</sub>/lit. Average values of Alkalinity at spot A was 55.87 mg/CaCO<sub>3</sub>/lit. and 55.25 mg/CaCO<sub>3</sub>/lit. at spot B.

**Do<sub>2</sub>-** The dissolved Oxygen contents are expressed in mg/lit. Average values of Do<sub>2</sub> at spot A was 8.62 mg/lit and 8.59 mg/lit at spot B.

**Free Co<sub>2</sub>-** The Free Carbon dioxide contents expressed in mg/lit. Average values of Free Co<sub>2</sub> at spot A was 16.6 mg/lit and 18.6 mg/lit at spot B.

**pH-** The hydrogen ion concentration was studied by standard pH meter. The Average values of pH at spot A was 8.4 and 8.03 at spot B.

**Discussion-** The investigation shows that the physicochemical parameters were in the permissible limit and water is potable for drinking, irrigation and for fish culture practices.

Table 1.1 shows Results of Physico-Chemical properties of Domari Dam

Month	Temperature				Alkalinity		Do <sub>2</sub>		Free Co <sub>2</sub>		pH	
	Air		Water		A	B	A	B	A	B	A	B
	A	B	A	B								
June	26.2	26	24	23.8	48	49	8.2	8.1	2.15	2.22	7.9	7.7
July	26	26	24	24.1	49.50	49	7.9	8.1	2.80	2.33	7.8	7.8
Aug	25.9	25.6	23.2	24	50.2	49.67	8	7.9	3.00	3.00	8.2	7.5
Sept	25.9	25.7	23.6	23.4	52.31	51.1	8.4	8.1	3.00	2.90	8.2	7.9
Oct	24	25	22	24	55	53.9	8.9	8.5	3.1	3.00	8.5	7.7
Nov	23	24	21	22	61.1	58.2	8.7	8.8	3.18	3.11	8.8	7.9
Dec	22	23	21	21	45.4	44.1	8.8	8.8	2.90	3.46	8.9	8.1
Jan	22.2	23	21.3	21	59.4	56.7	8.7	8.9	3.15	3.01	8.9	8.2
Feb	22	23.1	22	21.9	62	60.2	9	8.9	4.21	3.49	8.8	8.2
Mar	23.7	24	23	23	64.2	66.7	8.9	9	4.9	5.13	8.7	8.6
Apr	24	25	23.1	22.1	62.1	61.2	8.8	8.9	5.5	5.55	8.8	8.7
May	26	27	23.6	24	61	63.3	9	9.1	4.7	6.6	8	8.1
Avg.	24.24	24.78	22.65	22.85	55.87	55.25	8.62	8.59	16.7	18.6	8.4	8.03

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