RESEARCH ARTICLE

Physico-chemical analysis of water in Vishnupuri dam, Nanded (M.S.) India.

Pawar SK

Department of Zoology, Gramin Mahavidyalaya, Vasantnagar, (kotgyal), Tq. Mukhed Dist. Nanded, (M.S.) India

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ABSTRACT

The present paper deals with the study of physico-chemical analysis of water transparency, dissolved oxygen, Alkalinity Hardness, calcium and magnesium of Vishnupuri Dam water during the year June 2015 to May 2016. The water transparency was recorded maximum during summer season while minimum during monsoon season. The result revealed that there was significant seasonal variations in some physic-chemical parameters and most of the parameters were in the normal range and indicated better quality of dam water.

Keyword: Vishnupuri dam, P^H, Calcium, Magnesium, Water Transparency.

INTRODUCTION

India is a developing nation and is dependent on its natural resources for growth and development. India is a country with diverse landforms. Every state holds a unique geographical features. In the natural aquatic system, temperature is considered to be the most import factor. The presence of life in water in the form of biological species is largely resulted by water temperature. The quality of water resources is usually described according to its physical, chemical and biological or bacteriological characteristics. The deterioration of water quality, loss of biodiversity and fast depletion of water resources and the main challenges, which need Urgent attention. Water of good quality is required for living organisms. The physico-chemical methods are used to detect the effects of pollution on the water quality. The quality of water is described by its physical, chemical and microbial characteristics. But if some correlation were possible among these parameters, then significant ones would be fairly useful to indicate the quality of water. The limnology plays an important role in decision making processes for problems like dam construction, pollution control, fish and aqua culture practices. (Muley and Gaikwad 1999). The physico-chemical methods are used to detect the effects of pollution on the water quality. Changes in the water quality are reflected in the biotic community structure as shown by occurrence diversity and abundance pattern of species. Many researchers have done studies on Physico-Chemical and Biological Characters of River and Dam Water. Dhembare and Pondhe (1997), Hiware and Jadhav (2001), Jakher and Rawat

(2003), Khatavkar *et al.* (2004) Lendhe and Yergi (2004) Simpi *et al.* (2011), Alka (2014) Meme *et al.* (2014), Harney *et al.* (2012).

The present study aims at making an assessment of the water quality of the Vishnupuri Dam Nanded District. In order to assess the suitability of its water for human use and agriculture use. Many researchers have done studies on physico-chemical and biological Characteristics of River and Dam Waters.

MATERIAL AND METHODS

Study site

Nanded city receives its daily water supply from Vishnupuri dam situated near Asarjan village on the river. The command area of the dam is distributed in Nanded, Kandhar & Loha taluka of Nanded district. The dam has a live storage of about 80.79 million cubic meters, out of which 43.95 million cubic meters storage is reserved for drinking purpose for Nanded city and 10.26 million cubic meters storage is reserved for industrial applications.



Fig. 1: Vishnupuri Dam constructed on Godavari River in Nanded

The water samples were collected for physico-chemical analysis from four stations, (A, B, C and D) at the regular intervals of one month during the year June 2015 to May 2016. The samples are well mixed and stored in two liter plastic cans. Sample collection was usually completed during morning hours between 6:00 A.M. to 9:00 A.M. every for further analysis. The water transparency, Dissolved Oxygen and Hydrogen ion concentration (P^H), were estimated on the spot at the time of sampling while other parameters were estimated in the laboratory. Standard methods as

prescribed Saxena (1990), APHA (1992) Kodarkar *et al.* (1998), were followed for examination of various physical and chemical parameters of water.

RESULT AND DISCUSSION

The seasonal variation in physico-chemical parameters are given table respectively.

Water Transparency:-

The water transparency depends on the micro organisms present in water bodies and suspended organic and inorganic matter present in water. In the present study it ranged from 32.7 to 80.1 cm. The water transparency values were maximum in the season of summer and minimum in the season of monsoon. The minimum value was recorded during September while maximum value was recorded during May. Narasimharao and Jaya Raju (2001) observed the transparency value varied from 13 to 135 cm. from fish culture pond at nambur.

Dissolved Oxygen:-

The dissolved oxygen was varied from 3.4 to 9.3 mg/l during study. The dissolved oxygen was found to be maximum in the month of January and minimum in the month of May. Dissolved oxygen in water at a given temperature depends on factors like temperature of water. The dissolved oxygen almost all plants and animals need for respiration. The workers such as prakash (1982), showed an inverse relationship of carbon dioxide with dissolved oxygen.

Total Hardness, Calcium, Magnesium:-

The total hardness ranged from 132 to 175 mg/l.

The calcium level varied from 63 to 100 mg/l. The magnesium level varied from 10.35 to 23.25 mg/l. The maximum values was during summer while minimum values was during winter. The calcium is one of the alkaline earth metal. The other being magnesium, barium etc. The calcium is not known to indicator or produce any hazardous effect on human health. The magnesium has ten times the solubility of calcium and being bivalent it too produces hardness. The calcium and magnesium hardness the two elements, which from the most abundant ions in fresh water. The total hardness was in the range from similar result were observed by Hiware and Jadhav (2001) found the values of total hardness were 48.75 during summer and 34.5 mg/l during rainy season. Kulkarni's *et al.* (2002)

Parameters	Water Transparency				Dissolved Oxygen				Total Hardness				Calcium				Magnesium				Hydrogen Ion Concentration			
	Cm.				(mg/l)				(mg/l)				(mg/l)				(mg/l)				(Р ^н)			
Station	Α	В	С	D	Α	В	C	D	Α	В	С	D	A	В	С	D	Α	В	С	D	A	В	С	D
June	60.3	67.4	65.4	63.7	4.3	4.8	5.2	5.6	152	154	156	158	82	85	87	90	15.14	15.30	16.41	16.21	7.06	7.42	7.48	7.35
July	52.2	55.3	57.1	59.4	5.4	5.8	5.9	6.2	160	158	162	164	80	78	83	85	19.51	21.35	23.25	20.17	7.34	7.50	7.24	7.70
August	40.3	43.7	45.2	48.5	5.8	6.2	6.7	6.9	163	160	164	166	82	84	88	89	18.8	19.71	20.23	19.70	7.15	7.35	7.40	7.65
September	32.7	34.2	36.1	38.3	6.7	6.8	7.1	7.3	168	167	169	171	73	75	77	79	21.67	22.9	22.67	22.80	7.20	7.31	7.19	7.21
October	41.3	43.2	45.1	47.2	6.9	7.2	7.5	7.8	172	175	163	168	86	81	84	88	17.88	18.92	16.37	19.40	7.14	7.18	7.11	7.17
November	48.1	49.5	51.2	52.4	7.1	7.4	7.6	7.9	149	147	150	145	72	70	74	78	18.34	18.67	18.87	19.20	7.26	7.17	7.14	7.21
December	50.2	51.3	52.1	53.2	7.4	7.7	7.9	8.1	141	143	140	138	70	75	77	80	15.30	15.70	16.03	16.78	7.6	7.4	7.8	7.9
January	53.5	55.2	54.2	56.1	8.6	8.8	9.1	9.3	132	136	139	141	65	68	63	70	17.65	17.96	18.34	19.07	7.8	7.9	7.3	7.5
February	56.2	56.8	55.9	55.3	7.4	7.2	7.6	7.8	148	145	147	143	68	69	71	73	16.32	16.71	16.98	17.09	7.16	7.18	7.19	7.23
March	60.1	61.3	61.8	62.3	60.3	6.6	6.7	6.2	138	135	133	137	82	86	84	88	13.37	13.96	14.31	14.51	7.35	7.42	7.51	7.38
April	65.2	66.3	68.4	69.54	5.6	5.3	5.8	5.4	141	143	148	146	91	93	96	92	12.34	12.70	12.41	12.49	7.52	7.63	7.43	7.58
Мау	52.2	76.4	78.3	80.1	3.7	4.1	4.6	3.4	144	147	143	142	98	96	97	100	10.78	10.79	10.35	10.91	7.8	7.70	7.85	7.62

Table 1: Physical Parameters of Water Sample Collected from Four Sampling	Station in Vishnunuri Dam During the Year June 2015 to May 2016.
Table 1. I mysical I alameters of water sample concette nom I our sampling.	Station in visinguli Dam During the real june 2015 to May 2010.

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observed the calcium levels varied from 56.9 to 101.7 mg/l., N. Shubhashchandra *et al.* (2004), observed the total hardness range from 102 to 104 mg/l. in purna river, Parbhani District Maharashtra.

Hydrogen ion concentration (P^H)

In the present study the P^H range was recorded 7.3 to 7.85. The high P^H range was recorded in summer and low range in winter. P^H of water is important for the biotic compound because most of the plant and animal species can survive a narrow range of P^H from slightly acidic to slightly alkaline condition. Shubhashchandra *et al.* (2004). Recorded the p^H range between 7.2 to 7.8 in Purna River Parbhani District Maharashtra.

REFERENCES

- Alka PA (2014) An Assessment of water Quality of Borgaon Reservoir in Sangli District of Maharashtra, India. *International Ional Research Journal of Environment Sciences*. 3 (5) : P. 48-53.
- APHA (1992) Standard Method for the Examination of Water and Waste Water APHA AWWA, WPET Washington DC, U.S.A. 18th edition.
- Dhembare AJ and Pondhe GM (1997) Correlation of ground water parameters of pravara area, Maharashtra State, India. Vol. 12 (1 and 2) : 32-33.
- Harney NV, Dhamani AA and Andrew RJ (2012) Physicochemical status of three water bodies near Bhadrawater Town, Dist. Chandrapur, (M.S.) India. Bionano frontier Eco Revolution, Colombo, Srilanka.
- Hiware CJand Jadhav BV (2001) Biological Studies of manjara river near kallam, District Osmanabad, Maharashtra, India. J. Aqu. Biol. Vol. 16 (2), P. 11-13.
- Jakher GR and Rawat M (2003) Studies on physico-chemical parameters of a Tropical lake, Jodhpur, Rajasthan, India. *J. Aqua. Biol.* Vol. 18, (2) : P. 79-83.
- Khatavkar RS, Shah NV, Rao KR and Navale RA (2004) Variations in Physico-chemical parameters in Freshwater Tanks in and around Solapur city, Maharashtra. *J. Aqu. Biol.*, Vol. 19 (1), P.111-114.
- Kodarkar MS, Diwan AD, Murugan N, Kulkarni KM, Anuradha R (1998) Methodology for Water Analysis Indian Association of Aquatic Biologists, IAAB, Publication No.2.
- Kulkarni Rajender Rao, Rita N Sharma, Mehtab. Burkari (2002) Diurnal Variations of Physico-Chemical Aspects of Pollution in Khushavati River at Quepem Goa. *J. Aqua. Biol.*, Vol. 17 (1) P.27-28.
- Lendhe RS and Yergi SG (2004) Seasonal Variations in primary productivity of phirange khasbav Lake, Bhiwandi District Thane, Maharashtra. *J. Aqua. Biol.*, Vol. 19 (2), P. 49-51.
- Lubal MJ Sutar AV and Pawar KW (2012) Studies on physicalchemical aspect of mhaswad water reservoir of Satara District (Maharashtra) India. ISPAES. 2 (3) : 12-15.

- Manjare SA, Vhanalakar SA and Muley DV (2010) Water Quality assessment of Vadgaon tank of Kolhapur (Maharashtra), with special reference to Zoopankton. International Journal of Advanced Biotechnology and Research. 1 (2): 91-95.
- Meme FK, Arimoro FO and Nwadukwe FO (2014) Analgses of Physical and Chemical Parameters in Surface Water near by a Cement Factory in North Central, Nigeria. *Journal of Environmental Protection*. 5 : 826-834.
- Muley DV and Gaikwad PT (1999) Limnological Studies of Shiroli Reservior-A Case Study. Fresh Water Ecosystem of India. Ed. K. Vijay Kumar, Daya Publishing House, Delhi, P.P. 109-132.
- Narasimh Rao P and Jaya Raju PB (2001) Limnological Investigations and Diversity of Plankton in Sewage fed fish Culture pond at Nambur near Guntur. A.P. India. *J. Aqua. Biol*, Vol. 16 (1 and 2) P.11-14.
- Pawar SK (2017) Fish diversity in relation to fish economics of Isapur dam, from Pusad, Yavatmal District (Maharashtra), India, *Int. J. of. Life Sciences*, Volume 5(1): 133-136.
- Pawar SK (2017) Population kinetics and seasonal fluctuation of phytoplankton of Vishnupuri dam, Nanded district, (M.S) India. Int. Res. Journal of Science & Engineering, 2017, 5 (3): XXX.
- Pawar SK (2017) Population kinetics and seasonal fluctuation of zooplankton of Vishnupuri dam, Nanded district, (M.S) India. *Int. Res. Journal of Science & Engineering*, 5 (3): XXX
- Pawar SK (2017) The study on fish diversity in the Vishnupuri dam, Nanded (M.S.) India, *Int. J. of. Life Sciences*, Volume 5(1): 137-139.
- Prakash C (1982) Water Quality of Keelham Lake (Soor Sarovar) J. Envi. Bio; 4 (4) : 193-200.
- Ramachandra Mohan et al. (2010). Water Quality and Pollution Status of Madivala Lake, Bangalore *Environment and Ecology*, 28 (3).
- Saxena (1990) Environmental Analysis, Water Soil and Air Agro Botanical Publishes (India) 184, P.P.
- Shubhas N, Chandra Meitel, Patil PM and Bhosle AB (2004) Physico-Chemical Analysis of Purna River for Potability. *J. Aqua. Biol.*, Vol. 19 (1), P.103-105.
- Simpi B, Hiremath SM, Mur thy KNS, Candreshe karappak N, Patel AN and Puttiah ET (2011) Analysis of water Quality Using Physico-chemical parameters Hosahalli Tank in Shimoga District, Karnataka, India. *Global Journal of Science frontier Research*. 1 (3) : 31-34.

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