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STUDY ON WATER QUALITY OF BANSHELKI LAKE AT UDGIR, DIST. LATUR

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Abstract:

Udgir city is the centre place for the three states viz Maharashtra, Andhra Pradesh and Karnatka. It has the population of 1, 10000. The main source water is the Banshelki lake on thi lake dam is constructed on the Manmodi river in the year 1968. The water bodies around are presently under intense human activities leading to deterioration of water quality affecting the aquatic life. The present investigation was carried out to assess the water quality on seasonal basis for the year 2006-07 in terms of pH, Turbidity, Conductivity, DO, BOD, COD Hardness, alkalinity, chlorides, Phosphate, Nitrate. The study revealed that the human activities were influencing the water quality and indicating the marginal pollution load.

Key words: Water quality, aquatic life, human activities.

Introduction:

Water resources are divisible into two distinct categories the surface water resources and the ground water resources. Each of these categories is a part of the earth's water circulatory system called hydrologic cycle, and is ultimately derived from precipitation, which is rainfall and snow. (Handbook of Agriculture,1980) Lentic water bodies harbour very rich flora and fauna and maintain self sustaining ecosystem. Judicious exploitation of water bodies provides unending resource for the sustenance of dependent organisms. However rapid urbanization, industrialization over exploitation and simultaneous disregard to the environmental degradation has completely destroyed most of the water bodies all over the Globe. Therefore it has been imperative to save the water bodies and to save precious biodiversities for man's own survival (A. C. Das et. al). Sugar industries play an important role in the economic development of our country, but the effluents released by them produce a high degree of organic and

chemical pollutants (Jesudas and Akila 1996) the principal sources of nitrogen compounds are the nitrogen compounds of plant and animal origin, sodium nitrate and atmospheric nitrogen. (Metcalf and Eddy, 2003). Limnological studies of lotic waters in Jammu and Kashmir have received the attention of Vass et. al. (1977),

Udgir city is located on 77^0 12" 30 latitude and on 18^0 12" 30 longitude .It has an estimated population of 1, 10000 population. The annual average rainfall is 834 mm. Banshelki is one of the most important water resource for the udgir city which is located at the west, having storage capacity 134 millions cubic feet having dead storage 26.76 mcft . It is facing intense human pressure like fishing, swimming, bathing, washing industrial effluents etc. which degrade the water quality affecting these ecosystems. It receives discharge of urban, domestic sewage through the open drain system also receives highly polluted waste from sugar factory located at Tondar village in udgir. Therefore the present investigation was carried out to determine the water quality to assess the pollution load for the eutrophication of Banshelki Lake.

Materials and Methods:

The water samples were collected from four sampling site, stratified sampling during three seasons. The different physicochemical analysis was carried out as per standard methodology of APHA (1985) and Trivedy and Goel (1986).

Results and Discussion:

The result of the study is shown in Table 1 during the experiment it was observed that the temperature was higher in the summer season. The conductivity value was moderate to low from the summer to winter. Higher alkalinity values were due to addition of waste water from domestic, industrial, municipal and agricultural sources. The hardness is within permissible standard in all seasons.

The Banshelki Lake exhibited high load of BOD and COD and consequent depletion of DO making the water completely unfavorable for aquatic life at site III specifically. A similar pattern of fluctuation was observed by (Michael, 1964), (Bahura C.K.2001.)

Particularly chlorides showed marginally high concentration indicating the presence of high level of organic and inorganic pollutants at site III. High load of Phosphate and Nitrite were recorded in the summer, monsoon and winter season

revealing high concentration of nitrate nutrients that would favour only few organisms leading to loss of biodiversity affecting functioning of these ecosystems.

The study revealed some information in relation to water quality of the important lake at Udgir i. e. Banshelki Lake. Similar results were found by Dr. J. M. Patwari (2003). Same results were observed for the water quality of river Godavari at Nanded by Dr. R. K. Narkhede (2003).

Conclusion:

The study noted that the Banshelki lake is becoming oligotrophic and if it is not protected it will be highly polluted due to human activities and become eutrophic in coming few years .The present investigation emphasized the need for further study of this aquatic ecosystem for proper management as well as to derive sustainable benefit for the people of Udgir city which is business oriented magnificent city.

Table – Water quality characteristics of Banshelkii Lake

Sr. No.	Parameters	**Monsoon**				**Winter**				**Summer**			
1	pH	7.1	7.4	7.3	7.6	7.2	7.6	7.7	7.3	7.2	7.3	7.4	7.2
2	Temp.	23	23.5	24	24.2	23.4	23.5	24	23.8	25	25.5	27.4	26.8
3	Cond.	1160	1182	1213	1018	1420	1490	1532	1440	1210	1318	1829	1630
4	Turbidity	38	45	65	48.3	20	23	35	18	18	21	38	26
5	Alkalinity	149	167	265	186	152.2	161.5	220	171.5	130	141	232	170
6	Hardness	38.5	44	60	49	35.5	41	48	51	37.5	42.5	72	58.4
7	DO	7.4	6.8	5.5	6.3	7.2	6.6	5.7	7	6.3	7.1	4.0	5.7
8	BOD	23	21	34	28	18	23.5	35.5	23	21	28	42	33.5
9	COD	80	55	80	61	79.5	87.1	110	91.5	90	103	185	128
10	Chlorides	65	71	75	73	58	54.5	68	65.3	103	105	128	95
11	Phosphate	5.1	5.2	5.6	5.1	5.1	5.2	6	5.1	7.1	6.5	8	7.5
12	Nitrate	10.3	11.4	15.2	13.2	13.6	12.8	22.6	14.5	19.5	18.5	28.7	22.8

Note: All the values are in mg/L except pH and conductivity.

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References:

APHA (1985): Standard methods for examination of water and waste water 16th edition APHA, AWWA, WPCA

Trivedy R.K.and P.K.Goel (1986): Chemical and biological methods for water pollution studies, Enviromedia Publications, Karad. India.

Handbook of Agriculture (1980): Indian Council of Agriculture Research New Delhi, pp 59-60.

Metcalf and Eddy (2003): fourth Edition Waste Water Engineering Treatment Reuse, Tata McGraw Hill publications. New Delhi. Pp 42-95.

Jesudas L.L and Akila, R. (1996): Study of the physicochemical characteristics of the factory effluents, Indian J. of Environmental protection, 808-810.

J. M. Patwari, (2003): Thesis entitled "Water and Soil characteristics of pond at Nandrabad and its habitat on Lamellideous corrianus" Submitted to Dr. B. A. M. University Aurangabad.

R. K .Narkhede, (2003): Thesis entitled "Comparative studies of BOD and COD at Nanded Maharashtra in relation to Microbial communities. Submitted to S. R. T. M. University Nanded .

Vass,K.K., H.S.Raina, D.P.Zutshi and M.A.Khan (1977): Hydrobiological studies on river Jhelum. Geobios. 4 : 238 – 242.

Michael, R.G. (1964): Diurnal variation of the planktons correlated with physio-chemical factors in three different ponds Univ. of Calcutta, Calcutta. Ph. D. Thesis.

Bahura, C.K., (2001): Diurnal Cycle of Certain Abiotic Parameters Of A Freshwater Lake, the Ganjer Lake (Bikaner), In the Thar Desert of India