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Physico-chemical studies of uran wetlands Mumbai, Maharashtra

Vidya Pradhan^{1*}, J.D.Shaikh², K.N.Malik³, S.S.Gore⁴

¹Department of Zoology, Dr. Rafiq Zakaria College for Women, Aurangabad (M.S.) (INDIA)

²Maulana Azad College, Rauza Baugh, Aurangabad (M.S.) (INDIA)

³Social Service Leage College, Parel, Mumbai (M.S.) (INDIA)

⁴Moreshwar College Bhokardan, Jalna (M.S.) (INDIA)

E-mail : drvidyasp@gmail.com

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ABSTRACT

Uran, a wetland was monitored for its water quality from January 2009 to December 2010. These wetlands are highly populated which leads to environmental deterioration. Rapid growth of population, industrialization and urbanization resulted into pollution of environment. The collected data from the surface waters shown in respect of certain selected water quality parameters showed that the wetland is higher polluted. The physico-chemical parameters of the wetland were studied. The results revealed in some physico-chemical parameters and that to wetland is polluted due to continuous sewage discharge, and important human activities that pose major threats to open ocean biodiversity and ocean dumping and UV-B radiation. © 2012 Trade Science Inc. - INDIA

INTRODUCTION

Uran is part of the Navi Mumbai city township and lies in the Raigarh district near Panvel and Karjat siometed rest of Mumbai across Thane creek. It is located at 18° 53'N, 72° 56'E 18.88, 72.94^[1]. It has an average elevation of 21 meters (68 feet). The major threats to open ocean biodiversity are the ocean dumping and UV-B radiation. Long transported materials enter the open ocean and concerns have arisen about effect of organo chlorine compounds on marine plantonic and benthic system.

Some important threat to coastal ecosystem are habitat loss; global climate change, over exploitortion of fishing, pollution, entrophication, algal toxins, redionuclids; species introduction in various, water shed alterations and physical alterations of coasts, tourism, marine litter, and the fact that humans have very little

perception of the oceans and their marine life The quality of water resources is usually described according to its physical, chemical and biological or bacteriological characteristic. For confirming the food quality of water resources large number of physico-chemical parameters, magnitude and source of any pollutional load must be known for which monitoring of physico-chemical parameters and pollutants is essential

The present investigation was undertaken to study the physico-chemical study of wetland and the causes of pollution. In continuation of our earlier work^[1-3], we decided to study the variatiation in the physico chemical parameter of uran wetland.

MATERIALS & METHODS

Water samples were collected from sub-surface and near-bottom level using Niskin water samples and ana-

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lyzed for water temperature, total dissolved solids, sodium, chlorides, free carbon-dioxides, total alkalinity, total hardness. Water temperature was recorded with the help of mercury thermometer. Standard procedure were used for the analyses of these parameters While the other parameters were estimated by the standard method^[4-6]

RESULT & DISCUSSION

TABLE 1 : Physico-Chemical study of Uran Wetland, Mumbai

Sr. No.	Parameters	Range
1	Water temperature °C	18 – 30°C mg/l
2	Total dissolved solids	1503 – 3010 mg/l
3	Dissolved oxygen PH	3.08 – 7.58 mg/l
4	Total alkalinity	7.21 – 1021
5	Free carbon dioxide	13.0 – 28.9
6	Chloride	89.0 – 183.1
7	Total hardness	209 – 715
8	Conductivity	212 – 812
9	Nitrates	0.30 – 2.35 mg/l
10	Phosphates	0.0042 – 0.04 mg/l

The results obtained during present investigation are shown in TABLE 1. Temperature of water samples ranged between 18°C to 30°C being minimum in winter and maximum in temperature. The effect of atmospheric temperature was amply reflected in the water temperature changes^[7]. The water temperature noticed during the monsoon months was due to monsoon rain, and cloudy weather pH values ranged from 7.5 – 8.2 mg/l. It was some what higher in winter presumably due to higher photo synthesis activity There was sudden fall of pH as the flood water entered in the rainy season Higher pH values indicated productive nature of body. pH is an important factor of fresh water bodies. Factors like exposure of air, temperature and disposal of industrial wastes etc brings about changes^[8] in pH. The pH ranges from 7.57 – 8.2 mg/litre through out the year. pH shows slightly low values during winter and slighter higher values during summer. Dissolved oxygen varied from 3.08 to 7.56 ml/l being minimum in summer and maximum in winter. It showed an inverse relationship with water temperature. It showed an inverse relationship with water temperature. In summer the rate of oxidation of organic matter in water increases

and oxygen was consumed in the process^[9]. Uran at higher temperature the was has a lesser oxygen holding capacity and surplus oxygen was lost to the atmosphere. Dissolved O₂ is very essential for metabolism of all aquatic organism that possess aerobic respiratory bio-chemistry The higher values of oxygen during summer are associated with the river in the phytoplanktonic population

Alkalinity ranged from 7.21 to 1.21 mg/l (May to Nov.) being low in summer and monsoon and high in post-monsoon and winter. Decrease in alkalinity during rainy months are obviously due to dilution

The free carbon dioxide ranged from 13.01 to 28.7 mg/l where as water was hand throughout the study period. It ranged from 209 to 715 mg/litre. Higher values were recorded in summer and lower in monsoon.

In the present study rounded ranged between 89.0 – 183.1 mg/litre. It was observed that it was minimum in summer and monsson and it was maximum in post monsoon and winter. Low chloride values observed during summer to the very less amount of organic waste.

The conductivity value ranged between 212 – 812 mg/l. Nitrate level moved from 0.0042 – 0.04 mg/l. Which was higher in monsoon and lower in summer The phosphate ranged between 0.30 – 2.35 mg/l it was observed that the value was higher in monsoon and post monsoon which is due to rain water

The famous stages of water treatment need to be continuously monitored so as to remove any pollutants present in the rain water. To solve problem of water contamination due to sewage care needs to be taken while laying supply and carriage lines to water and sewage respectively.

From the above study, it is concluded that the water samples in and around the Uran wetlands area have been highly polluted through out the year due to the indiscriminate discharge of the untreated effluents. Care has to be taken by the local resident in minimizing the pollutant load on the water bodies.

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