

Nutrient status of Kaloor Lake at Udgir

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Abstract

Nutrients are the most important factors in the water body. Increase in the nutrients level causes serious threat to the existence of the water body by eutrophication. Decrease amount of nutrients retards the growth of algae, phytoplanktons. So the present study has been undertaken for observing status of nutrients in the kaloor lake Udgir.

Introduction

Water is an essential component of the environment and it sustains life on the earth. All organisms depend on water for their survival (Smitha et.al 2007). Freshwater bodies are important wetlands located in and around human habitations as they are generally semi natural ecosystems constructed by man in landscape suitable for water stagnation (Yadav et.al, 2013). The quality of drinking water is essential for life. Contaminants such as bacteria, viruses, heavy metals, nitrates and salt have polluted water supplies as a result of inadequate treatment and disposal of waste from humans, livestock, industrial discharges, domestic discharge and extensive use of limited water resources (Onwughara NI 2013). Water defects and contamination of existing water supplies threaten to be critical environmental issues today for agricultural, domestic and industrial uses.

Human-induced eutrophication, or nutrient over enrichment, is a rapidly growing environmental crisis in freshwater and marine systems worldwide. Nutrients that cause eutrophication include nitrogen and phosphorus. While nitrogen and phosphorus are critical to biological processes in aquatic ecosystems, increased runoff of these nutrients to aquatic ecosystems from land-based sources results in increased biomass production, upsetting the natural balance of these ecosystems.(WRI-2009). Most of the lakes, especially near urban or residential areas, are found to be polluted at different levels because of anthropogenic activities. Some examples of such lakes from India are: Bada Talab near Bhopal city, Hussain Sagar Lake in the heart of Hyderabad city, Dal Lake in Srinagar, all affected by organic pollution. The traditional uses of the lake have been disturbed due to deterioration of lake water. Deterioration of lake water is also responsible for public health problems in surrounding area. Therefore, regular monitoring of lake water quality & lake ecosystem is necessary for taking appropriate environmental measures to protect & conserve lake

water quality suitable for urban ecosystem. (Sanyogita R. Verma et al.2011).

Study area

Udgir is one the major taluka in Latur District. having population of two and half lakhs. Kaloor lake water is used for the irrigation around the udgir. Its catchment area is having fully agricultural practice. Heavy load is there on the agriculture for the production due to population explosion. Farmers are utilizing fertilizers in heavy amount. All the fertilizer is not utilized by the plant and it is coming in the lake through atmospheric runoff. This excess fertilizer stimulates the plant growth in the lake leading to the process of eutrophication. Hence the study has been undertaken.

Materials and Methods

For sampling the 1 liter plastic bottles were used and appropriate preservatives were added at the time of sampling and brought into the laboratory for analysis. Methods used are as per the guidelines of APHA and CPCB, MPCB and NEERI manuals. For Nitrite-Nitrate Aplpha Naphthylamine Hydrochloride, for Phosphate Stannous chloride, for sulphate Barium sulphate and for pH Hand pH meter method was used.

Tables and Graphs

Table -1
 Levels of Nitrate from January to December 2018

Sr.No	Month	S.S No.0 1	S.S No.0 2	S.S No.0 3	S.S No.0 4
01	Jan	42	27	25	20
02	February	49	26	23	23
03	March	55	29	27	22
04	April	51	32	25	27
05	May	48	43	23	39
06	June	48	47	25	40
07	July	54	52	27	40
08	August	50	35	26	26
09	September	43	29	27	24
10	October	45	33	28	25
11	November	43	32	26	28
12	December	49	35	25	24

Chart No: 1 Levels of Nitrate in Kaloor lake (January to December 2018)

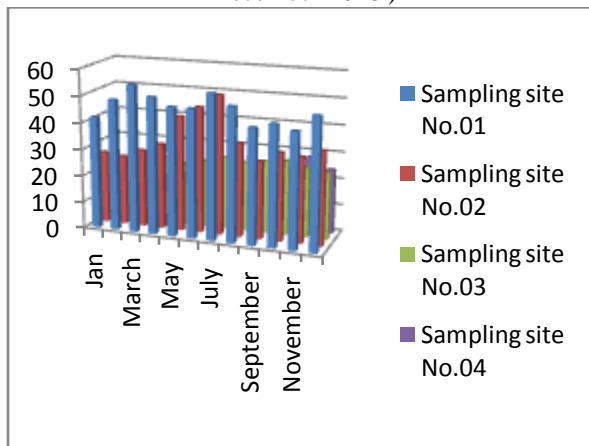


Table -3
Levels of Sulphate from January to December 2018

Sr. No	Month	S. No.01	S. No.02	S. No.03	S. No.04
01	Jan	87	97	67	86
02	Feb.	85	82	65	86
03	March	90	91	70	90
04	April	127	110	80	105
05	May	110	115	82	112
06	June	130	125	84	111
07	July	121	110	86	107
08	August	122	116	90	91
09	Sept.	96	95	67	92
10	Oct.	104	90	66	90
11	Nov.	112	92	62	86
12	Dec.	97	93	61	83

Table -2
Levels of Phosphate from January to December 2018

Sr. No	Month	S.S. No.01	S.S. No.02	S.S. No.03	S.S. No.04
01	Jan	3.1	2.2	1.9	1.6
02	Feb.	3.5	2.7	1.4	1.5
03	March	2.8	1.9	2.1	1.7
04	April	4.3	2.7	1.3	1.8
05	May	3.9	2.1	1.4	1.6
06	June	3.9	2.9	1.5	2.8
07	July	3.7	3.0	1.4	2.4
08	August	4.1	3.0	1.6	2.6
09	Sept.	4.0	3.5	2.7	2.4
10	Oct.	3.4	2.7	1.1	2.6
11	Nov.	3.2	2.3	1.4	1.9
12	Dec.	2.8	2.1	1.5	1.8

Chart No: 3. Levels of Sulphate from January to December 2018

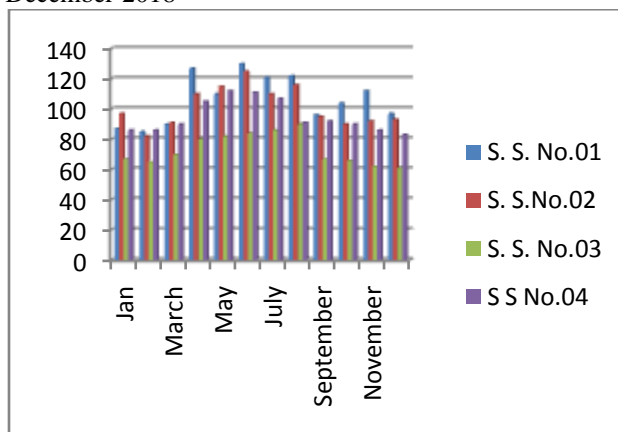


Chart No. 2 Levels of Phosphate from January to December 2018

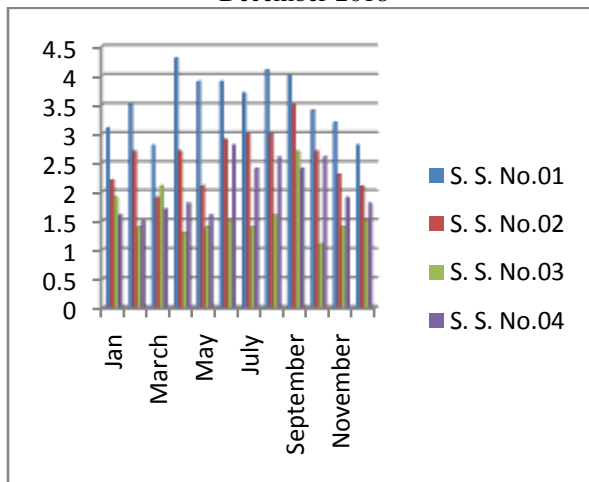
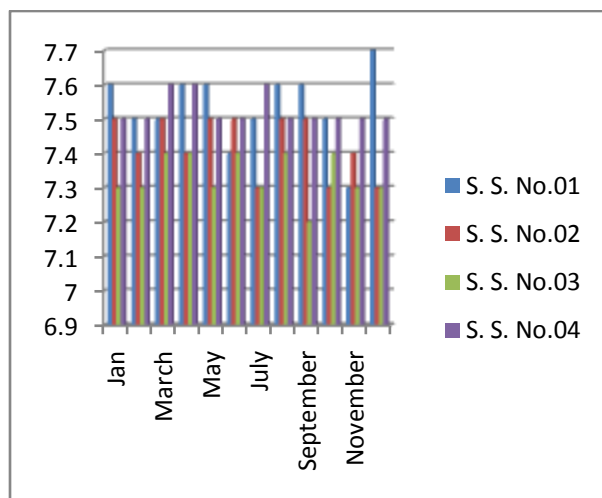


Table -4
Levels of pH from January to December 2018

Sr. No	Month	S. No.01	S. No.02	S. No.03	S. No.04
01	Jan	7.6	7.5	7.3	7.5
02	February	7.5	7.4	7.3	7.5
03	March	7.5	7.5	7.4	7.6
04	April	7.6	7.4	7.4	7.6
05	May	7.6	7.5	7.3	7.5
06	June	7.4	7.5	7.4	7.5
07	July	7.5	7.3	7.3	7.6
08	August	7.6	7.5	7.4	7.5
09	September	7.6	7.5	7.2	7.5
10	October	7.5	7.3	7.4	7.5
11	November	7.3	7.4	7.3	7.5
12	December	7.7	7.3	7.3	7.5

Chart No. 4: Levels of pH from January to December 2018



Results and Discussion

In the present Investigation the levels of Nitrate was found maximum in the month of March it is 55mg/L and Minimum was found in the month of January it is 20 mg/L. the levels of phosphate was found highest in the month of April at site no 1. it is 4.3 mg/ lowest levels was found in the month of October it is 1.1mg/l in sampling station no three. The highest level of sulphate was found in the month of June it is 130mg/L in sampling station one and lowest levels were found in the month of December it is 61mg/L at sampling station three. pH found maximum in the month of December is 7.7 at sampling station. minimum pH was found in the month of september at sampling station three it is 7.2 all the analysis shows that if the lake is not conserved it will turn into eutrophic in near future so there is urgent need to conserve the Kaloor lake .

Acknowledgement

I am very thankful to the Principal and Staff of the Maharashtra Udayagiri Mahavidyalaya Udgir for providing me the continuous encouragement and make available all the facilities like laboratory and library for this research work.

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