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Seasonal fluctuation of some physico-chemical water parameters from Sunegaon lake taluka Loha dist. Nanded (M.S.), India

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Abstract

Lake water quality is a critical issue worldwide, with many lakes experiencing declining water quality due to human activities. This paper reviews the current state some physico-chemical water parameters of Sunegaon lake water quality, with a focus on the impacts of pollution, eutrophication, and climate change. We also discuss the importance of lake water quality monitoring and management strategies to mitigate these impacts. Therefore, it is essential to prioritize lake water quality conservation and management efforts.The present study based on the seasonal fluctuation of some physico-chemical water parameters namely; Dissolved oxygen, Biochemical oxygen demand, Sulphate, Chloride, Nitrate and Phosphate.

Key word : Physico-chemical, eutrophication,water quality and Sunegaonlake.

Lakes are vital freshwater ecosystems that provide numerous ecological, economic, and social benefits. They support a wide range of aquatic life, regulate water cycles, and offer recreational opportunities. However, lake water quality is facing significant threats from human activities, such as pollution, eutrophication, and climate change. Lake water quality is closely linked to human health, and poor water quality can have significant economic and social implicationsKumar *et at.,*[5]. Water also the functional unit of aquatic ecosystem. H_2O is a transparent and nearly colorless chemical substance[6].

This research article deals with the some physico-chemical water parameters of Sunegaonlake. Sunegaonlake in Lohataluka, Nanded district of Marathwadaregion is one of the important water body and as per our knowledge no literature is available on physico-chemical parameters. Hence this water body is selected to study the physico-chemical parameters.The sampling of water carried out

during the period of July 2023 to June 2024. The analysis of water samples is to be performed preferably in the field. The analysis of certain parameters such as, dissolved oxygen, Biochemical oxygen Demand, Sulphate, Chloride, Nitrate and Phosphate is to be performed in the field by using portable ELIKO makes a digital water analysis kit on the station of collection by the laboratory techniques given by APHA[1].

In the present study Sunegaon lake talukaLoha dist. Nanded. The physico-chemidcalparameters of our findings plotted in the table andgraphical representation.

Table-1. Seasonal fluctuation of some physico-chemical parameters of Sunegaonlake at Station-A, during July 2023 to June 2024.

Sr. no.	Seasons → Parameters ↓	Mon-soon	Winter	Summer
1	DO	8.87	9.8	7.82
2	BOD	6.90	6.66	10.03
3	Sulphate	47.68	36.91	47.16
4	Chloride	26	19.25	36.5
5	Nitrate	1.05	0.66	0.80
6	Phosphate	0.99	0.52	1.00

Table-2. Seasonal fluctuation of some physico-chemical parameters of Sunegaonlakeat Station-B, during July 2023 to June 2024.

Sr. no.	Seasons → Parameters ↓	Mon-soon	Winter	Summer
1	DO	9.05	9.975	8.05
2	BOD	7.095	6.75	10.24
3	Sulphate	47.94	37.48	47.56
4	Chloride	30	23.25	42.5
5	Nitrate	1.138	0.72	0.898
6	Phosphate	1.225	0.725	1.278

Table-3. Seasonal fluctuation of some physico-chemical parameters of Sunegaonlakeat Station-C, during July 2023 to June 2024.

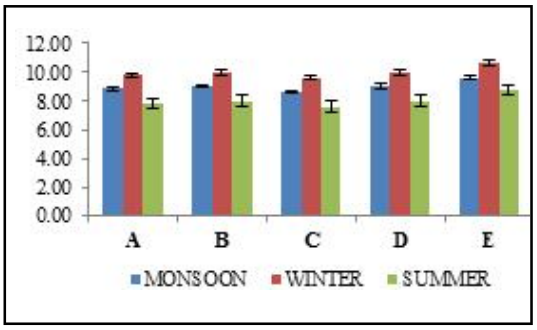
Sr. no.	Seasons → Parameters ↓	Mon-soon	Winter	Summer
1	DO	8.67	9.62	7.65
2	BOD	7.39	7.05	10.54
3	Sulphate	48.33	37.6	47.95
4	Chloride	32	25.25	44.5
5	Nitrate	1.338	0.92	1.09
6	Phosphate	1.3	0.77	1.4

Table-4. Seasonal fluctuation of some physico-chemical parameters of Sunegaonlakeat Station-D, during July 2023 to June 2024.

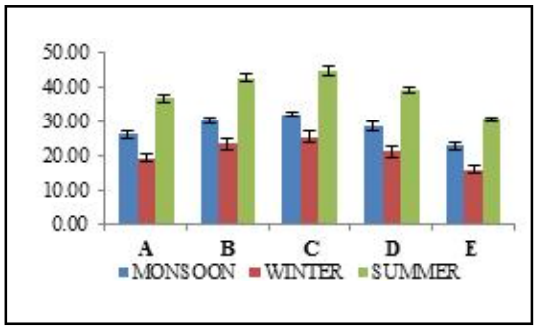
Sr. no.	Seasons → Parameters ↓	Mon-soon	Winter	Summer
1	DO	9.05	9.975	8.025
2	BOD	7.09	6.665	9.945
3	Sulphate	47.94	37.2	47.05
4	Chloride	30	21	39
5	Nitrate	1.13	0.673	0.805
6	Phosphate	1.22	0.7	1.268

Table-5. Seasonal fluctuation of some physico-chemical parameters of Sunegaonlakeat Station-E, during July 2023 to June 2024.

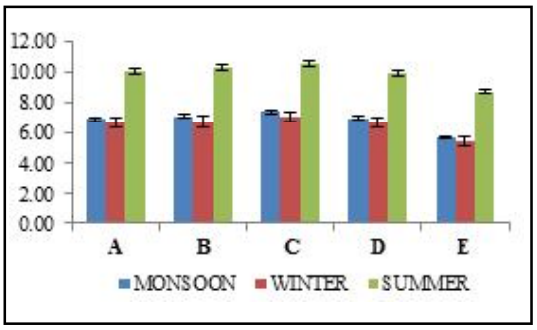
Sr. no.	Seasons → Parameters ↓	Mon-soon	Winter	Summer
1	DO	9.625	10.63	8.775
2	BOD	5.743	5.473	8.74
3	Sulphate	36.08	26.83	35.18
4	Chloride	22.75	15.75	30.5
5	Nitrate	0.855	0.493	0.598
6	Phosphate	0.87	0.498	0.88



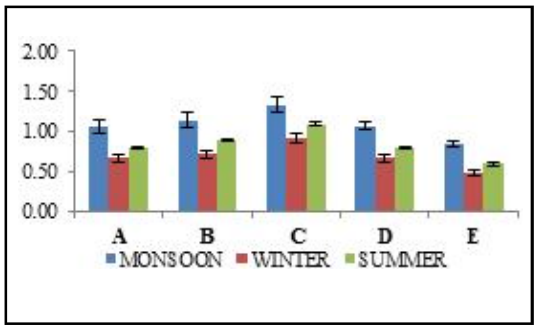
Graph 1. Seasonal fluctuation of Dissolved oxygen fromSunegaonlake at Station- A, B, C, D and E during July 2023 to June 2024.



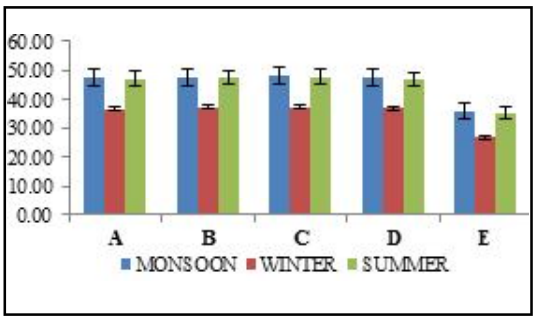
Graph 4. Seasonal fluctuation of Chloride from Sunegaonlake at Station- A, B, C, D and E during July 2023 to June 2024.



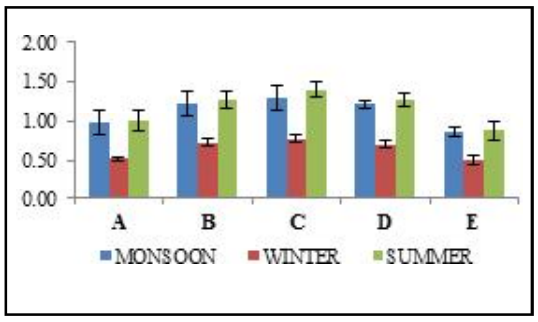
Graph 2. Seasonal fluctuation of Biochemical oxygen demand fromSunegaonlake at Station- A, B, C, D and E during July 2023 to June 2024.



Graph 5. Seasonal fluctuation of Nitrate from Sunegaonlake at Station- A, B, C, D and E during July 2023 to June 2024.



Graph 3. Seasonal fluctuation of Sulphate from Sunegaonlake at Station- A, B, C, D and E during July 2023 to June 2024.



Graph 6. Seasonal fluctuation of Phosphate from Sunegaonlake at Station- A, B, C, D and E during July 2023 to June 2024.

Dissolved oxygen shows maximum values during the winter season and biochemical oxygen demand shows maximum values during summer season. This findings corroborated with Khiradkar*et al.,*[4] from Labhansarad dam and Ingale*et al.,*[3] from Bhiwapurlake. Also, chloride and phosphateshows maximum values during summer season. While suphate and nitrates value higher during monsoon season.This seasonal fluctuation shows similar trend with Behzad *et al*.,[2] from Manaslake (Pune-India).

As the results shows the above seasonal fluctuation values due to moderate anthropogenic activities near the lake area at station- C, B and A during the study period. Hence lake is going towards moderate condition in future.

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