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LIMNOLOGICAL STUDY OF LENTIC ECOSYSTEMS IN SANGAMNER TALUKA OF AHMEDNAGAR DISTRICT IN MAHARASHTRA, INDIA

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ABSTRACT
Study of freshwater ecosystems is very necessary because day by day rainfall is not sufficient. Water is getting tremendous importance in life more than it was before due to repeated draught like situations. In the present study Limnology of the four selected water bodies in Sangamner Taluka of Ahmednagar district of Maharashtra state. Bhuteshwar, Jawalevast, Rajapur and Velhale. The physiochemical parameters like acidity, alkalinity, dissolved Oxygen, TDS, pH and hardness of the water from the selected spots were estimated in rainy season and winter season. Seasonal variation and variation in different parameters at different spots were observed. During rainy season the acidity was found in the range of 12.5 to 29.16 mg/L. Alkalinity was in the range of 73.33 mg/L. pH was in the range of 6.3 to 8.2. Hardness was in the range of 13.66 to 120.83. TDS was in the range of 40 to 360. Temperature was in the range of 21^0c to 29^0 C. In winter season the acidity was found in the range of 13.33 to 94.6 mg/L. The alkalinity was in the range of 61.66 to 113.3 mg/L. pH was in the range of 8.1 to 8.36. Dissolved oxygen was found in the range of 2.95 to 8.19 mg/L. Hardness was in the range of 45 to 132.8. TDS was in the range of 160 to 490. Temperature was in the range of 22 to 24 ^{0}C. Various zooplanktons like rotifers, Protozoans like *Amoeba* and *Paramecium* along with guppy fish, frogs, crabs and fresh water snails, hydra were also observed. Some Aquatic algae Chara, Spirogyra and Hydrilla were also observed.

KEYWORDS: Freshwater ecosystem, Limnology, Seasonal variation

INTRODUCTION

Freshwater bodies are very important in the nature. They provide habitat to the living aquatic organisms and also drinking water to other organisms in the vicinity. Sangamner is a rain fed area having less rainfall. Therefore in the present study this topic was selected. Limnology is a very useful tool to study the entire ecosystem. Review of literature reveals that much work has not been done in this area on such topic. In the present study four water bodies Bhuteshwar, Jawalevasti, Rajapur and Velhale were selected. It is necessary to study the physicochemical parameters to know the water quality which support the life in that aquatic ecosystem. Physicochemical parameters of Gulabsagar water body in Jodhpur was studied by Chouhan and Vyas (2017).

Nayaka (2018), has carried out assessment of physicochemical parameters of Gundalamma Lake in Tumkur in Karnataka. Nama and Dhanraj (2018), have assessed the water quality of Palasani pond in Joghpur by studying physicochemical parameters. Bhagde *et al.* (2016) has studied hydrobiology of Devtale Lake in Sangamner Taluka of Ahmednager district of Maharashtra state. Water quality index of some lakes around Kolhapur city of Maharashtra was determined by Anekar and Dongre (2016). Gautam and Sheivastva (2017), studied the physicochemical parameters of pond in Bhopal by analyzing the water sample.

Nakhate and Kale studied the physicochemical parameters in Kankaleshwar Lake in Beed district. Joseph Ndjama *et al.* (2017), have done the work to study physicochemical and biological characteristics of Nkilobisson artificial lake in Yaounde Cameroon.

MATERIALS AND METHODS

Survey was done to select the lentic ecosystems. Temperature was recorded with the help of thermometer. pH and TDS were recorded with the help of Hanna digital pH and TDS meter respectively**.** Dissolved oxygen was estimated by Winkler's method. Acidity, Alkalinity and hardness were estimated by the method given by Maithei. Flora and fauna were observed and recorded.

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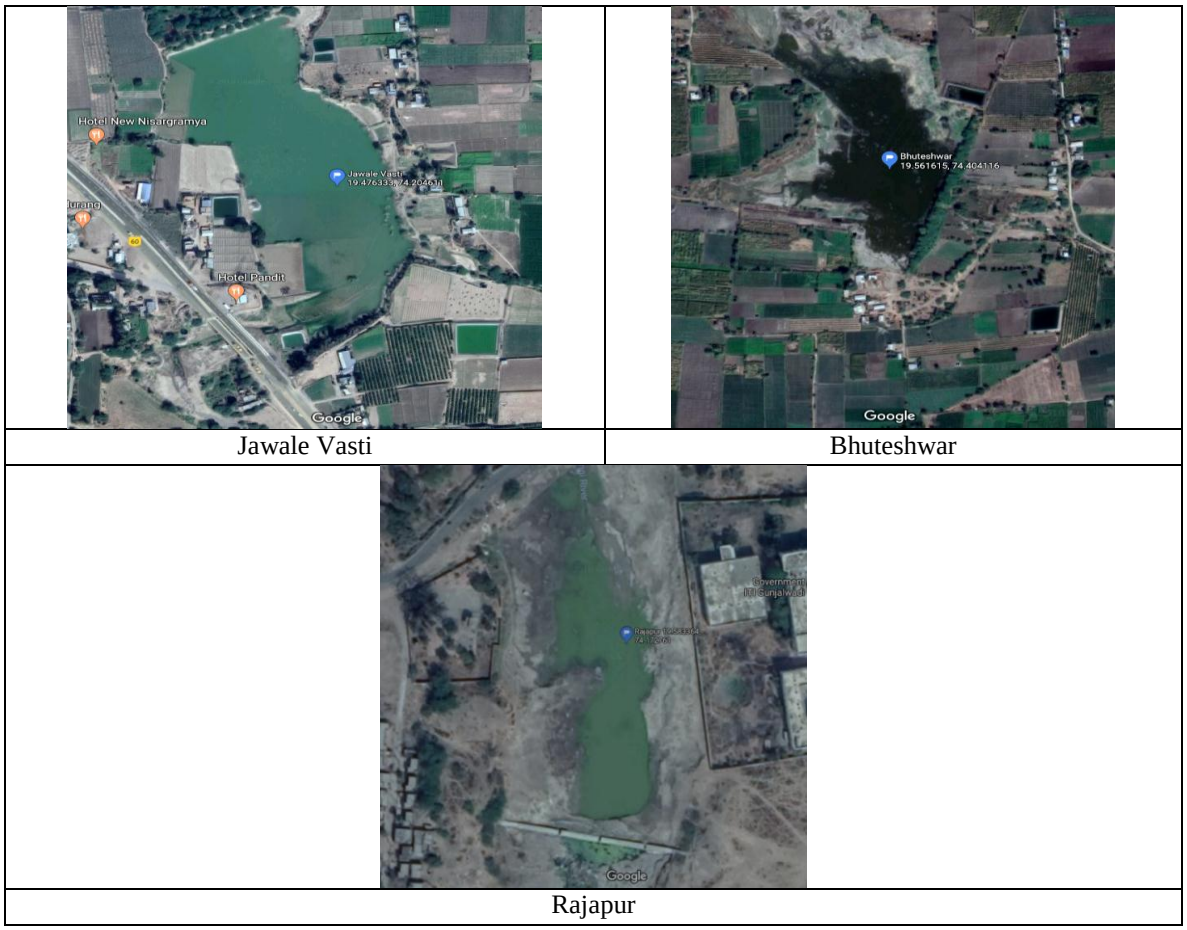
RESULTS AND DISCUSSION

The results are shown in Table 1-2 and Figure 1-4.

Table .1. Assessment of various parameters of water bodies during rainy season

Rainy Season	Bhuteshwar	Jawalewasti	Rajapur	Velhale
Acidity (mg/L)	29.16	25.83	20.83	12.5
Alkalinity (mg/L)	5	73.33	63.33	21.66
pH	8.2	6.3	6.7	5.7
Dissolved O_2 Content (mg/L)	5.77	6.57	3.08	5.77
Hardness (mg/L)	37	58.33	120.83	13.66
TDS	140	360	40	340
Temperature (°C)	29	29	21	20

During rainy season the acidity was found in the range of 12.5 to 29.16 mg/L. It was maximum at Jawalevasti and minimum at Velhale. Alkalinity was in the range of 73.33 mg/L. The maximum was at Jawalevasti and minimum was at Bhuteshwar. pH was in the range of 6.3 to 8.2. It was maximum at Bhuteshwar and minimum at Velhale. Dissolved oxygen was in the range of 3.08 to 6.57 mg/L. it was maximum at Jawalevasti and minimum at Rajapur. Hardness was in the range of 13.66 to 120.83. It was maximum at Rajapur and minimum at Velhale. TDS was in the range of 40 to 360. It was maximum at Jawalevasti and minimum at Rajapur. Temperature was in the range of 21^0c to 29^0C. It was maximum at Bhuteshwar and Rajapur and minimum at Rajapur.



Jawale Vasti | Bhuteshwar

Rajapur

Figure.1. Geographical location of the water bodies selected for the study

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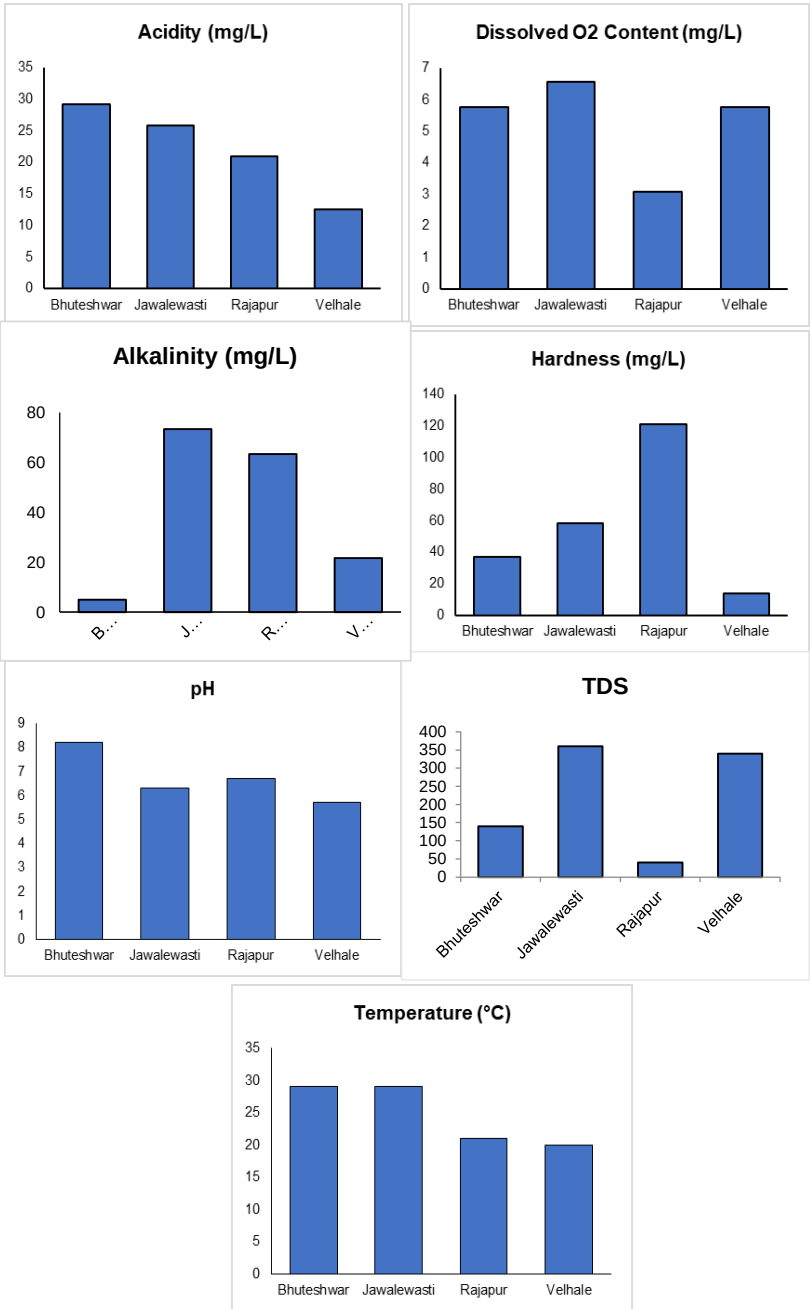

Figure.2. Variation in physicochemical parameters of water from various water bodies during rainy season

In winter season the acidity was found in the range of 13.33 to 94.6 mg/L. The maximum acidity was observed at Bhuteshwar and minimum at Velhale. The alkalinity was in the range of 61.66 to 113.3 mg/L. It was maximum at Jawalevasti and Rahjapur and minimum at Bhuteshwar. pH was in the range of 8.1 to 8.36. It was maximum at Velhale and minimum at Bhuteshwar. Dissolved oxygen was found in the range of 2.95 to 8.19 mg/L. It was maximum at Velhale and minimum at Bhuteshwar. Hardness was in the range of 45 to 132.8. It was maximum at Rajapur and minimum at Jawalevasti. TDS was in the range of 160 to 490. It was maximum at Velhale and minimum at Rajapur. Temperature was in the range of 22 to 24^0C. It was maximum at Bhuteshwar and minimum at Rajapur.

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Table. 2. Assessment of various parameters of water bodies during winter season

Winter Season	Bhuteshwar	Jawalewasti	Rajapur	Velhale
Acidity (mg/L)	94.167	55	20	13.33
Alkalinity (mg/L)	61.66	113.3	113.3	91.67
pH	8.1	8.2	8.3	8.367
Dissolved O_2 Content (mg/L)	6.6	7.114	2.95	8.19
Hardness (mg/L)	45.83	63	132.8	101.2
TDS	160	390	136.7	490
Temperature (°C)	24	22	21.33	23

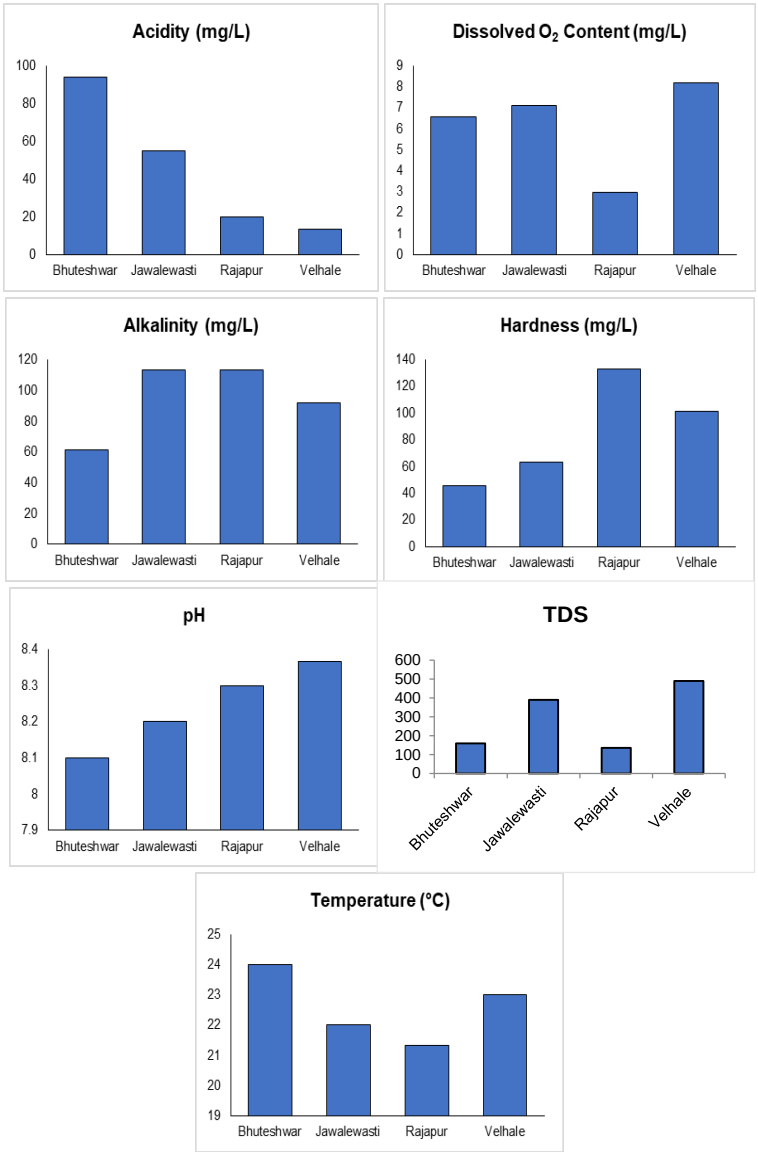

Figure.3. Variation in physicochemical parameters of water from various water bodies during winter season

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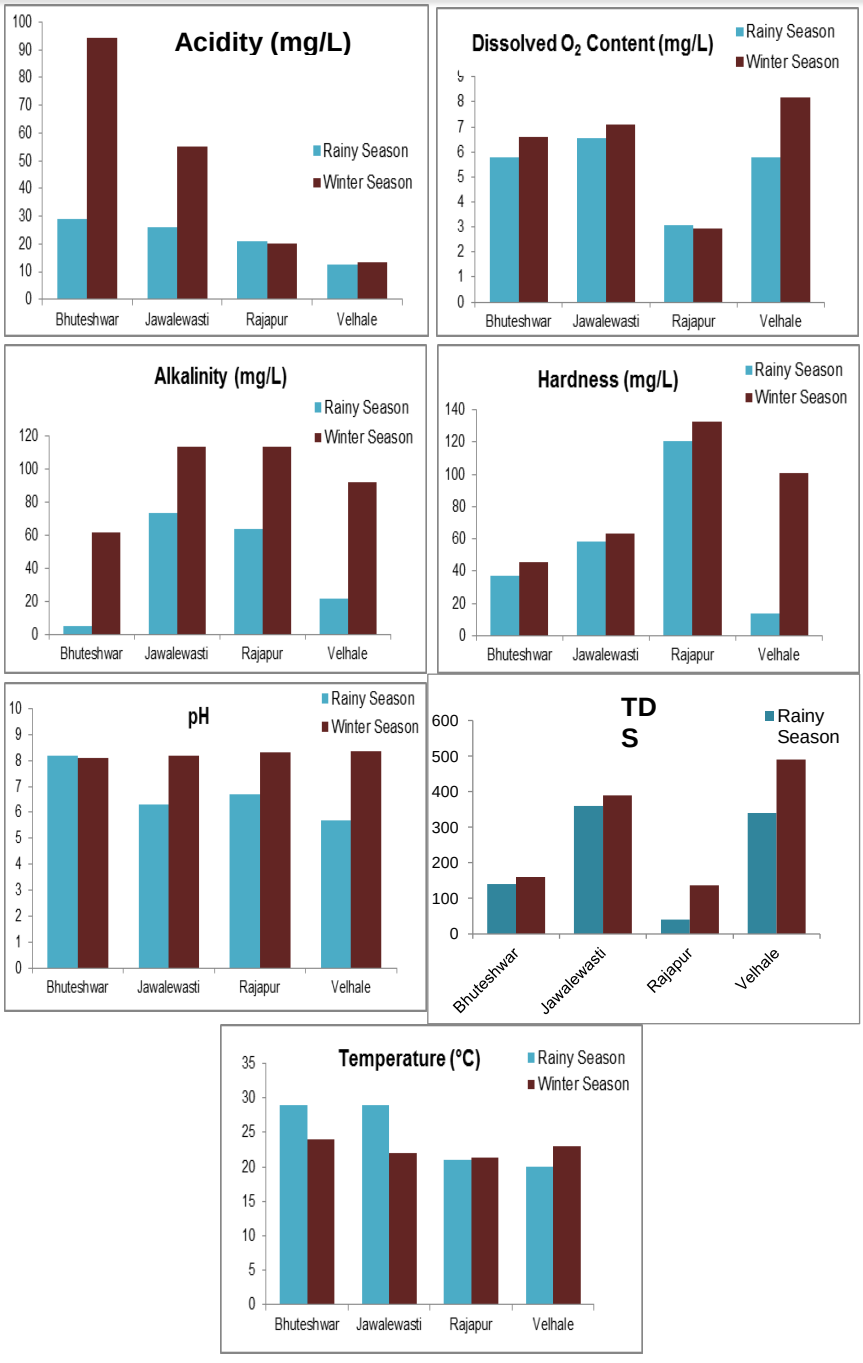

Figure.4. Seasonal variation in the physiochemical parameters of water bodies

The result showed that there is variation in the physicochemical parameters at different spots. His may be due to difference in topography and the nearby soil. Seasonal variation was also observed regarding some parameters at some spots. . Various zooplanktons like rotifers, Protozoans like *Amoeba* and *Paramoecium* along with guppy fish, frogs, crabs and fresh water snails, Hydra were also observed. Some Aquatic algae Chara, Spirogyra and Hydrilla were also observed. From the limnological study of Balai et al 2016, it is evident that such limnological studies are useful to know the suitability of such lakes for aquaculture and fisheries. Tasleem Begum 2016 after studying physicochemical

seasonal analysis of Narsarha talab of Shahadol district in Madhya Pradesh suggests that .Such study will be useful to improve the socioeconomic importance of the water bodies apart from academic importance.

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