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Research Article



Diatom flora of alkaline and saline water habitat

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Abstract

Alkaline and saline water habitat is a unique habitat where algae grows and found in diverse form. While studying algal diversity of Lonar crater lake water, authors came across some interesting taxa of diatoms. A total 15 taxa under 8 genera were identified and recorded. All diatom taxa recorded during present study are pinnate diatoms. The work was carried out for the period of two consecutive years i.e. from October 2015 to September 2017. Taxa of *Amphora*, *Fragillaria*, *Navicula*, *Cymbella*, *Nitzschia*, *Gomphonema*, *Surirella* and *Diatoma* were identified and recorded. *Fragillaria construens*, *Navicula cupsidata*, *Nitzschia palea* and *Nitzschia scalpelliformis* were found dominant. Seasonal variation study of diatom flora of Lonar crater lake reveals that, summer and winter season are found suitable for abundance diatoms.

INTRODUCTION

Diatoms are Bacillariophyceae algae. They are characterized by the presence of silicified walls. Aquatic and terrestrial habitats are the habitats where diatoms grow luxuriantly and found in diverse form. It is also found in air as well as in hot water spring. Alkaline and saline water habitat is a unique habitat where diatoms are also found in abundance. While studying algal diversity of Lonar crater lake water, authors came across some interesting taxa of diatoms. Lonar lake (19° 55' 45" and 76° 34' 00") is situated about a kilometer to south west of Lonar town in Buldhana district of Maharashtra. Lonar lake is a natural water body. The presence of alkaline and saline water having pH around 9 to 11 is a unique feature of this ecosystem. The Lonar lake water appears to be saline due to high concentration of dissolved solids and suspended solids. Extensive review of literature reveals that except few reports (Jadhav et al. 2008, Satyanarayan et al. 2008) very rare attention has been paid towards diatom flora of Lonar lake. Present research work deals with the detailed study of diatoms of Lonar lake.

MATERIALS AND METHODS

In order to study diatom flora of alkaline and saline water habitat, Lonar lake situated in Buldhana district of Maharashtra has been selected. Algal samples were collected at monthly intervals from 10 selected sites of Lonar lake. Collections were made for the period of two consecutive years i.e. from October 2015 to September 2017. Acid washed collection bottles were used for the collection of algal samples. For identification, the diatoms were cleaned according to Brun's method (Sarode and Kamat, 1984). Diatom taxa were identified on the basis of taxonomic characters according to Hustedt (1930), Venkataraman (1939) and Sarode and Kamat, (1984).

RESULTS AND DISCUSSION

A total of 15 taxa of diatoms under 8 genera were identified and recorded throughout the period of study (Table 1). All recorded diatom taxa are pinnate diatoms. Blin (1991), Juggins et al., (1994) and Sheek and Zalut (1999) studied diatoms from brackish and saline water.

On the basis of occurrence of diatom taxa *Fragillaria construens*, *Navicula cupsidata*, *Nitzschia palea* and *Nitzschia scalpelliformis* were found dominant. Jadhav *et al.* (2007) and Satyanarayan *et al.* also recorded similar kind of observations. Genus *Nitzschia* was represented by 4 taxa. Tuite (1981) recorded abundance of benthic diatom in East African alkaline and saline lake. Diatoms are used for bioassessment of water and for conducting transfer function (Reed, 1998; John, 1998). Seasonal variation study of diatom flora of Lonar lake reveals that abundance of diatoms were found in summer and winter seasons. Similar kind of observations were made by Talekar and Jadhav (2010) and Sawdekar and Jadhav (2017).

Hence, it is concluded that alkaline and saline water also shows abundance of diatoms. *Fragillaria construens*, *Navicula cupsidata*, *Nitzschia palea* and *Nitzschia scalpelliformis* were the most frequently encountered species. Summer and winter seasons are found suitable seasons for growth development of diatoms.

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Table 1: Diatom Flora of Alkaline and Saline Water.

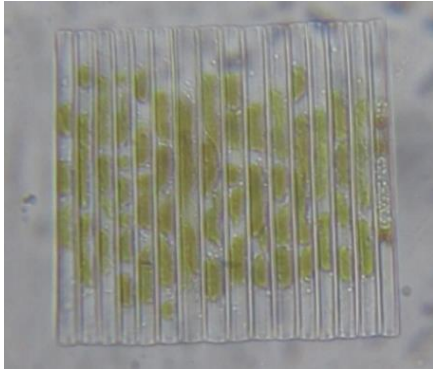
Sr. No.	Name of the Diatom
1	<i>Amphora</i> sp. Ehrenberg.
2	<i>Fragillaria brevistriata</i> Grun v. vidharbhensis v. nov.
3	<i>Fragillaria construens</i> (Hhr.)Grun.V.venter Grun
4	<i>Navicula cupsidata</i> Kuetz.
5	<i>Navicula cupsidata</i> Var.donaice Grun.
6	<i>Navicula hustedtii</i> Krasske
7	<i>Navicula salinarum</i> (Grunow) Kuntze
8	<i>Cymbella aspera</i> (Ehr.) cleve
9	<i>Nitzschia closterium</i> W.Smith
10	<i>Nitzschia fonticola</i> Grun.
11	<i>Nitzschia obtuse</i> W. Smith v. <i>scalpelliformis</i> Grun.f,Parva.Husdet
12	<i>Nitzschia palea</i> (Kuetz) W. Smith
13	<i>Gomphonema</i> sp. Agardh
14	<i>Surirella ovata</i> Kuetz.
15	<i>Diatoma valgaris</i> Kuetz.

Talekar Santosh and Jadhav Milind J, 2010. Studies on the diatoms from Manjara river of Beed district in Maharashtra. *Bioscience Discovery*, 1(1) 13-14.

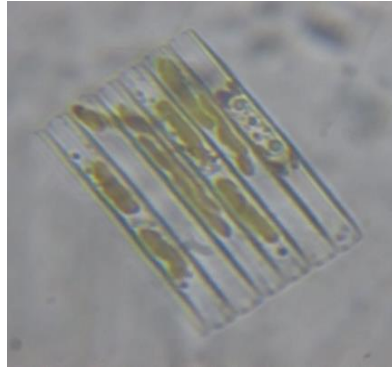
Tuite CH, 1998. Standing crop densities and distribution of *Spirulina* and benthic diatoms in East

African alkaline and saline lake. *Freshwater Biol.*, 11: 345-360.

Venkataraman G, 1939. A systematic account of some South Indian diatoms. *Proc.Ind.Acad.Sci.* 10: 293-368.



Fragillaria construens



Fragillaria brevistriata
v. *vidharbhensis*



Navicula capsidata



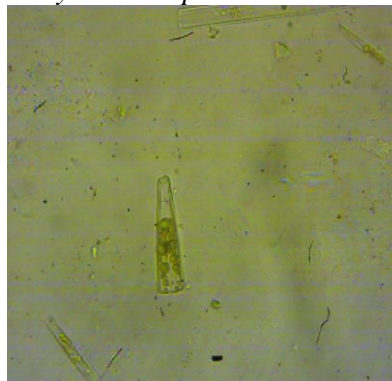
Navicula hustedtii Krasske



Cymbella aspera



Nitzschia palea



Gomphonema sp. Aghardh

Figure 1. Diatoms recorded from alkaline and saline water habitat.

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