Study on some phytoplankton from Januna Lake, Khamgaon (MS)

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Abstract
The samples collected from Januna lake Khamgaon are investigated for different unicellular algae present in water and some Diatoms and cosmarium species found in lake are reported here. The Januna lake is 6 to 10 km away from Khamgaon situated between latitude $76^0$44' to 76^0 47' and longitude 20^0 56' to 20^0 63' i.e. in high temperature zone, the rainfall is very low, the samples were collected by planktonic net, preserved in 4% formalin, observed and identified. In all seven species of Diatoms and Cosmarium has been described here, viz are *Pinnularia acrosphaeria* (Breb.) *Cymbella kolbei* (Hust.), *Cymbella tumida* (Breb.), *Nitzschia frustulum* (Kutz.), *Cosmarium bioculatum, C. botrytis* and *C. globosum.* Chlorophyta are abundant in the hard water with high turbidity. Presence of Diatoms like *Cymbella, Nitzschia* is an indication of polluted water. The species of diatoms reported here indicates indirectly the disposal of garbage and sewage in the lake. *Pinnularia acrosphaeria* inhabit the water bodies generally with rotten matters. *Nitzschia frustulum* is abundant in the pools ditches formed through effluents from sewage. *Cymbella kolbei* and *C. tumida* grows vigorously in detritus and squeezing of vegetable matter. It shows that water quality of the lake is so contaminated.

Keywords: *diatoms, bacillariophyceae, cosmarium, chlorophyceae, januna*.

1. Introduction
The Algal flora of the various part of the Maharashtra is still remain unexplored and without first knowing the status of our aquatic resources especially algae of this area we cannot have projection for their utilization. The Khamgaon is Tahsil of district Buldana situated between latitude 76^0 44' to 76^0 47' and longitude 20^0 56' to 20^0 63' i.e. in high temperature zone. The rainfall is very low so water bodies like ponds ditches are mostly temporary for two to three months only.
Januna is small water reservoir, about 6 km from Khamgaon. In present investigation the samples are collected from Januna water body throughout the year. The samples are investigated for different phytoplankton abundantly present in water out of which Diatoms and *Cosmarium* species found in collection are reported here.

2. Material and Methods

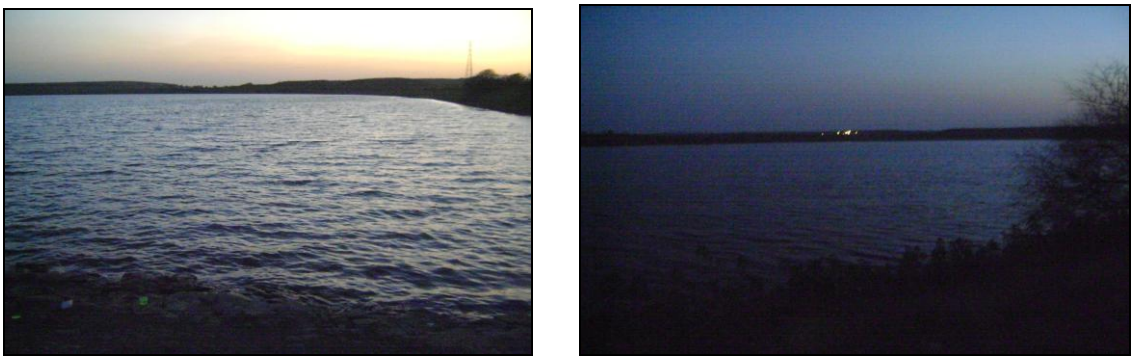


Fig 1: View of Januna Lake Khamgaon

The samples were collected from Januna Lake throughout the year by planktonic mesh net. Collected sample has been preserved in 4% formaldehyde and stained with Iodine, fast green and Cotton blue and mounted in glycerin for further study. The identification has been done on the basis of morphological consideration like habit, shape & size of the cell etc. with the help of monograph and relevant books and literature [1-16]. The slides are observed under Labomed vision 2000 binocular research microscope with photomicrographic attachment of DCM 130 Cat cam with 1.3 M pixel camera.

3. Results and Discussion
Following species of Diatoms has been observed.
Bacillariophyta (Diatoms)

The members of Bacillariophyta comprising single class Bacillariophyceae are commonly called as Diatoms This group is very large and comprises about 16000 species with 238 genera. It includes two orders namely Centrales and Pinnales, defined on the basis of symmetry. In present collection four planktonic species belonging to three different genera has been reported, which are as follows.

Pinnularia acrosphaeria (Breb.)
Valves of the cell 70-74.5 µ long and 11 µ broad, linear with distinctly swollen middle part and poles Striae about 10-12 in 10 µ slightly radial in the middle and a few convergent towards extreme ends. Raphae somewhat thick but simple; central pores slightly unilaterally bent and distinct terminal fissures sharply bent in contrary directions. Axial area wide a

little less than half the width of the valves with irregularly disposed punctuates margins, central area slightly widened. (Photo Plate No. 1. A to D.).

***Cymbella kolbei* (Hust.)**
Valves 20-22 µ long and 7.8 µ broad, asymmetrical naviculoid, dorsal side highly convex, ventral side less convex, ends scarcely constricted obtusely rounded. Raphae less excentric, slightly arched, with central pore ventrally bent. Axial area narrow, linear lanceolate; central area only slightly expanded. Striae about 9-12 in the middle to 15-16 in 10 µ, towards ends, course, slightly radial throughout, faintly lineate, mid ventral side with an isolated distinct stigma. (Photo Plate No. 1. EtoH.).

***Cymbella tumida* (Breb.)**
Valves 82.5-94.7 µ long and 18.8-20 µ broad, ends bluntly rostrate, truncate. Striae on the dorsal side are about 7-9 in the middle to 9-10 in 10 µ, towards ends. On ventral side 7 in the middle to 10 towards ends in 10 µ, lineate. Liniations about 14-16 in 10 µ. This species shows much variation in shape, timidities and ends. (Photo Plate No.1. I to N.).

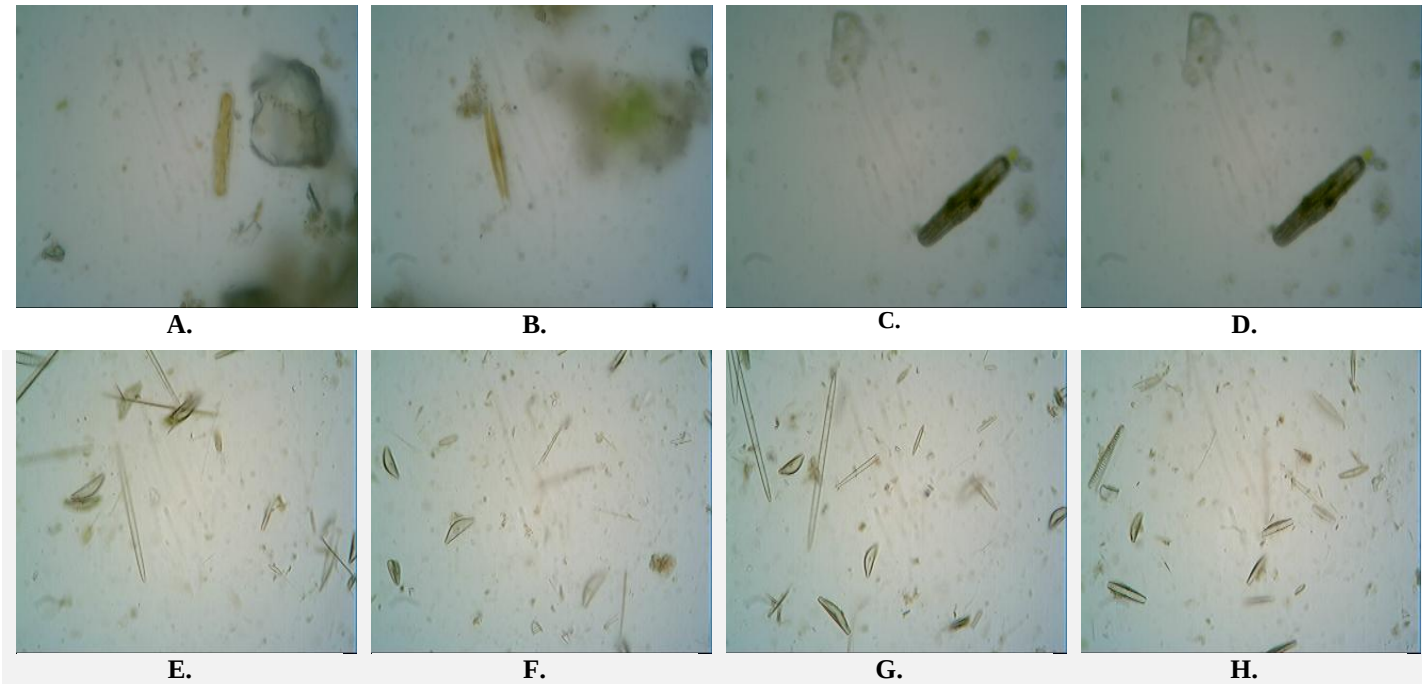
***Nitzschia frustulum* (Kutz.)**
Valves 5.4-11 µ (upto 60 µ) long and 2.4-3 µ (upto 5 µ) broad, elliptic lanceolate to linear lanceolate, cuneately narrowed, weakly rostrate rounded ends. Keel very excentric, keel punctuate course, about 9-13 in 10 µ. Two middle ones set apart. Striae 24-26 in 10 µ, fine but distinctly punctuate. (Photo Plate No.1. O to R.).

Cosmarium
It is free floating, solitary desmids. Three different species of Cosmarium are found from Januna Lake. It consists of a small, flat cell. The length breath ratio varies in different species. The unicell has deep constriction, the sinus. The sinus divides the cell into two distinct symmetrical halves, the semicells. The two semicells are joined by a narrow connecting portion, the isthmus. It has three principal planes of symmetry, naturally rests in a plane containing the two longest axes. In this plane the semicells appears semicircular, elliptical, reniform etc. The cell consists of cell wall enclosing the protoplast. The cell wall is smooth in some species and impregnated with granules in others. It is differentiated in two layers, an inner and outer. There is pore in cell wall. The protoplast secrets mucilage through these pores, which forms mucilaginous coat around the cell wall. Protoplast contains cytoplasm, nucleus, chloroplast and vacuoles. Following three species are found in present collection.

C. bioculatum
The cells in this species are small, 16-20 µm long and 14-16 µm broad, isthmus is 4-5 um wide. This is comparatively shorter form. (Photo Plate No.2. A to F.).

C. botrytis
The cells in this species are much longer than broad, 70-75 µm long and 50-70 µm broad, isthmus is 15-18 µm wide. (Photo Plate No.2. G to K.).

C. globosum
The cells in this species are slightly longer than broad, 30-35 µm long and 25-30 µm broad; isthmus is 9-12 µm wide. This is comparatively shorter form. The present specimen resembles many species of Desmids. (Photo Plate No.2. L to N.).



A. **B.** **C.** **D.**

E. **F.** **G.** **H.**

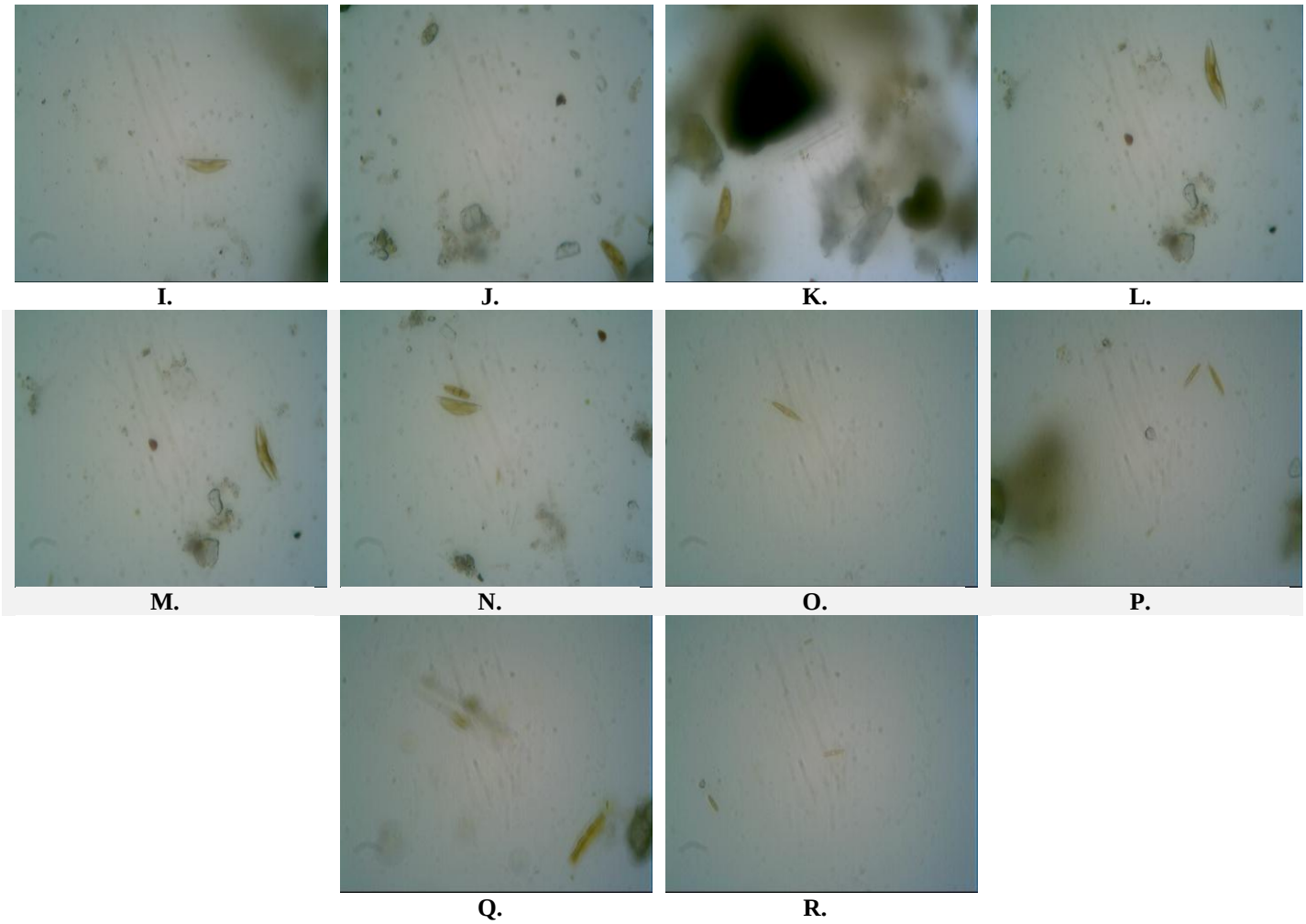
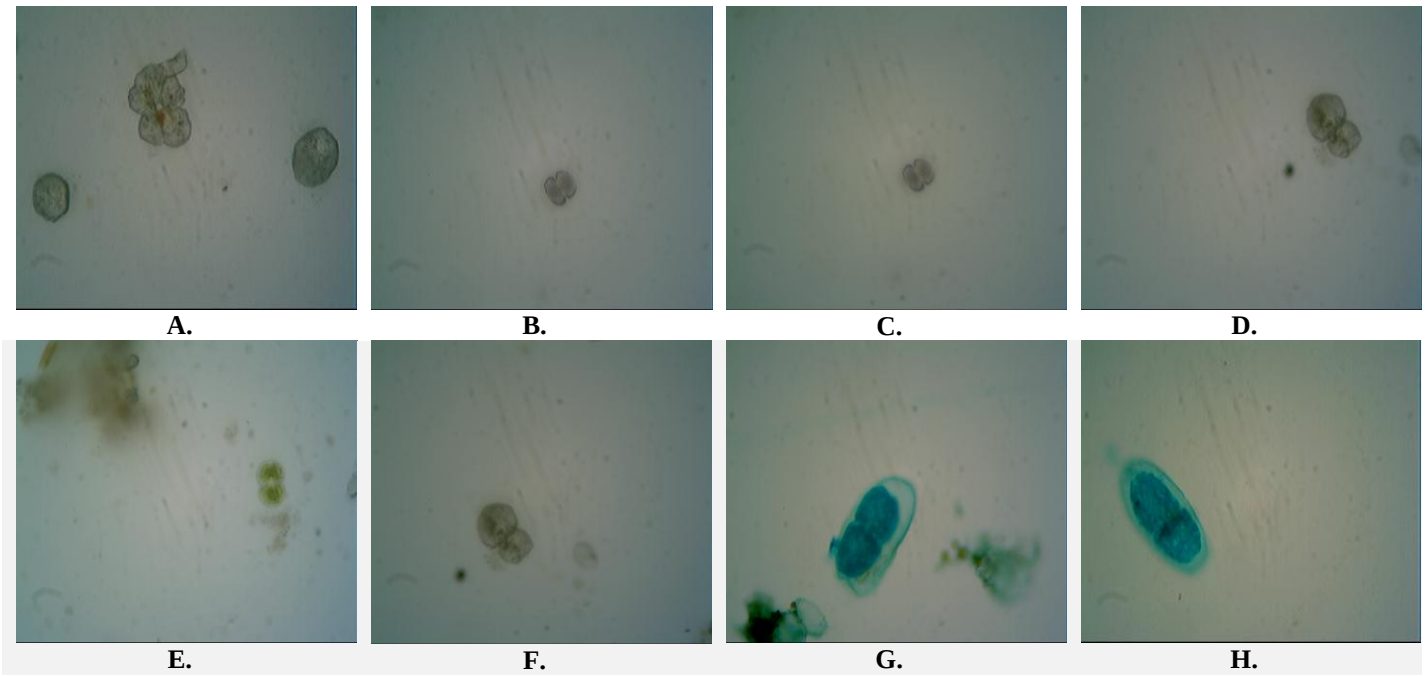


Fig 2: A to D *Pinnularia acrosphaeria*, E to H *Cymbella kolbei*, I to N *Cymbella tumida*, *O to R Nitzschia frustulum*



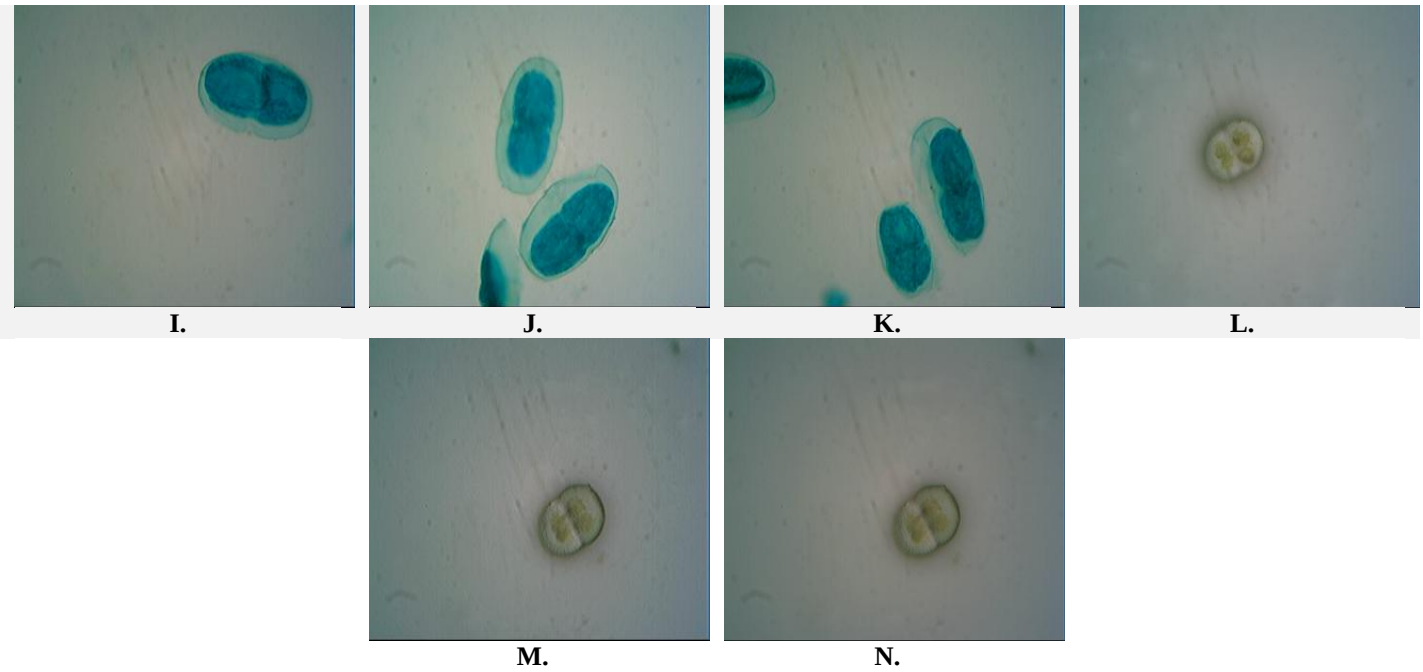


Fig 3: A to F *Cosmarium bioculatum, G to K Cosmarium botrytis, L to N Cosmarium globosum.*

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