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Phytoplanktonic Algal Forms of Euglenineae and Bacillariophyceae Collected From a Perenial Pond

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ABSTRACT

Microscopic algal forms constitute the phytoplankton of the freshwater ecosystem. It represents the extremely heterogeneous motile or non-motile form of autophytic thallophytes whose movement is more or less dependent on water currents.Euglenineae represent the motile algal forms. Bacillariophyceae members are known as diatoms which are considered as the jewels of plant world. Four algal forms of Euglenineae and sixteen forms of Bacillariophyceae were collected from Shivganga, a perennial pond of Deoghar, Jharkhand.

Keywords : Phytoplankton, algal forms, microscopic, aquatic, freshwater, ecosystem, heterogeneous, motile, non-motile, autophtic, thallophytes, diatom,bio indicator, pollution.

INTRODUCTION

Phytoplanktons are the heterogeneous forms autophytic thallophytes whose movement is more or less dependent on water currents. Euglenineae and Bacillariophyceae represent a major fraction of algal vegetation of Shivganga, a perennial pond of Baidyanathdahm, Deoghar, Jharkhand. It acts as water purifier as well as bioindicator of water pollution. Systematic enumeration of euglenoids and the diatoms of Shivganga pond was carried and twenty algal forms have been recorded out of which 4 belongs to Euglenineae 16 to Bacillariophyceae. Brief description of all the species have been given, mentioning measurements, characteristics feature and time (month) of collection of the individuals. Following abbreviations are used in the description M=Micron, L=length, W= width, T= thickness, I = isthmus, Dia= diameter, Plank =plantonic, Pl= plate, f = figure.

METHODS

Standard methods are adopted for the collection and identification of phytoplankton. Algal samples were collected at regular monthly intervals by filtering 85 liter of water with plankton net of bolting silk (no 20) having 75 message per linear centimeter. Samples were preserved in 4% Formalin for laboratory analysis. Micro transact method of Lackey (1938) modified Edmondson (1974) was followed for the counting of members of phytoplankton individuals per liter of water were calculated by the formula of of Welch (1948). Literature and monograph of West and West (1907), Fritsch(1935), Desikachary(1959), Turner(1978) and Sarode and Kamat (1984) were followed as the basic references for the identification of phytoplankton. Important characteristics of phytoplankton along with its habit, habitat, measurement in Micron and Camera lucida diagrams are presented here with some abbreviation mentioned above were used in the description of phytoplanktonic algae

RESULTS

Systematic enumeration of algal forms of Euglenineae

and Bacillariophyceae were carried after its proper collection in morning hours at monthly intervals for the whole year. It was counted and identified for its species composition Only four species of Euglenineae and 16 species of Bacillariophyceae were recorded. Following is the systematic enumeration of phytoplanktonic algal forms of Euglenineae and Bacillariophyceae collected from Shivganga pond of Baidyanathdham- Deoghar, Jharkhand.

Class: EUGLENUNEAE

Order: EUGLENALES

Family: EUGLENACEATE

1. *Euglena acus Ehrenb.*

   Fritsch, 1935, P.724, f.239A.

   Cell L= 115.5M; W=6.6M, Plank; July; f.1.

2. *Euglena spirogyra Ehrenb*

   Fritsch, 1935, P.724, f.239C.

   Cell L= 112.2M; W=19.8M, Plank; July; f.2.

3. *Euglena polymorpha Dang.*

   Fritsch, 1935, P.724, f.239D

   Cell L= 33 M; W=9.9M, Plank; Dec; f.2.

4. *Phacus anomala* Fritsch and Rich

   Fritsch, 1935, P.724, f.239K

   Cell L= 33M; W=26.4M, Plank; Dec; f.4.

Class: BACILLARIOPHYCEAE

Order: CENTRALES

Family: COSCINODISCACEAE

Sub family: MELISIROIDEAE

1. *Melosira granulata (Ehr.) Ralfs.*

   Gandhi,1958, P.494, f.2,

   Frustules dia=5.5M, Semicells= 23.1M high, cylindrical, united in short chains, end cells with spines, Plank; Jan-May, Aug-Dec; f.5.

2. *Melosira islandicavar.typica A.Cl.*

   Sarode and Kamat, 1984, P.19, Pl.1, f.4.

   Frustules dia=6.6M, Semicells= 19.2M high, rows of aeroles10 in 10M, Plank; Jan-July, Sept, Nov, Dec; f.6.

3. *Cyclatella meneghiniana Kuetz.*

   Sarode and Kamat, 1984, P.22, Pl.1, f.12.

   Valves dia= 20.6M, discoid, frustules with undulate walls, central field radially puntate, striae 9 in 10M, Plank; July, f.7.

Order: PENNALES

Family: FRAGILLARIACEAE

1. *Fragillaria construens(Ehr.) Grun*

   Sarode and Kamat, 1984, P.26, Pl.1, f.20b.

   Valves L= 24.75 M, W=3.3M, Striae 12 in 10M, Frustules linear, loosely attached, rounded ends, pseudoraphe broad; Plank; Feb-Apr, Aug, Oct, Nov; f.9.

2. *Synedraacus var. acula*(Kuetz.)X.H.

   Valves L= 151.8 M, W=2.47 M, Striae 16 in 10M,

   Delicate, narrow, needle like, with capitate ends, Plank; Jan, Apr, Jun-Sept, dec; f.10.

   Family: NAVICULACEAE

3. *Gyrosigma attenuatum*(Kuetz) Rabh.

   Sarode and Kamat, 1984, P.66, Pl.7, f.146.

   Valves L= 208 M, W=24.5 M, Striae 13 in 10M, Sigmoid, lanceolate, gradually narrowed from the middle towards the poles, ends obtusely rounded, Plank; Apr, Aug, f.11.

4. *Gyrosigma acuminatum*(Kuetz.) Rabh.

   Sarode and Kamat, 1984, P.67, Pl.7, f.147.

   Valves L= 95.7 M, W=13.2 M, Striae 18 in 10M,

   Frustules solitary lanceolate, gradually tapering from middle, raphe, sigmoid, Plank; Feb. f.12

5. *Gyrosigma baikalensis*SKV.

   Sarode and Kamat, 1984, P.67, Pl.7, f.147.

   Valves L= 155.1 M, W=165 M, Striae 17 in 10M, Lanceolate, strongly produced, capitate ends, Plank; June, f.14.

6. *Naviculahalophila* (Grun.) Cleve var. *Subcapitata*ostrub

Sarode and Kamat, 1984, P.113, Pl.13, f.278.

Valves L= 33 M, W=6.6 M, Striae 15 in 10M,

Lanceolate, slightly produced, capitate ends, Plank; June, f.14.

7. *Navicula minuta*(Kuetz.) var*producta*Grun.

Sarode and Kamat, 1984, P.116, Pl.13, f.291.

Valves L= 26.4 M, W=8.25 M, Striae 15 in 10M, Elliptic lanceolate, rounded ends, central area large, rectangular, widening forwards margins, Plank; June. f.15.

8. *Navicula laterostrata*Hustedt.

Sarode and Kamat, 1984, P.113, Pl.13, f.281.

Valves L= 26.4 M, W=6.6 M, Striae 15 in 10M, Elliptic lanceolate, rounded ends, raphe thin straight, Plank. Dec,f.16.

9. *Cymbella hunarica*(Grun.) pant var. *Signata* (Pant.) A.CL.

Sarode and Kamat, 1984, P.170, Pl.20, f.453.

Valves L= 33 M, W=8.25 M, Striae 10 in 10M, Asymmetrical; dorsal margin- convex, ventral margin- Straight, Apr,fig.17.

10. *Gomphonema gracile*Ehr. var, *auritum* A.Br

Sarode and Kamat, 1984, P.185, Pl.23, f.497.

Valves L= 33 M, W=3.3 M, Striae 13 in 10M, Lanceolate clavate, acutely rounded ends, Central area unilateral.Apr,f.18.

Family: NITZSCHIACEAE

1. *Nitzschia intermedia. Hantzsch.*

Sarode and Kamat, 1984, P.218, Pl.26, f.598.

Valves L= 165 M, W=7 M, Striae 25 in 10M, Linear lanceolate, elongated cuneate, Plank, May, June,f.19.

2. *Navicula Subtilis* Grun.

Sarode and Kamat, 1984, P.225, Pl.26, f.624.

Valves L= 35 M, W=3.3 M, Striae 35 in 10M,

Narrow lanceolate, acute ends, Plank, June,f.20.

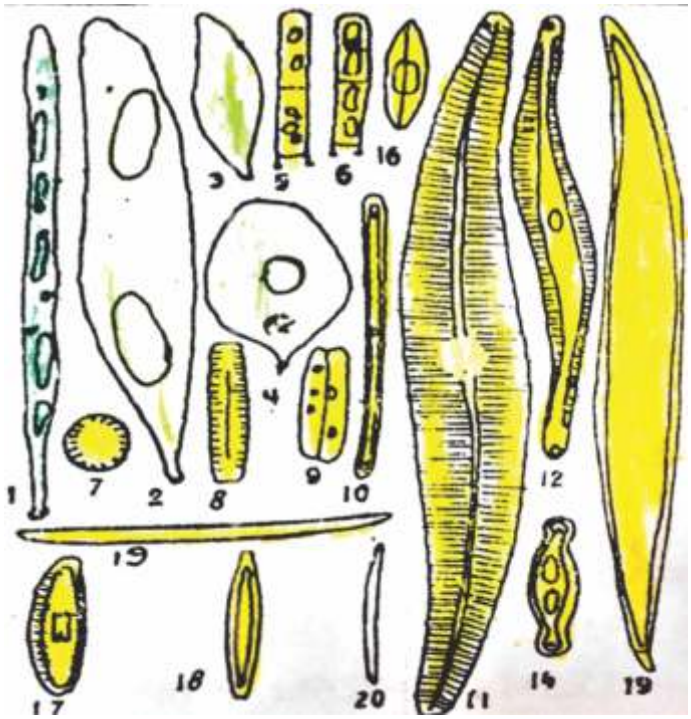

Fig 1-20: Euglenineae and Bacillariophyceae algae collected from Shivganga pond, B.Deoghar.

1. *Euglena acus.*
2. *Euglena spirogyra.*
3. *Euglenapolymorpha.*
4. *Phacusanomala.*
5. *Melosira granulate.*
6. *Melosiraislandica.*
7. *Cyclatellameneghiniana.*
8. *Fragillariaconstruens.*
9. *Fragillariabrevistriata.*
10. Synedraacus.
11. *Gyrosigmaattenuatum.*
12. *Gyrosigmaacuminatum.*
13. *Gyrosigmabaikalensis.*
14. *Navicula halophile.*
15. *Naviculaminuta.*
16. *Naviculalaterostrata.*
17. *Cymbellahunarica.*
18. *Gomphonema gracile.*
19. *Nitzschia intermedia.*
20. *Navicula subtilis*

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