



---

## **Study on Diversity and Distribution pattern of Bacillariophyceae Algae from Shivan River Basin**

***Dr. R. R. More***

Department of Botany, Jijamata A. S. C. College Nandurbar. (M.S.) 425412

---

### **ABSTRACT**

The current work is deals with the study and observation of some bacillariophyceae algal diversity from Shivan River Basin of Nandurbar District area. Bacillariophyceae also commonly known as Diatoms, are particularly interesting as potential indicators of water quality. Different sites were decided to collect sample from Shivan River Basin and collected samples were tested in laboratory for types of Algal diversity. Distribution and diversity pattern of algal sample were listed and recorded form river are unique and pioneers recorded of said location.

Key word: Bacillariophyceae, Shivan River, Nandurbar, Aquatic habitat and Diversity.

---

### **Introduction**

The aquatic resources of the country are its national wealth and their sustainable utilization for all purposes given top preference. Increasing population explosion and industrialization, intensive green revolution and fish culture have pressured on the water resources and water shortages have rapidly. Global warming can increase global rates of evaporation, shift rainfall pattern and disturbed water supplies and ultimately food supplies, some area will get heavy rainfall and some less, some river flows will change, heave flooding, we are already facing this problem. Hence there is an urgent need of scientific management like rain water harvesting, water shade management and conservation of the precious natural resources. UN general assembly has proclaimed the period 2005 to 2015 as an international decade for action. "Water for life" (Dudgeon *et al.*, 2005 and Noga *et al.*, 2012). The World Health Organization (WHO, 2000) estimates that 80% of all sickness in the world is attributed to water born disease due to unsafe water and sanitation. Water is universal solvent, it provides an ideal medium for many important biological process occurring at cellular level in living organism, mainly the fresh water is one of the most precious and important natural resource (Rimet *et al.*, 2012 and Hosmani *et al.*, 2013).

Diatoms (Bacillariophyceae Members) are a specialized, systematic group of algae occurring in all water ecosystems and other wet habitats. Bacillariophyceae Members includes above thousands of species reordered form all over the world. Besides easy sampling and collection, Bacillariophyceae have the great advantage that their siliceous walls provide the detail from which identification is made and every sample ends up permanently mounted on a microscope slide (Reid *et al.*, 1995, Tambor *et al.*, 2011 and Dhande *et al.*, 2019).

---

### **Materials and Methods**

Water is the main essential requirements of all living organisms. Its qualities always are in top priorities in human civilizations. For current works to study in the diversity of Bacillariophyceae member Shivan River Basin has been selected. This study aims to understand various Bacillariophyceae members among the local water bodies of the Shivan River Basin. Monthly collection of water and algae were made for years from June 2018 to May 2019. The collected algal samples were stored in the acid washed plastic bottles and sample immediately preserved in 4% formalin for microscopic observations. The algae were identified by relevant monographs and recent available literature (Kamat, 1963; Mahajan, 1983, Gonzalvies & Kamat, 1960 and Prasad BN and Mehrotra RK 1979).

---

### **Results and Discussion**

The class Bacillariophyceae represented 50 species distributed into diffrent genera (Table 1) and 2 orders Centrales and Pennales. The species recorded viz Cyclotella, Synedra, Mastogolia, Stauroneis, Pinnularla, Cymbella, Gomphonema, Nitschia and Surirella. Bacillariophyceae member dominant group was found luxuriant growth in summer.

Table: 01: Bacillariophyceae Diversity

Sr. No	Bacillariophyceae Members	Sample 01	Sample 02	Sample 03	Sample 04
01	<i>Melosira islandica</i> O. Muell. v. <i>helvetica</i> O. Muell	+	+	-	+
02	<i>Cyclotella antiqua</i> W. Smith	-	-	+	-
03	<i>Cyclotella catenata</i> Brun	-	-	-	+
04	<i>Cyclotella meneghiniana</i> Kuetz. f. <i>binotata</i> Grun.	-	+	+	-
05	<i>Cyclotella meneghiniana</i> Kuetz. v. <i>unipunctata</i> A. Cl.	+	-	-	-
06	<i>Cyclotella stelligera</i> Cleve et Grun.	-	-	-	+
07	<i>Fragilaria capucina</i> Desmazieres v. <i>lanceolata</i> Grun.	+	-	+	-
08	<i>Fragilaria ungeriana</i> Grun.	-	+	-	-
09	<i>Synedra acus</i> Kuetz :	-	-	+	-
10	<i>Synedra affinis</i> Kuetz v. <i>fasciculata</i> (Kuetz) Grun.	+	-	-	-
11	<i>Synedranana</i> Meister	-	-	+	+
12	<i>Synedrapulchella</i> Kuetz.	+	-	+	-
13	<i>Synedrapulchella</i> Kuetz v. <i>naviculacea</i> Grun.	-	-	+	-
14	<i>Synedra ulna</i> (Nitiz) Ehr.	-	+	-	-
15	<i>Mastogloia blatica</i> Grun.	+	-	-	+
16	<i>Mastogloia recta</i> Hustedt v. <i>pulchella</i> Voigt	-	+	-	+
17	<i>Pleurosigmatularum</i> Grun.	-	-	+	-
18	<i>Caloneis aequatorialis</i> Hustedt v. <i>tugelae</i> Cholnoky	-	+	-	-
19	<i>Neidium longiceps</i> (Greg.) A. Cl.	-	-	-	+
20	<i>Stauroneis phoenicenteron</i> Ehr.	-	+	-	-
21	<i>Stauroneis phoenicenteron</i> Ehr. f. <i>producta</i> Gandhi	-	-	+	-
22	<i>Navicula cari</i> Ehr. f. <i>indica</i> Sarode and Kamat	+	-	-	-
23	<i>Navicula cuspidata</i> Kuetz.	-	-	-	+
24	<i>Navicula cuspidata</i> Kuetz. v. <i>ambigua</i> (Ehr.) Cleve f.	-	+	-	+
25	<i>Navicula cuspidata</i> Kuetz. v. <i>conspicua</i> Venkat	-	-	+	-
26	<i>Naviculalahalophila</i> (Grun.) Cleve f. <i>subcapitata</i> Ostrup	+	-	-	-
27	<i>Navicula mutica</i> Kuetz. v. <i>producta</i> Grun.	-	-	+	-
28	<i>Navicula radiosa</i> Kuetz. v. <i>tenella</i> (Breb. ex Kuetz.) Grun.	-	-	-	+
29	<i>Navicula rhychocephala</i> Kuetz. v. <i>amphiceros</i> V.H.	-	-	-	+
30	<i>Navicula terrestris</i> Boy. Pet.	+	-	-	-
31	<i>Navicula zanoni</i> Hustedt	+	-	-	+
32	<i>Pinnularia acrosphaeria</i> (Breb.) W. Smith v.	-	+	-	-
33	<i>Pinnularia borealis</i> Ehr.	-	-	+	-
34	<i>Pinnularia divergens</i> W. Smith v. <i>laticeps</i> Frengu.	+	-	-	-
35	<i>Pinnularia neglecta</i> (Mayer) A: Berg	-	-	-	+
36	<i>Pinnularia platycephala</i> (Ehr.) Cleve	-	+	-	-
37	<i>Cymbella bengalensis</i> Grun.	+	-	-	-
38	<i>Cymbella bharatensis</i> Sarode and Kamat	-	+	-	+
39	<i>Cymbella cistula</i> (Hemprich) Grun.	-	-	-	+
40	<i>Cymbella ventricosa</i> Kuetz.	-	+	-	-
41	<i>Cymbella tumidula</i> Grun.	+	-	+	-
42	<i>Cymbella ventricosa</i> Kuetz. v. <i>arcuata</i> Skv.	-	+	-	+
43	<i>Cymbella ventricosa</i> Kuetz. v. <i>depressa</i> Krishn.	-	+	-	+
44	<i>Gomphonema augur</i> Ehr.	-	-	-	+
45	<i>Gomphonema clavatooides</i> Gandhi	+	-	-	-
46	<i>Gomphonema intricatum</i> Kuetz	-	+	-	+
47	<i>Gomphonema intricatum</i> Kuetz v. <i>fossile</i> pant	-	-	+	-
48	<i>Gomphonema lanceolatum</i> Ehr.	-	-	-	+
49	<i>Nitzschia sublinearis</i> Hustedt	-	+	-	-
50	<i>Surirella robusta</i> Ehr. f. <i>minor</i> Gandhi	-	+	-	+

---

## Conclusion

The current investigation help to provides information about 50 algae belongs to Bacillariophyceae or diatoms in different area of Shivan River Basin and can be used for the preparation of algal base knowledge of district.

## Acknowledgment

Author is thanks to Dr P V Ramaiah Ret. Principal ACS College Taloda, for their support and help with regards to current work. I am also thankful to the Principal Jijamata College Nandurbar for their constant encouragement and able guidance throughout the course of the present study.

---

## REFERENCES

- [1] Dhande JS, Jawale AK, Vanjari SD and Chaudhari NA (2019). Studies on taxonomy of some coccooid Cyanophytes from Hartala lake, Maharashtra. *Int. J. of Life Sciences, Special issue, A 13*, pp. 247-250.
- [2] Gonzalves, E.A., and Kamat, ND (1960). The myxophyceae of Karnataka III , *Journal of Bombay University*, 28(Expecting): pp. 28-41.
- [3] Hosmani, S. P. (2013) "Freshwater Algae as Indicators of Water Quality. *UJERT*, 3(4), 473- 482.
- [4] Kamat, N.D. (1963).The Algae of Kolhapur, India. *Hydrobiologia*, 22 (3-4): pp. 209- 305.
- [5] Mahajan Neelima and Mahajan AD (1990). On some fresh water blue green algae from Satpuda ranges in Jalgaon district. (M.S.). *Perspectives in Phycology (Prof. M.O.P. Iyengar centenary celebration volume)*, pp. 157-159.
- [6] Mahajan, A.D., (1983). Study of algal flora of Khaira district Gujarat. Ph.D. Thesis, Sardar Patel University, Anand.
- [7] Noga T. (2012). Diversity of diatom communities in the Wisłok River (SE Poland).
- [8] Prasad BN and Mehrotra RK (1979). Cyanophycean flora of some North Indian crop fields. *Geophytology*,8(2): pp. 147-157.
- [9] Reid, M. A., J. C. Tibby. D. Pcnny & G. P.A. (1995). The use of diatoms to assess past and present water qualities. *Austral. J. Ecol.* 20: 57-64.
- [10] Rimet, F. (2012). Recent views on river pollution and diatoms. *Hydrobiologia*, vol. 683, pp. 1-24.
- [11] Tambor A., Noga T. (2011). Różnorodność flory okrzemek w rzece Lubcza i potoku Lubenia (Podgórze Rzeszowskie, Polska SE). *Rocznik Przemyski*, 47(3): 105–118.
- [12] Wołowski K, I. Kaczmarek, J. M. Ehrman and A.Z. Wojtal (eds), *Phycological Reports: Current advances in algal taxonomy and its applications: phylogenetic, ecological and applied perspective*, pp. 109–128.