Some Diatoms from Nandurbar District.

Nilima, Patil and Patil, Neelima

P.G.Department of Botany,

JET's Z.B. Patil College, Deopur, Dhule-424002

e-mail: nilimajp11@gmail.com

Abstract

During August, 2018-February, 2019 some diatoms were recorded from freshwater of Nandurbar district. The present paper reports 8 genera, with 15 species of class Bacillariophyceae. These include 15 members of order Centrals & Pennals. All these Diatoms are aquatic.

Key words: Nandurbar, Diatoms, aquatic.

Introduction

Algae are predominant organisms in water bodies and contribute to primary productivity of aquatic food chain. (Jena M. et. al.2005), especially members of Cyanophyceae, Chlorophyceae and Bacillariophyceae. These occur as planktonic, epizoic, epiphytic forms in lentic and lotic type of water bodies (Padhi S. B. et al. 2010).

Bacillariophyceae which includes Diatoms are microscopic algae. The uses of diatoms as food source for zooplanktons and fishes (Prescott 1954); they create about 25% oxygen in atmosphere (Shukla S. et. al 2008). They are used to study water quality and pollution (Kamat, 1965).

The northern part of Maharashtra is known as Khandesh region which include Dhule, Jalgaon & Nandurbar district. Nandurbar is located between $21^0$00'00" to $22^0$00'30'N latitude to $73^0$31'00'' to $74^0$45'30''S longitude. Nandurbar is surrounded by Dhule at South-East, Gujarat state at West & M.P. (Madhya Pradesh) at north side.

Materials and methods

The material was collected from different locations in Nandurbar District, during August, 2018-february, 2019.

The samples were placed overnight in laboratory and allowed to settle. Next day supernant was drained out & settled material is used for further cleaning, for this cold H_2O_2

method is used. Acid boiling was used to remove organic material. Material was centrifuged to remove acid traces and then stored in 70% ethanol. (Karthick et.al.2010)

Microphotographs were taken by using Motic microscope, by using oil immersion (100X). Identification was done up to species level by Sarode and Kamat (1984), Sarode & Kamat (1983a), Gandhi H.P. (1958 B), Rajeshwari, M. S.et.al. (2016).

Description

Division: Bacillariophyta.

Class: Diatomatae.

Order-Centrals.
Sub-order: Discineae
Family: Coscinodiscaceae
Sub-family: Metosiroideae.

1) *Cyclotella meneghiniana* Kuetz.

Central area is large, striae are thick & clear, cylindrical valves are disc shaped, central area clearly isolated from marginal. Valves are about 17.4-18.2 µ in diameter. Striae about 7-9 in 10 µ.

2) *Cyclotella. meneghiniana* Kuetz *f. binotata* Grun.

Valves circular, discoid in girdle view. Valves are undulate, about 17.9-22 µ in diameter, striae about 6-8 in 10 µ & are large, very thick.

3) *Cyclotella meneghiniana* Kuetz.*f.unipunctata* A. Cl.

Valves discoid, circular and about 12.5 µ in diameter. Inner & outer area are clearly distinguish, straie visible, clear & thick, about 6-7 in 10µ.

Order: Pennales
Suborder: Araphidineae
Family: Fragilariaceeae
Sub-family: Fragillarioideae.

4) *Fragillaria intermedia* Grun *f. chandrapurensis* Sarode et. Kamat.

Frustules straight, in girdle view they are united & form long bands. Valves are straight with collateral margins. Pseudoraphe present & they are narrow; ends of valves are tapering & rounded. Valves are about 53.6-63.1 µ long & 9.7-10 µ broad & striae about 10-11 in 10 µ, clear & are absent in central area of one side.

5) *Fragillaria rumpens* (Kuetz.) Carl *v. fragilarioides* (Grun.) A Cl.

Valves are 33.6-41.2 µ long & 2.9-3.2 broad. Frustules are straight & narrow oval shaped & somewhat capitate ends. Pseudoraphe present & narrow. Middle area is large, striae 11-13 in 10 µ.

Suborder: Monaraphidineae.
Family: Achnanthaceae.
Sub family: Cocconeoideae.

6) *Achnanthes exigua* Grun.

Valves 14.9-17.6 µ long & 5.4-5.9 µ broad became narrower at ends. Ovate to almost quadrate in central portion. Valve of raphe with thin & linear raphe, constricted axial area. Striae somewhat radial, 19-20 in 10 µ.

7) *Achnanthes inflata* (Kuetz.) Grun.

Valves 42.6-51.3 µ long & 13.1-15.8 µ broad. Frustules curved in middle. Ends broadly rounded raphe straight & with thin raphe valve. Striae 11-12 in 10 µ, radial.

Sub-order: Biraphidineae
Family: Naviculaceae
Sub-family: Naviculaoideae.

8) *Mastogloida recta* Hustedt.

Valves 42.3-48.5 µ long & 13.5-14.1 µ broad, ovate linear to linear lanceolate with somewhat narrower ends obtusely rounded. Raphe thick, clear & somewhat bent near centre. Central area large compare to axial area. Striae 11-13 in 10 µ, straight but at ends become convergent.

9) *Coloneis permagna* (Bail.) Cleve.

Valves 79.3-107.9 µ long and 31.4-37.4 µ broad, lanceolate rhombic, frustules larger and vigorous, ends rounded, raphe visible and linear, larger axial area than central area and ends convergent, striae about 14 in 10 µ.

10*) Neidium capitellata* Gandhi.

Valves 89.3-97.7 µ long and 19.1-23.6 µ broad, linear straight oval with triangular margins, somewhat wider, abruptly enlarge and globular ends. Raphe thin and linear, central area very large, axial area wider, raphe terminal fissures bifurcated.

11) *Stauroneis acuta* W.Smith.

Valves 63.4-71.1 µ long and 12.8-13.7 µ broad, frustules straight, diamond shape and swollen in the central area, ends broadly rounded, raphe linear and elongated with unilaterally bent central pores and somewhat aculeate terminal fissures, axial area wider, somewhat enlarged, buldge in middle, strauroid central area.

12) *Stauroneis graenlandica* Ostrup *v. subquadrata* A.Cl.

Valves 14.6-15.2 µ long and 5.1-5.6 µ broad, straight ovate to diamond shape in the middle and become narrower, abruptly enlarged and capitate ends, narrower axial area and central area stouronoid shaped.

13) *Navicula cuspidata* Kuetz. *f.brevirostrata* Gandhi.

Valves 56.0-61.8 µ long and 17.5-24.0 µ broad, oval lanceolate shape and become narrower somewhat beak like, ends sub truncate, raphe linear and thin, narrow, wider axial area.

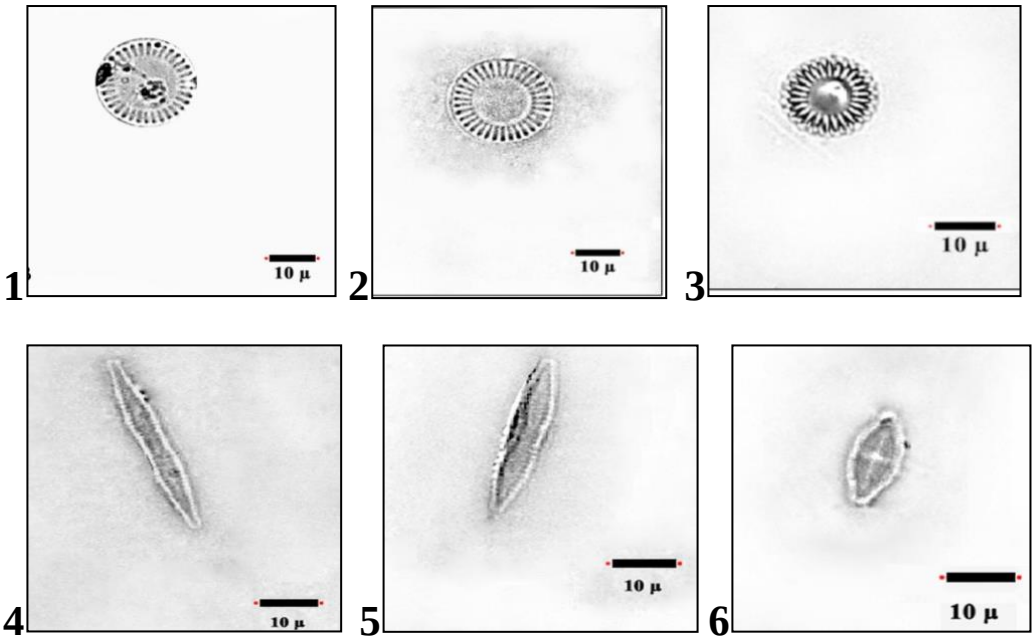
14) *Navicula cuspidata* Kuetz. *v.ambigua (Ehr.)* Cleve.

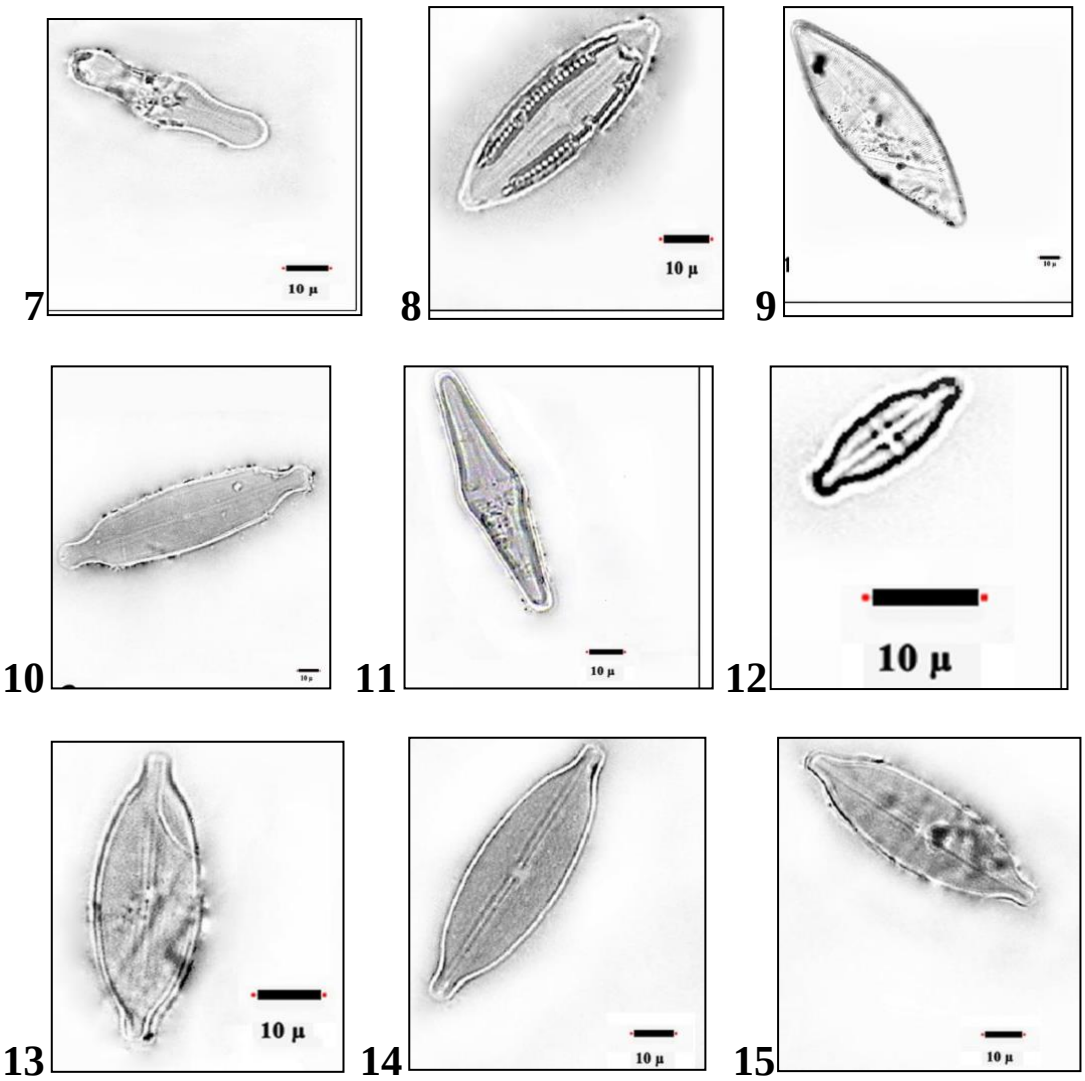
Valves 63.3-83.9 µ long and 17.5-21.3 µ broad, tappered diamond shape with narrow oval ends. Ends become narrower, valve end abruptly enlarge and globular, raphe linear and thin, central area smaller and tappered axial area.

15) *N.cuspidata* Kuetz. *v.ambigua* (Ehr.) Cleve *f.diminuta* A. cl.

Valves 61.1-82.3 µ long and 17.2-20.1 µ broad, predominantly narrow , oval shape tapering at end, raphe thin and linear, central area somewhat broad and axial area tappered.

Photo plate





1) *Cyclotella meneghiniana* Kuetz. 2) *Cyclotella. meneghiniana* Kuetz *f. binotata* Grun. 3) *Cyclotella meneghiniana* Kuetz.*f.unipunctata* A. Cl. 4) *Fragillaria intermedia* Grun *f. chandrapurensis* Sarode et. Kamat, 5) *Fragillaria rumpens* (Kuetz.) Carl *v. fragilarioides* (Grun.) A Cl. 6) *Achnanthes exigua* Grun. 7) *Achnanthes inflata* (Kuetz.) Grun, 8) *Mastogloida recta* Hustedt. 9) *Coloneis permagna* (Bail.) Cleve. 10) *Neidium capitellata* Gandhi, 11) *Stauroneis acuta* W.Smith , 12) *Stauroneis graenlandica* Ostrup *v. subquadrata* A.Cl. 13) *Navicula cuspidata* Kuetz. *f.brevirostrata* Gandhi. 14) *Navicula cuspidata* Kuetz. *v.ambigua* (Ehr.) Cleve. 15) *N.cuspidata* Kuetz. *v.ambigua* (Ehr.) Cleve *f.diminuta* A. cl.

References

- Gandhi H.P. (1958 B) Freshwater Diatoms from Kolhapur & Its Immediate Environs. *J. Bombay Nat. Hist. Soc*.**55: 493 -511.**
- Jena, M., Ratha, S. K., & Adhikary, S. P. (2005). Algal diversity changes in Kathajodi River after receiving sewage of Cuttack and its ecological implications. *Indian Hydrobiology*, **8(1):** 67-74.
- Kamat N. D. (1965). Ecological notes on the algae of Kolhapur, *J. Biol.sci.* **8:**47- 54.
- Karthick B., J.C.Taylor, Mahesh M.K. & Ramachandra T.V. (2010). Protocols for collection, preservation & enumeration of Diatom from aquatic habitat for water quality monitoring in India. *IUP J. Of Soil & Water sci*.**3 (10):**25-60.
- Padhi S. B, Das P. K., swain P.K., Behera G. (2010). Algal flora of freshwater aquatic systems of Mohuda, Orissa. *Indian Hydrobiology*, **12(3):** 143-148.
- Prescott G.W. (1954). How to know "The fresh water algae."W. M. C.Brown company publishers Dubuque, *IOWA.* **Pp.** 1- 224.
- Rajeshwari, M. S., & Krishnamurthy, S. R. (2016). Diatoms (Bacillariophyceae) of the River Bhadra, At Bhadravathi, Karnataka, India. *The Journal of Indian Botanical Society*, **95(3 &4):** 183-193.
- Sarode, P.T. & Kamat N.D. (1983a). The Diatom flora of Vidarbha, India. *Bibliotheca Phycologica*, **66:**259-319.
- Sarode P.T.and Kamat N.D. (1984). Fresh water diatoms of Maharashtra. *Saikripa Prakashana Aurangabad.* **Pp.** 338
- Shukla, Sunil Kumar, Chandra Prakash Shukla & P.K. Misra (2008). Three Taxa Of Pinnate Diatom Nitzschia Hassall – New Additions Of Diatom Flora Of India.Proc. *Nat Acad Sci. India Sect*. B. **78 (4):** 358-361.