

New records of fresh water Algae from India

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Abstract

This is the part of Taxonomic study of micro and macro flora of major rivers of Chandrapur district conducted from 2013 to 2015 period. Present paper deals with total 12 taxa of 8 genera of fresh water algae which were isolated first time from India. Among these, one genus *Amphikrikos* is a new report for the country.

Key words: Chandrapur, Major rivers, New report.

Introduction

India is one of the mega biodiversity countries with 7310 algal species (BSI ENVIS). Various workers contributed their valuable research to explore algal diversity of the country. Although much works have been published from different habitats of the country (Kamat, 1963; Bhakta *et al.*, 2010; Bhosale *et al.*, 2010; Chakraborty *et al.*, 2010; Arulmugan *et al.*, 2010; Srivasthava, 2011; Bhakta & Adhikary, 2012; Das & Adhikary, 2012; Patil *et al.*, 2012; Anekar *et al.*, 2012; Toppo & Suseela, 2013), only few studies are available from Chandrapur district of Maharashtra state (Kamat, 1975; Wadhve, 2014; Reddy & Chaturvedi, 2015).

Chandrapur is the eastern district of the Maharashtra state, located between 18° 41' to 20° 50' North Latitudes and 78° 48' to 80° 55' East Longitudes (fig 1). Physiographically it is situated in the Wainganga and Wardha river basin. The area is drained by major tributaries Wardha, Wainganga and Painganga rivers of the Godavari river. In present study the major rivers Wardha, Wainganga and Painganga of the district were explored. Total 21 sites were selected to monitor micro and macro flora of the rivers (Table 1). These sites are randomly placed and approximately equidistant from each other.

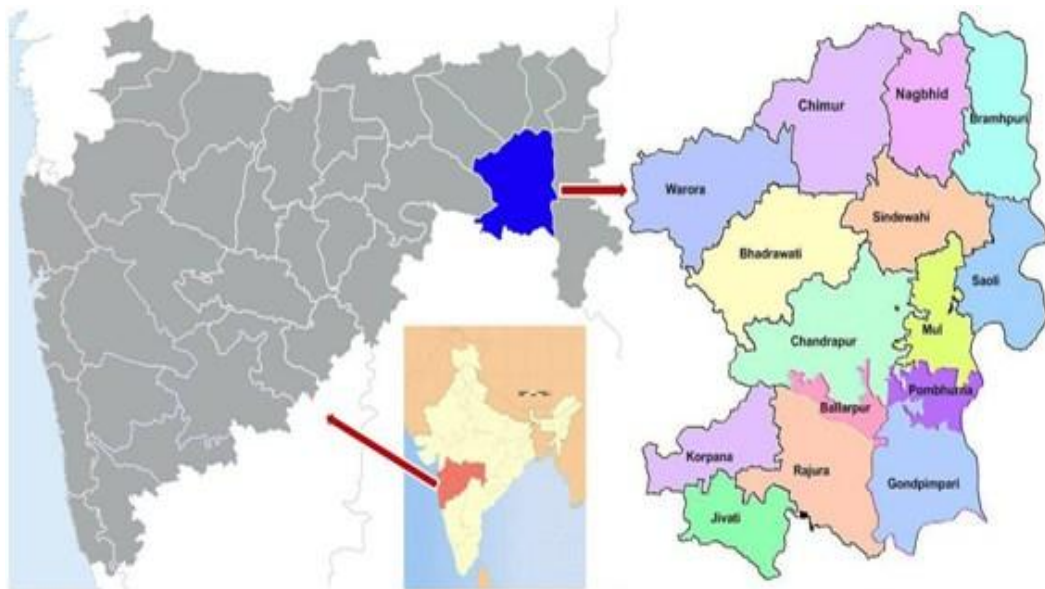


Fig 1 . Location of Chandrapur District

Table 1. Sampling sites

Sr.No	Site	Area	Coordinates
1	S1	Pardi	19° 44' 28.176" N; 78° 54' 46.584" E
2	S2	Bori	19° 48' 23.4756" N; 78° 59' 58.8588" E
3	S3	Gadegaon Wirur	19° 51' 48.456" N; 79° 7' 25.464" E
4	S4	Dhanora	19° 54' 13.104" N; 79° 11' 2.328" E
5	S5	Kadoli	19° 52' 30.756" N; 79° 17' 16.512" E
6	S6	Sasti	19° 50' 1.464" N; 79° 20' 6.864" E
7	S7	Rajura	19° 48' 48.528" N; 79° 22' 29.604" E
8	S8	Koipara	19° 45' 59.544" N; 79° 29' 24.9" E
9	S9	Arvi	19° 38' 1.0428" N; 79° 29' 21.5088" E
10	S10	Polsa	19° 30' 28.8756" N; 79° 35' 18.7224" E
11	S11	Tatepalli	19° 34' 54.948" N; 79° 42' 13.2336" E
12	S12	Gugus	19° 57' 19.7136" N; 79° 5' 56.6448" E
13	S13	Patala	20° 7' 39.324" N; 78° 59' 48.0192" E
14	S14	Soit	20° 16' 45.0084" N; 78° 49' 5.4912" E
15	S15	Gondpipri - Ashti	19° 40' 38.4456" N; 79° 47' 7.6596" E
16	S16	Gangapur	19° 50' 28.0032" N; 79° 45' 14.1048" E
17	S17	Saoli – Chamorshi	20° 0' 28.818" N; 79° 47' 10.4424" E
18	S18	Saoli – Gadhiroli	20° 8' 5.5572" N; 79° 55' 24.9816" E
19	S19	Kudesawali	20° 19' 24.6468" N; 79° 56' 58.1388" E
20	S20	Brahmapuri - Armori	20° 28' 58.9512" N; 79° 56' 47.202" E
21	S21	Brahmapuri - Wadsa	20° 37' 9.7212" N; 79° 56' 24.6444" E

Material and Methods

Samples were collected from all 21 sites during May, August, November and February months of 2013-2015 period. From every site, approximately 50 liters of running water is filtered through phytoplankton net of 20 μ mesh size made of bolting silk. The filtrate was preserved in 4% formaldehyde solution. Microphotography done with the help of Coslab camera inbuilt trinocular microscope.

Algae were identified with the help of standard books, floras, monographs and research papers (Korshikov, 1953; Prescott, 1970; John *et al.*, 2002; Hindak & Hindakow, 2008; Rodrigues *et al.*, 2010; Ramos *et al.*, 2012) and species novelty is conformed from check lists (Gupta, 2012) and Google scholar.

Taxonomic enumeration

Total 12 taxa of 12 species and 8 genera are explained and presented along with their micro photographs.

1. *Amphikrikos minutissimus* Korshikov 1953. (PI I, fig 1)
[Korshikov 1953, p.244, f.189; Hindak & Hindakow 2008, p. 786, f.26 - 31]
Cells solitary, cylindrical, suddenly narrowed down into obtuse ends. Cells have collar ring of brown granules on both the sides.
Size: Cells 4 μ X 8 μ - 9 μ . (longer than the taxa explained by Korshikov)
Occurrence: S1-S5, S8-S10
2. *Elakatothrix acuta* Pascher 1915. (PI I, fig 2)
[Korshikov 1953, p. 411, f. 413]
Colony two celled, embedded in gelatinous mass. Cells cylindrical suddenly form pointed ends on both the sides. Cells longitudinal axes are parallel.
Size: Cells 4 μ X 13 μ -15 μ .
Occurrence: S1-S3
3. *Granulocystopsis decorata* (Svirenko) Tsarenko 2000. (PI I, fig 3)
Basionym: *Oocystis decorata* Svirenko 1931.
Synonym: *Oocystis coronata* Lemmermann; *Oocystis pseudocoronata* Korshikov 1939.

- [Korshikov 1953, p.271, f.224]
Cells ellipsoid to broadly ovate. Apices rounded with a sub apical collar of granules.
Size: Cells 7 μ -10 μ X 13 μ -15 μ .
Occurrence: S8-S11
4. *Westella botryoides* var. *major* G.M.Smith 1918. (PI I, fig 8)
Cells quadrately arranged in groups of four, which further loosely aggregated by ruminants of mother cell wall.
[Prescott 1962, p.237]
Similar to type except larger dimensions.
Size: Cells 10 μ in diameter.
Occurrence: S5
5. *Chlorobion obtusum* Korshikov 1953. (PI I, fig 11)
[Korshikov 1953, p. 284, f. 245]
Cells solitary, broadly fusiform, asymmetrical, bent with one side slightly convex. Ends bluntly rounded. Chloroplast parietal with pyrenoid. Protoplast contains large number of oil droplets.
Size: 10 μ -12 μ X 50 μ -60 μ .
Occurrence: S6
6. *Tetrastrum homoiacanthum* (Huber-Pestalozzi) Hindak 1984. (PI I, fig 9)
Basionym: *Tetrastrum heteracanthum* var. *homioacanthum* Huber-Pestalozzi 1929.
[Rodrigues *et al.* 2010, p.260, f.40]
Colony four celled, Cells quadrately arranged around central space. Cells triangular cordate or sometime appear triangular quadrate. Outer free surface slightly concave with two straight, long and equal setae.
Size: Cells 6 μ -8 μ in diameter; Seta up to 12 μ ; Colony: up to 15 μ broad
Occurrence: S9-S11
7. *Monoraphidium caribeum* Hindak 1970. (PI I, fig 5)
[Ramos *et al.* 2012, p. 427, f. 2h]
Cells fusiform, arcuate to sickle shaped, gradually tapers towards the ends.
Size: Cells 2 μ -3 μ X 15 μ -20 μ .
Occurrence: S12-S16
8. *M. irregulare* (G.M.Smith) Komarkova-Legnerova 1969. (PI I, fig 7)
Basionym: *Dactylococcopsis irregularis* G.M.Smith 1922.
[John *et al.* 2002, p. 366, pl. 90, f. L; Ramos *et al.* 2012, p. 430, f. 3d]
Cells spindle shaped, spirally twisted and very long. Somewhat cylindrical in the middle and attenuated to pointed ends. It is with more spirals than *M. contortum*.
Size: Cells 1 μ -2 μ X 35 μ -70 μ .
Occurrence: S4, S5, S7-S12
9. *M. komarkovae* Nygaard 1979. (PI I, fig 10)
[John *et al.* 2002, p. 368, f. 91A; Ramos *et al.* 2012, p. 431, f. 3e]
Cells cylindrical broadly spindle shaped, straight, and much longer than broad. Cells straight or slightly curved, cylindrical in the middle, and gradually narrows in to long needle like pointed apices.
Size: Cells 3 μ -4 μ X 60 μ -100 μ .
Occurrence: S4, S5, S14-S16
10. *M. nanum* (Ettl) Hindak 1980. (PI I, fig 4)
Basionym: *Nephrodiella nana* Ettl 1977.
[Ramos *et al.* 2012, p. 432, f. 3h]
Cells reniform or crescent shaped with rounded ends.
Size: Cells 2 μ -3 μ X 5 μ -8 μ .
Occurrence: S2, S4
11. *M. obtusum* (Korshikov) Komarkova-Legnerova 1969. (PI I, fig 6)
Basionym: *Ankistrodesmus obtusus* Korshikov 1953.
[Korshikov 1953, p. 290, f. 249; John *et al.* 2002, p. 368, f. 91D]
Cells cylindrical to broadly spindle shaped, straight or slightly bend. Broad, cylindrical in the middle and attenuate in to round apices.
Size: Cells 4 μ -6 μ X 45 μ -55 μ .
Occurrence: S4
12. *Goniochloris fallax* Fott 1957. (PI I, fig 12)
[John *et al.*, 2002, p. 254]

Cells triangular with concave sides and acute apices. Apices produced in to spine like arms. Cell wall delicate and smooth. Cell contains 5 small disc shaped chloroplasts and oil droplets.

Size: Cells 33 μ -37 μ in diameter.

Occurrence: S1-S4, S6, S7, S10-S13, S17, S18

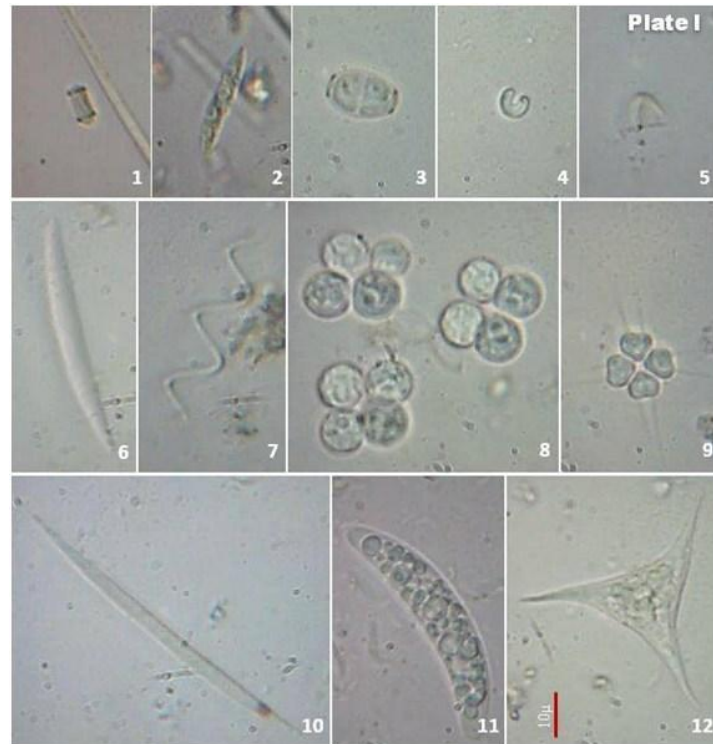


Plate I: fig 1. *Amphikrikos minutissimus*, fig 2. *Elakatothrix acuta*, fig 3. *Granulocystopsis decorate*, fig 4. *Monoraphidium nanum*, fig 5. *Monoraphidium caribeum*, fig 6. *Monoraphidium obtusum*, fig 7. *Monoraphidium irregular*, fig 8. *Westella botryoides* var. *major*, fig 9. *Tetrastrum homoiacanthum*, fig 10. *Monoraphidium komarkovae*, fig 11. *Chlorolobion obtusum*, fig 12. *Goniochloris fallax*.

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