

ADDITIONS OF ZYGNEMATACEAE TO THE MARATHWADA REGION OF MAHARASHTRA

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ABSTRACT

While working on phycological studies of Bhandarwadi minor irrigation project during January 2016 to December 2017 the author came across some interesting members of zygnemataceae i.e. *Mougeotia* (08), *Zygnema* (05) and *Spirogyara* (08)

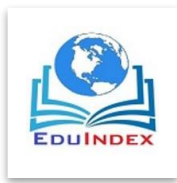
Key words: Zygnemataceae ,Marathwada,Maharashtra.

INTRODUCTION:

Review of literature reveals that, studies on algal taxonomy in abroad and in India have been done extensively by many research workers. India has a very rich and diversified algal flora. In the present century great advances have been made in the investigations of fresh water algae, marine algae and soil algae in many parts of the world and particular attention has been paid to their taxonomy, ecology and applied aspects. In Maharashtra tremendous work has been done on algal taxonomy by various workers. In Marathwada region of Maharashtra except few reports (Ashtekar 1980, Kamble 2008, Andhale 2008, Talekar 2009) very rare attention has been paid towards algal taxonomy, although the climatic conditions of Marathwada region are most suitable to grow algae luxuriantly and in diverse form, therefore to fulfil this lacuna, it has been decided to work on algal taxonomy of Bhandarwadi minor irrigation project at Bhandarwadi in Marathwada region of Maharashtra.

MATERIALS AND METHODS:

The present investigation was carried out for first time from the Bhandarwadi minor irrigation project, constructed on Rena River, just 15 kms away from the Renapur town. The algal samples



were collected during January 2016 to December 2017. The algal collections were made regularly from selected sampling stations. Acid washed collection bottles were used for the collection of algal samples. On return to the laboratory from field, the collections were carefully observed under the microscope and important points were noted. All collections were preserved in 4% commercial formalin added with 5% glycerine. Identification of algal taxa was performed by referring to the standard literature on algae. Smith (1951, 1955), Prescott (1951), Randhawa (1959), Tiffany and Britton (1952), Scott and Prescott (1961).

SYSTEMATIC MIC ENUMERATION:

***Mougeotia bangalorensis* Iyengar** (Randhawa 1959, P. 171, F. 107A, a-b;.)

Vegetative cells 15-18.5 μ in diameter, 80-102.5 μ long; chloroplast single, with 5-7 pyrenoids in a row; conjugation scalariform; conjugating cells straight; zygospores oblong elliptic in the enlarged conjugating tube and extending into one of the gametangia and slightly extending into the other gametangia, 30-34.8 μ in diameter, 20-22.5 μ long; spore wall yellow brown, smooth and obscured by the granular membranous residue left after conjugation in the gametangia.

***Mougeotia elegantula* Wittrock**

(Czurda 1932, P. 88, F. 78a, b; kolkwitz and Krieger 1944, P. 181, F. 143; Prescott 1951, P. 301, P1. 70, F. 7,8; Tiffany and Britton 1952, P 128, P1. 39, F. 406, 408; Randhawa 1959, P. 156, F. 78a.)

Vegetative cells 3-4.2 μ in diameter, 40-45 μ long; chloroplast with 4-8 pyrenoids in a row; conjugating cells geniculate; conjugation scalariform; zygospores formed in the tube, dividing bith the gametangia; zygospores cruciate-quadrangle, with concave margins and rounded corners; zygospores 15-18.5 μ in diameter, 15-17.5 μ long, spore wall smooth, hyaline.

***Mougeotia floridana* Transeau**

(Prescott 1951, P. 301; Tiffany and Britton 1952, P. 134; Randhawa 1959, P. 154, F. 74a,b.)

Vegetative cells 15-17.5 μ in diameter, 80-90 μ long; chloroplast with 6-8 pyrenoids in a single row; conjugation scalariform; zygospores occupying the middle of the receptive gametangium and partly in the conjugating tube, triangular, 32-34 μ in diameter, 36-40 μ long; spore wall yellow, smooth.

***Mougeotia jogensis* Iyenga** (Randhawa, 1959, P. 130, F. 22)

Vegetative cells 9-10.2 μ in diameter, 120-130 μ long; chloroplast with 5-7 pyrenoids in a single row; conjugation scalariform; zygospores formed in the greatly enlarged conjugating tubes; zygospores globose to ellipsoid, 20-23 μ in diameter; spore wall brown, smooth.

***Mougeotia punctata* Wittrock** (Randhawa 1959, P. 167, F. 99)

Vegetative cells 9.8-10 in diameter, 60-72.5 μ long; cells cylindrical, chloroplast with 4-6 pyrenoids in a row; conjugation scalariform; zygospores formed in the tube, dividing both the gametangia; zygospores quadrate with retuse margins, outer spore wall coarsely punctate or pitted; zygospores 20-24.8 μ in diameter, 20-27 μ long.

***Mougeotia quadrangulata* Hassall** (Randhawa 1959, P. 165, F. 96.)

Vegetative cells 13-14.5 μ in diameter, 60-75a μ long, cylindrical, chloroplast with 8-9 pyrenoids in a row; conjugation scalariform, zygospores formed in the tube, dividing both the gametangia, zygospores quadrate 30-32 μ in diameter, 35-37 μ long, with straight or slightly retuse margins, spore wall finely scorbiculate or punctate, colourless

***Mougeotia scalaris* Hassall**

(Czurda 1932, P. 67, F. 42a. b; Randhawa 1959, P. 133, F. 28; Prescott 1951, P. 304, P1. 71, F. 6,7; Tiffany and Britton 1952, P. 132, P1. 40, F. 419; kolkwitz and Krieger 1944, P. 128, F. 6,8.)

Vegetative cells 14-15.5 μ in diameter, 60-65 μ long; chloroplast with 4- 7 pyrenoids in a single row; conjugation scalariform; zygospores wholly formed in conjugating tubes, not dividing

the gametangia; zygospores globose or broadly ovate, 26-30 μ in diameter, spore wall yellow-brown, smooth.

***Mougeotia tumidula* Transeau** (Prescott 1951, P.305, P1.71, F.2; Randhawa 1959, P.163-164).

Vegetative cells 8-9.8 μ in diameter, 70-87 μ long; cells cylindrical, chloroplast with 6-8 pyrenoids in a single series; conjugation scalariform; zygospores formed in a conjugating tube, dividing both the gametangia; zygospores quadrangular, 25-29.2 μ in diameter, 28-32.5 μ long; both inner and outer spore walls minutely scorbiculate, corners with two tumids.

***Zygnema cyanosporum* Cleve**

(Czurda 1932, P. 106, F. 104; Kolkwitz and Krieger 1944, P. 217, F. 220; Transeau 1951, P. 27; Prescott 1951, P. 325; Randhawa 1959, P. 225, F. 159.)

Vegetative cells 20-24.8 μ in diameter, 60-64.8 μ long; chloroplasts two, star shaped, conjugation scalariform; zygospores, globose, in the conjugation canal, 22-24.8 μ in diameter; zygospore wall composed of two layers, a thick, hyaline exospore and a bluish and smooth mesopore.

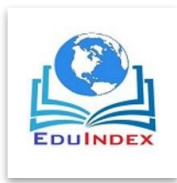
***Zygnema czurdae* Randhawa**

(Kolkwitz and Krieger, 1944, P. 235, F. 262; Randhawa 1959, P. 217-218, F. 144a, b.)

Vegetative cells 20-22 μ in diameter, 68-72 μ long; chloroplasts two, star shaped, with a conspicuous pyrenoid in each; conjugation scalariform; zygospores oval to globose, in the conjugation canal, 30.8 - 37.5 μ in diameter; zygospore well smooth.

***Zygnema melanosporum* Lagerheim** (Randhawa 1959, P. 246, F. 203)

Vegetative cells 20-22.5 μ in diameter, 47-50.5 μ long; chloroplasts two, star shaped; conjugation scalariform; zygospores in one of the gametangia; receptive gametangia cylindrical or slightly enlarged; zygospores ovoid to cylindrical-ovoid, 15-19.8 μ diameter, 20-27.5 μ long.



***Zygnema mucigenum* Randhawa** (Randhawa 1959, P. 243,244, F. 199a,b.)

Vegetative cells 13-14.8 μ in diameter, 35-50 μ long; chloroplasts two, more or less globose; conjugation scalariform; the conjugation canals are very much elongated, and zygospores are found in one of the gametangia; zygospores dark bluish green in colour, oval in shape, 14-15 μ in diameter, 25-27.5 μ long; mesospore thick, greenish bluish and prominently pitted.

***Zygnema pectinatum* (Vaucher) Agardh** (Randhawa, 1959, P. 223, F. 155)

Vegetative cells 20-24.8 μ in diameter, 35-41.8 μ long; chloroplasts two, star shaped; conjugation scalariform; zygospores formed in the conjugating canals, globose to ovoid, 30-32 μ in diameter, 35-37.8 μ long; median spore wall brown.

***Spirogyra aequinoctialis* G.S. West.**

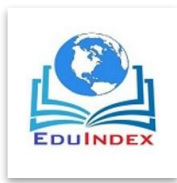
(Prescott 1951, P. 311, Pl. 72, F. 3,4; Randhawa 1959, P. 387, F. 439; Kolkwitz and Krieger 1944, P. 388, F. 578, 579.)

Vegetative cells 23-26 μ in diameter, 80-95 μ long, with plane end walls; chloroplasts 3, making 1.5-2 turns; conjugation scalariform; conjugation tube formed by both gametangia; fertile cells symmetrically inflated; zygospores elongate-ellipsoid to ovate, 22-26 μ in diameter, 40-47 μ long; median spore wall with deep pits.

***Spirogyra biformis* Jao** (Randhawa 1959, P. 317, F. 293.)

Vegetative cells 30-35.2 μ in diameter, 100-115 μ long, with plane end walls; chloroplast 2, making 2.5-3 turns; conjugation scalariform; conjugation tube formed by both gametangia; fertile cells cylindrical; zygospores ellipsoid with rounded ends, 25-28.5 μ in diameter, 40-43.2 μ long; median spore wall yellow, smooth.

***Spirogyra fluviatilis* Hilse** (Prescott 1951, P. 314, Pl. 73, F. 4,5;)



Vegetative cells 30-34.8 μ in diameter, 100-110 μ long; with plane end walls, chloroplast 3-5 making 2-2.5 turns; conjugation scalariform; conjugation tube formed by both gametangia, fertile cells inflated; zygospores ovate; 20-24.8 μ in diameter, 35-39.8 μ long; median spore wall wrinkled, irregularly pitted.

***Spirogyra gibberosa* Jao**

(Randhawa 1959, P. 295, F. 252; Transeau 1951, P. 155, P1. 22, f. 10,11; Kolkwitz and Krieger 1944, P. 326, F. 438.)

Vegetative cells 18-19 μ in diameter, 128-132 μ long; with plane end walls; chloroplast single, conjugation scalariform; conjugation tubes formed by the male gametangia; fertile cells inflated; zygospores ellipsoid, with more or less pointed ends, 20-30 μ in diameter, 37-43 μ long; median spore wall yellow, smooth.

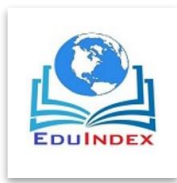
***Spirogyra micropunctata* Transeau (Prescott 1951, P. 317, P1. 73, F.9;)**

Vegetative cells 28-30 μ diameter, 100-107 μ long; with plane end walls; chloroplast single, conjugation scalariform, conjugation tube formed by the male gametangium; fertile cells slightly inflated; zygospores ellipsoid with broadly rounded ends, median spore wall punctate; zygospore 27-32 μ in diameter, 50-57.5 μ long.

***Spirogyra neglecta* (Hassall) Kuetzing**

(Czurda 1932, P. 190, F. 200a,b; Kolkwitz and Krieger 1944, P. 351, F. 491; Transeau 1951, P. 175, P1. 27, F. 14, 15; Tiffany and Britton 1952, P. 152, P1. 45, F. 476, 477; Randhawa 1959, P. 324, F. 308.)

Vegetative cells 48-52.5 μ in diameter, 83.8-92 μ long; with plane end walls; chloroplast 3, making 2-3 turns; conjugation scalariform; conjugation tube formed by the both gametangia; fertile cells slightly swollen; zygospores oval, 42-45 μ in diameter, 62.5-64.8 μ long; median spore wall brown, smooth.



Spirogyra novae –angliae Transeau

(Prescott 1951, P. 318, P1. 75, F. 1-3; Kolkwitz and Krieger 1944, P. 396; Tiffany and Britton 1952, P. 154, P1. 47, F. 503; Randhawa 1959, P. 411, F. 494.)

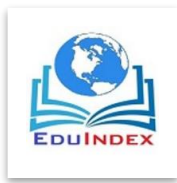
Vegetative cells 40-44.8 μ in diameter, 72-82.2 μ long; with plane end walls; chloroplast 3, making 2-4 turns; conjugation scalariform; conjugation tubes formed by both gametangia; fertile cells inflated; zygospores ovate to ovate ellipsoid; 37.5-40 μ in diameter, 56.5-62.8 μ long; median spore wall brown, reticulate.

Spirogyra subsalsa Kuetzing (Prescott 1951, P. 321, P1. 73, F. 1-3.)

Vegetative cells 20-23.8 μ diameter, 80-97.5 μ long, with plane end walls; chloroplast 2; conjugation scalariform; conjugation tubes formed by both the gametangia; fertile cells swollen; zygospores ellipsoid; 30-34.8 μ in diameter, 38-42.2 μ long; median spore wall smooth, brown, reticulate.

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