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(Chlorophyceae: Zygnematales) from Supaul
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Deepak Kumar Jha, Anuradha Kumari and
Ram Naresh Jha

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Some Rare Species of *Spirogyra* (Chlorophyceae: Zygnematales) from Supaul District of North Bihar, India

Deepak Kumar Jha^{*1}, Anuradha Kumari² and Ram Naresh Jha³

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ABSTRACT

The present paper deals with the occurrence and distribution of three taxa of the genus *Spirogyra* from different unexplored regions of Supaul district of North Bihar. Out of these, 2 taxa viz. *S. pseudomaxima* Kadlubowska and *S. tolosana* COMERE are being recorded for the first time from India, while another one i.e., *S. angolensis* WELWITSCH is the first record from Bihar.

Key words: Algae, India, New record, *Spirogyra*, Zygnemataceae

Spirogyra is a green filamentous alga of the order zygnematales, named for the spiral arrangement of the chloroplast that is characteristics of the genus. The genus is represented in the world, by over 500 species [1-5]. Significant quantum of work has been done by various workers [6-16] most of these reports are from Punjab, Maharashtra, Uttar Pradesh and West Bengal. Apart from stray reports [17-18] our knowledge about the genus *Spirogyra* link is poorly understood from north Bihar. Therefore, Floristic survey of the genus has been taken up. The present study deals with 3 taxa of *Spirogyra* from different localities of Supaul district of North Bihar.

MATERIALS AND METHODS

Algal samples were collected from different localities of Supaul district (Latitude- 25°37' - 26°25'N; Longitude- 86°22' - 87°10'E) of North Bihar during December' 2021 to March' 2022. The samples were preserved in FAA with glycerin (50 ml per litre of preservative). pH and temperature were recorded at the collection sites. Prism type camera lucida was used for the drawing and photograph of the sample were taken. Identification of the taxa was made with the help of standard literature including monograph [19-20].

RESULTS AND DISCUSSION

In the present study 3 species of *Spirogyra* i.e., *Sporophila angolensis* WELWITSCH, *Spirogyra pseudomaxima* Kadlubowska and *Spirogyra tolosana* COMERE are reported.

Spirogyra angolensis WELWITSCH
Plate 1 (Fig 1-3); Plate 2 (Fig 1-2)
(Randhawa [1] 1959)

Vegetative cells 60-68µ in diameter, 80-200µ long, septa plane, chloroplasts 3, making 3-4 turns. Conjugation scalariform, tubes formed by both gametangia, receptive female gametangia cylindric, zygospore ellipsoid, 56-60µ in diameter, 76-100µ long, mesospore yellow and smooth.

The present specimen is very much similar to the earlier reported species.

Habitat: Collection No: DK-41, January 3, 2022, from a ditch (pH 6.5, temp. 12 °C) at Parsauni (District Supaul).

Association: The present specimen is associated with *Spirulina princeps*.

Distribution: China, South Africa, USA [1], Kerala [21].

This is the first record of the species from Bihar.

Spirogyra pseudomaxima Kadlubowska
Plate 1 (Fig 4-8); Plate 2 (Fig 3-5)
(Kadlubowska [4] 1984)

Vegetative cells 120-130µ in diameter, 120-160µ long, with plane end walls; chloroplasts 4-6. Conjugation scalariform, tubes formed by both gametangia, fertile cells cylindric, sometimes both gametangia slightly inflated towards conjugation side, zygospore lenticular, 92-100µ in diameter, 92-108µ long, mesospore maroon, double layered, outer layer

* Deepak Kumar Jha

✉ deepakkumarjha781@gmail.com

^{1,3} University Department of Botany, Lalit Narayan Mithila University, Darbhanga - 846 004, Bihar, India

² University Department of Biotechnology, Lalit Narayan Mithila University, Darbhanga - 846 004, Bihar, India

covered with branched ribs, the inner one thick, covered with ridges arranged irregularly like a net, it becomes visible only

after detachment of the exospore and the outer mesosporic layer.

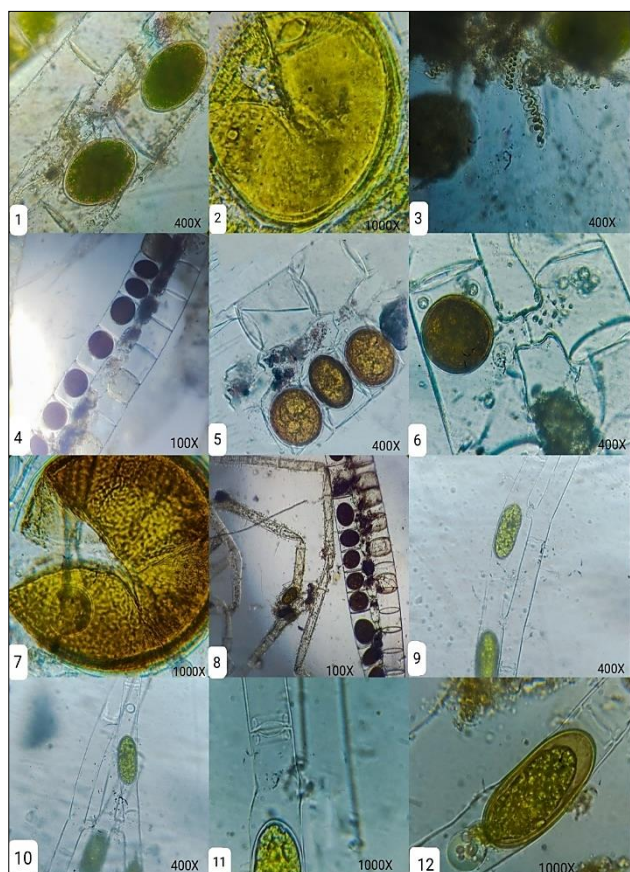


Plate 1 (Fig 1-3) *Spirogyra angolensis* WELWITSCH, (Fig 4-8) *Spirogyra pseudomaxima* Kadlubowska, (Fig 9-12) *Spirogyra tolosana* COMERE

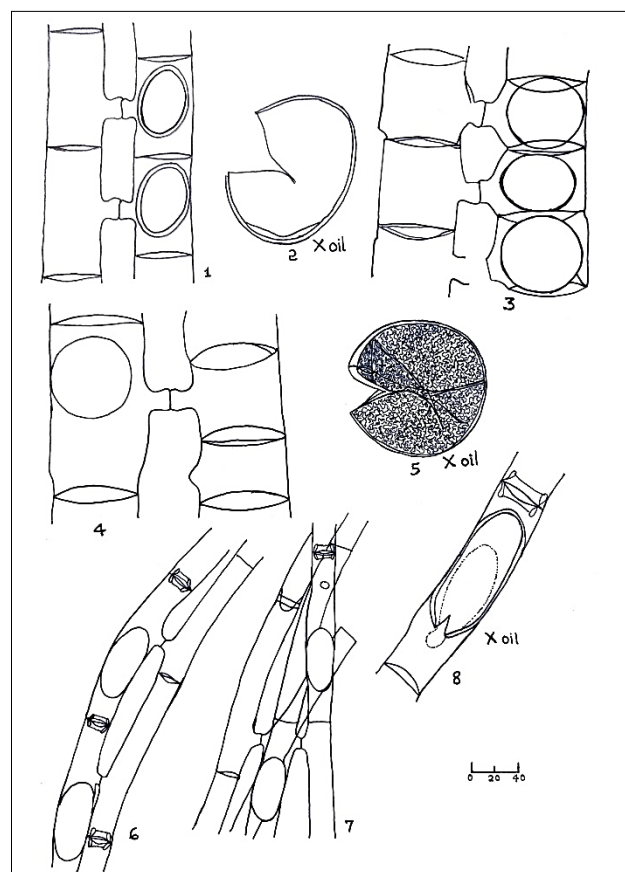


Plate 2 (Fig 1-2) *Spirogyra angolensis* WELWITSCH, (Fig 3-5) *Spirogyra pseudomaxima* Kadlubowska, (Fig 6-8) *Spirogyra tolosana* COMERE

The present specimen is similar to the type species in all characters.

Habitat: Collection No. DK-101, March 3, 2022, from a canal (pH 7.5, temp. 30 °C) of Pipra Khurd (District Supaul).

Association: The present specimen is closely associated with *Sirogonium sticticum* and other *Spirogyra* species.

Distribution: Denmark [4], Japan [22].

This is the first record of the species from India.

Spirogyra tolosana COMERE

Plate 1 (Fig 9-12); Plate 2 (Fig 6-8)
(Randhawa [1] 1959)

Vegetative cells 28µ in diameter, 180-230µ long with replicate end walls, chloroplasts 2. Conjugation scalariform, fertile cells cylindric or sometime slightly inflated, zygospore cylindric- ovoid, 28µ in diameter, 60-64µ long spore wall yellow- brown, smooth.

The preset specimen resembles earlier reported species.

Habitat: Collection No- DK-68, March 3, 2022, from a ditch (pH 6.0, temperature 30 °C) at Pipra Khurd (District Supaul).

Distribution: France, USA [1].

This is the first record of the species from India.

During the algal survey of Supaul, North Bihar different taxa of *Spirogyra* were found growing as free-floating mats in shallow water of ditches, canals, puddles etc. In India the mature fruiting stages are recorded at pH 6.5 to 7.5 and temp. 17 °C to 27 °C [18] while in the USA the favorable pH and temp. for the growth of Zygnematales are 6.1 and 19 °C [23]. During the present study, the fruiting stage of *Spirogyra angolensis* was found at 12 °C. *S. angolensis* and *S. pseudomaxima* were observed growing in association of blue green algae and other green algae. Particularly *S. pseudomaxima* was found growing with *Sirogonium sticticum*. *S. tolosana* was observed in pure form. It appears from present investigation that a period between first weeks of January to last week of March is most favorable for the growth of such species of *Spirogyra*.

CONCLUSION

Study of distribution of taxa examined reveals that *S. pseudomaxima* and *S. tolosana* are reported for the first time from India. This distribution pattern may be either due to endemism or difference in climate or our poor knowledge of the flora.

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