

New Records of *Sirogonium* KUTZING (Zygnemataceae) from Supaul District of North Bihar, India

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Abstract

The present paper deals with the description of three taxa of the genus *Sirogonium* from different localities of Supaul district of North Bihar. Out of these, two taxa viz. *Sirogonium megasporum* (JAO) TRANSEAU and *Sirogonium melanosporum* (RANDHAWA) TRANSEAU are being recorded for the first time from Bihar, while another one i.e., *Sirogonium sticticum* (Engl.Bot.) KUTZING is the second record from Bihar after Kargupta and Jha (2004).

Key words: *Sirogonium megasporum*, *Sirogonium melanosporum*, New records, *Sirogonium*

Sirogonium is a genus of filamentous freshwater green algae of the order Zygnematales occurring in fresh water bodies on all continents except Antarctica (Algae base). In India, the genus *Sirogonium* KUTZING is represented by about 10 species [1-2] out of total 16 species known so far [3]. Randhawa [1] in his monograph on Zygnemataceae included taxonomic description of 15 species of the genus *Sirogonium*, including 8 Indian species. Dixit [4], Singh [5], Rattan [6], Patel and Kumar [7], Srivastava [8-9], Kargupta [10], Ushadevi and Panikkar [11], Kargupta and Jha [12] and Halder [13] made some important contributions on the taxonomy of *Sirogonium* KUTZING from India.

Kargupta and Jha [12] reported 6 species of *Sirogonium* including two new varieties from North Bihar. Species of *Sirogonium* occur less commonly in comparison to *Spirogyra*, *Zygnema* and *Mougetia* [12]. Halder [13] described a species of *Sirogonium* i.e., *Sirogonium sticticum* (J.E. Sm.) KUTZ. from Hoogly district of West Bengal. Zygnematacean flora of Supaul district in general and that of *Sirogonium* in particular is poorly understood. Hence, the survey of Zygnematacean flora of the district was felt desirable. The present paper describes the morphology and distribution of *Sirogonium* species belonging to family Zygnemataceae under the class Chlorophyceae. All these taxa were observed by the authors in the course of survey of freshwater algal diversity of Supaul district.

MATERIALS AND METHODS

Algal samples were collected from freshwater bodies of Supaul District (Latitude – 25°37' – 26°25' N; Longitude – 86°22'

– 87°10' E) of North Bihar during January 2021 – March 2022. The samples were preserved in FAA with glycerine (50 ml per Litre of preservative). Specimens were treated with 8% KOH Solution and Lactic acid to observe sculpturing of Zygospor wall [12]. Observation was made on Olympus research microscope (Model No - 7213). Prism type Camera lucida was used for drawing and Microphotographs of the material were taken.

RESULTS AND DISCUSSION

In the present study 3 species of *Sirogonium* i.e., *S. megasporum* (JAO) TRANSEAU, *S. melanosporum* (RANDHAWA) TRANSEAU and *S. sticticum* (Engl. Bot.) KUTZING are reported.

Sirogonium megasporum (JAO) TRANSEAU [1]

Vegetative cells 44 – 60 µm in diameter., 216 – 308 µm long; Chloroplast 3, straight.

Conjugation direct, gametangia shortened, reflexed, and more or less inflated on the inner side; receptive gametangia inflated upto 90 – 100 µm; Zygospor ellipsoid to ovoid, 68 – 82 µm in diameter, 90 – 108 µm long; median wall smooth, yellowish brown.

Habitat: Collection No. DK – 84, Date – March 3, 2022, from canal (pH – 8, Temp. 30°C) at Pipra Khurd (District Supaul).

The present specimen resembles the type species.

Received: 23 Sep 2022; Revised accepted: 19 Dec 2022; Published online: 05 Jan 2023

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Citation: Jha DK, Jha RN. 2023. New Records of *Sirogonium* KUTZING (Zygnemataceae) from Supaul District of North Bihar, India. *Res. Jr. Agril Sci.* 14(1): 35-37.

Distribution; China; South America, USA [1], India: Uttarakhand [14].

This is the first record of the species from Bihar.

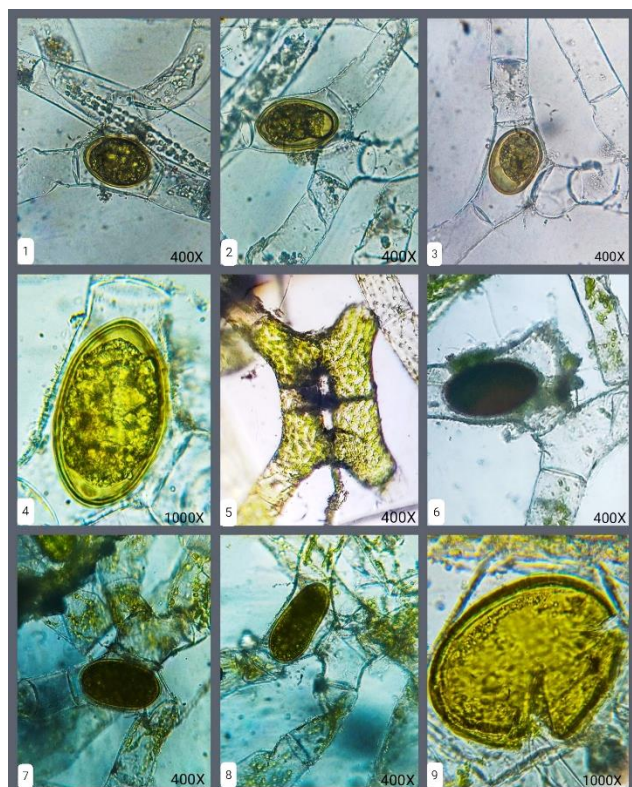


Plate 1 (Fig 1 – 4) *Sirogonium megasporum* (JAO) TRANSEAU (Fig 5 – 6) *Sirogonium melanosporum* (RANDHAWA) TRANSEAU (Fig 7 – 9) *Sirogonium sticticum* KUTZING

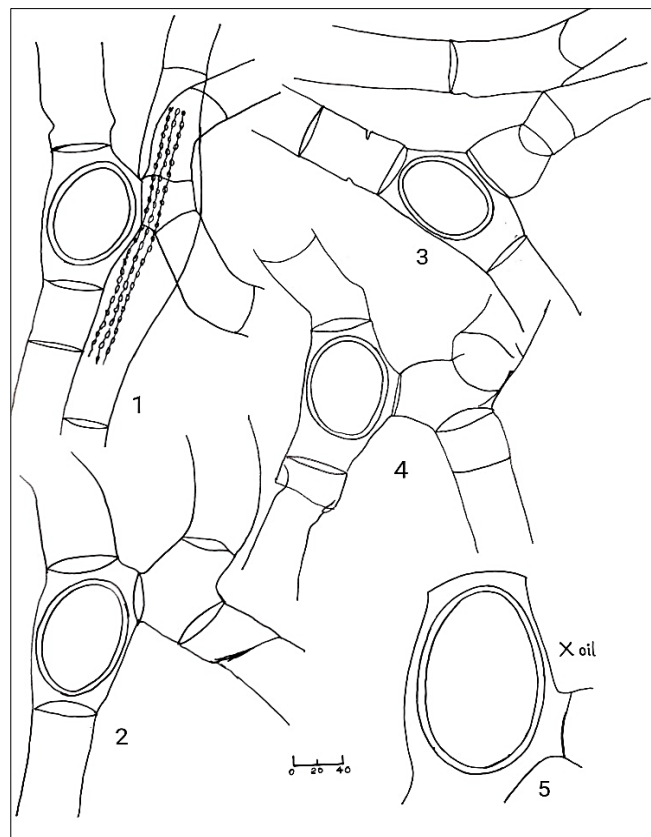


Plate 2 (Fig 1 – 5) *Sirogonium megasporum* (JAO) TRANSEAU

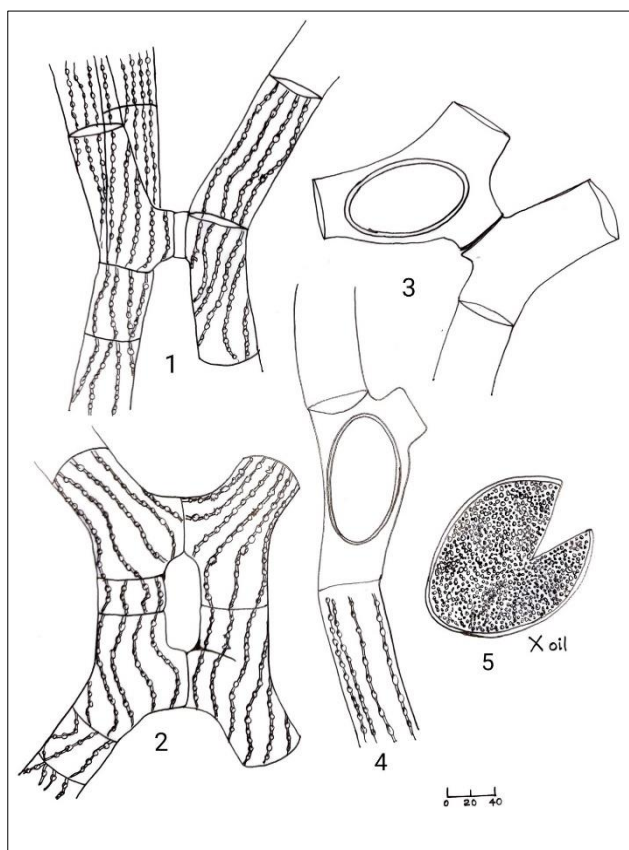


Plate 3 (Fig 1 – 5) *Sirogonium melanosporum* (RANDHAWA) TRANSEAU

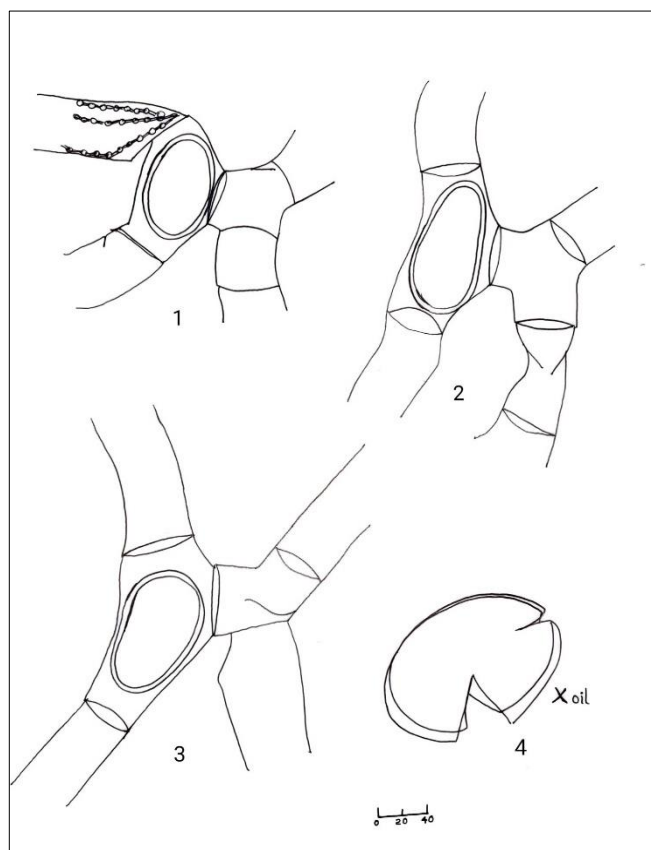


Plate 4 (Fig 1 – 4) *Sirogonium sticticum* KUTZING

Sirogonium melanosporum (RANDHAWA) TRANSEAU [1].

Vegetative cells 72 – 86 µm in diameter, 160 – 288 µm long; 4 – 8 Chloroplasts, nearly straight.

Conjugation direct; receptive gametangia inflated upto 90 – 136 µm; Zygosporangium usually ellipsoid, 80-94 µm in diameter, 140 – 182 µm long; median spore wall brown to black, verrucose.

Distribution: USA; India; Uttar Pradesh [1].

Habitat: Collection No – 22, Date – July 23, 2021 from Rice field (pH 6, Temp. 34°C) at Mahua, Nirmali (Dist. Supaul). The present specimen resembles the type species.

This is the first record of the species from Bihar.

Sirogonium sticticum KUTZING [1].

Vegetative cells 52-60 µm in diameter, 216-260 µm long; Chloroplast 3-4, nearly straight.

Conjugation direct between usually shortened and more or less reflexed gametangia; receptive gametangia inflated up to 72 µm; spores ellipsoid, 60 µm in diameter, 92-94 µm long; median spore wall smooth, yellow.

Habitat: Collection No- 101, Date – March 3, 2022, free floating in a canal (pH 7.5, Temp. 30°C) at Pipra Khurd (Dist. Supaul)

Association: The present specimen is closely associated with *Spirogyra pseudomaxima* Kadlubowska.

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

Distribution: India: Uttar Pradesh [1], Punjab [6], West Bengal [10], Bihar [12].

This is the second record of the species from Bihar.

During the survey of algal flora of Supaul District (N. Bihar) different taxa of *Sirogonium* were found growing as free-floating mats in fresh water bodies like ponds, ditches, canals, puddles etc. *S. sticticum* (Engl. Bot.) KUTZING was found growing with *Spirogyra pseudomaxima* while *S. megasporum* (JAO) TRANSEAU and *S. melanosporum* (RANDHAWA) TRANSEAU were observed in pure form. During the study, the mature fruiting stages are recorded at pH 6 – 8 and temperature 30 – 34 °C.

CONCLUSION

It is evident from the study of distribution of *Sirogonium* that *S. sticticum* is the most commonly occurring species both in Bihar and Outside Bihar. Two species of *Sirogonium* (*S. megasporum* and *S. melanosporum*) were found in pure form, hence they may be considered suitable for biochemical and other studies.

Acknowledgement

The present authors are thankful to Prof. and Head of Department of Botany for providing laboratory facilities and constant inspiration. They are also grateful to Prof. A. N. Kargupta for giving useful suggestion from time to time.

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