

NOTES ON ALGAL ASSOCIATION ON THE ROOTS OF *DROSERA BURMANNI*

R. K. GUPTA AND KAJU MAJUMDAR
Botanical Survey of India, Howrah - 711 103

During the routine exploration of the Algal flora of Jharkhand, the authors came across an interesting algal association with the roots of the insectivorous plant *Drosera burmanni* Vahl. (Field No. 60069, dated 28.02.2013) from Kelaghat Dam of Simdega District of Jharkhand (N 22°35'25.20 - E 84°36'21.00) which was growing under exposed moist conditions. Three species of microalgae viz. *Netrium digitus* (Bréb.ex Ralfs) Itzigs. & Rothe, *Zygnema stellinum* (O. F. Müll.) C. Agardh & *Spondylosium planum* (Wolle) West & G. S. West were isolated from the association. On perusal of literature, it revealed that, no such report on algal association with insectivorous plants was reported; hence it is reported here as a first report.

MATERIALS AND METHODS

The collected materials are brought to the laboratory and specimens were preserved in herbarium sheets, as well as in 3% formalin solution along with 3 - 4 drops of glycerin. The specimens are deposited in CAL. For the identification of algal species relevant literature (West & West, 1904 - 1912; West & al., 1923; Transeau, 1951; Randhawa, 1959; Gupta & Singh, 2001; Gupta, 2005; Toppo & Suseela, 2007; Gupta, 2012) have been consulted. The host plant was identified in Central National Herbarium (CAL).

For microscopic preparation a small chip of root portion of the samples of *Drosera burmanni* Vahl along with the soil was taken and kept in distilled water over night. After that sample was gently squeezed and the liquid was studied under the Olympus CX 41 compound microscope and photographs were taken under Olympus C- 7070 camera.

OBSERVATION

Class: CHLOROPHYCEAE

1. **Netrium digitus** (Bréb.ex Ralfs) Itzigs. & Rothe in Rabenh., Alg. Sachs. Dec.51. 1856. *Penium digitus* Bréb. ex Ralfs, Brit. Desmid. 150.1848. (MESOTAENIACEAE).

Cells unicellular elongate, 42.5 - 47.5µm long, 10.0 -15.0µm broad; poles rounded; median constriction absent; cell wall smooth; chloroplast 2 - 6 with radiating longitudinal plates; pyrenoid elongate; nucleus one.

2. **Zygnema stellinum** (O. F. Müll.) C. Agardh, Syn. Alg. Scand. 32. 1817. *Conferva stellina* O. F. Müll. in Nova Acta Acad. Sci. Imp. Petrop. Hist. Acad. 3: 93. 1788. (ZYGNEMACEAE).

Filaments unbranched; cells cylindrical 40.0 - 45.0µm long, 35.0 - 37.5µm broad; chloroplast two, stellate with radiating protuberances; pyrenoid one; nucleus one; conjugation scalariform, zygospores ovoid, 29.5 - 34.5µm broad.

3. **Spondylosium planum** (Wolle) West & G. S. West in J. Linn. Soc., Bot. 40: 430. 1912. *Sphaerosoma pulchrum* var. *planum* Wolle, Desmids U.S. 29.1884. (DESMIDIACEAE).

Cells compressed, 25.0 - 32.5µm long, 20.0 - 23.7µm broad, united to form unbranched filaments; chloroplasts axial; cell wall smooth; isthmus 5 - 6µm long; nucleus one; pyrenoid one.

RESULTS AND DISCUSSION

In a similar type of study Gupta and Singh (2001), reported 14 species of algae belonging to the members of Cyanophyceae (9), Bacillariophyceae (4) and Chlorophyceae (1) growing in the rhizoidal zone of moss communities. Toppo & Suseela (2007) reported 21 algal taxa in association with bryophytes viz. *Cyathodium* Kunze ex Lehm. (8) *Bryum* Hedw. (7) and *Funaria* Hedw. (6). Blue green algal components are common in the rhizoids of all three bryophytes. *Chroococcus* and *Oscillatoria* are recorded in association with all bryophytes.



Plate 1 : A-B. Habitat of *Drosera burmanni* Vahl with algal association, C. Image of exsiccata D. *Netrium digitus* (Bréb. Ex Ralfs) Itzigs. & Rothe, E-F. *Zygnema stellinum* (O.F. Müll.) C. Agardh, G. *Spondylosium planum* (Wolle) West & G.S. West

The study revealed that *Drosera burmanni* Vahl supports three species of green microalgae under 3 genera and 3 families of the members of Chlorophyceae on its root system. It is also interesting to note that all the members belong to Conjugales. No blue green algal association has been encountered. It appears to be the part of survival strategies of such algae. The result incorporated in the present communication are based on collections

made by the authors, only once and it is hoped that further surveys will yield many more algal taxa from this region in association of insectivorous plants.

ACKNOWLEDGEMENTS

The authors are grateful to Director, Botanical Survey of India, Kolkata for providing necessary facilities and encouragement.

REFERENCES

- GUPTA, R.K. 2005. *Algal Flora of Dehradun district Uttarakhand*. Botanical survey of India, Kolkata.
- GUPTA, R.K. AND D.K. SINGH 2001. Microalgae in the rhizoidal zone of moss communities in Schirmacher Oasis, East Antarctica. *Phytotaxonomy* 1: 57-62.
- GUPTA, R.K. 2012. *Algae of India: A Checklist of Chlorophyceae, Xanthophyceae, Chrysophyceae and Euglenophyceae*. Vol. 2. Botanical Survey of India.
- RANDHAWA, M.S. 1959. *Zygnemaceae*. Indian Council of Agricultural Research, New Delhi.
- TOPPO, K. and M. R. Suseela. 2007. A preliminary report on Bryophyte- Algal associations. In *Current trends in Bryology* (Eds. V. Nath and A. K. Asthana). Bishen Singh Mahendra Pal Singh, Dehradun India. pp.279- 286.
- TRANSEAU, E.N. 1951. *The Zygnemataceae*. The Ohio state University Press, Columbus.
- WEST, W. and G.S. West, 1904- 1912. *A monograph of the British Desmidiaceae* Vol. I- VI. The Ray Society, London.
- WEST, W., G.S. West and N. Carter. 1923. *A monograph of the British Desmidiaceae*. Vol. V. The Ray Society, London.