

NEW RECORDS OF *OEDOGONIUM* LINK IN NEES FROM RAJSHAHI DISTRICT, BANGLADESH

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Abstract

Four taxa of *Oedogonium* Link in Nees growing on different hydrophytes in Rajshahi district such as, *O. acrosporium* var. *acrosporium* De Bary, *O. areschougii* Wittr. Hirn var. *contortifilum* Jao, *O. khannae* Skuja f. *minus* Gonz. et Jain and *O. striatum* Tiff. var. *denticulatum* Gauthier-Liev. have been recorded for the first time from Bangladesh.

Introduction

Islam and Sarma (1963) was the first to make a report on *Oedogonium* Gauthier-Lievre from Bangladesh. Later on a number of studies were carried out on the genus growing on soil, mollusc shells and some other habitats (Islam and Sarma 1964 a, b, 1965, and 1976; Islam 1973, 1976 and 1979). Epiphytic *Oedogonium* growing on rice plants and submerged aquatic plants were studied by Catling *et al.* (1981), Aziz *et al.* (1991) and Naz *et al.* (2007). Recently, a compilation on the genus by Ahmed *et al.* (2008) revealed the occurrence of 72 taxa of *Oedogonium* in Bangladesh. In the present paper, four species of *Oedogonium* have been described and illustrated which were not reported earlier from Bangladesh.

Materials and Methods

Oedogonium spp. growing on *Ipomoea aquatica* Forsk., *Hygroryza aristata* (Retz.) Nees Wight and Arn. and *Eichhornia crassipes* (Mart.) Solms. were collected from different parts of Rajshahi during 2001-2004 and preserved in Transeau's solution.

Results and Discussion

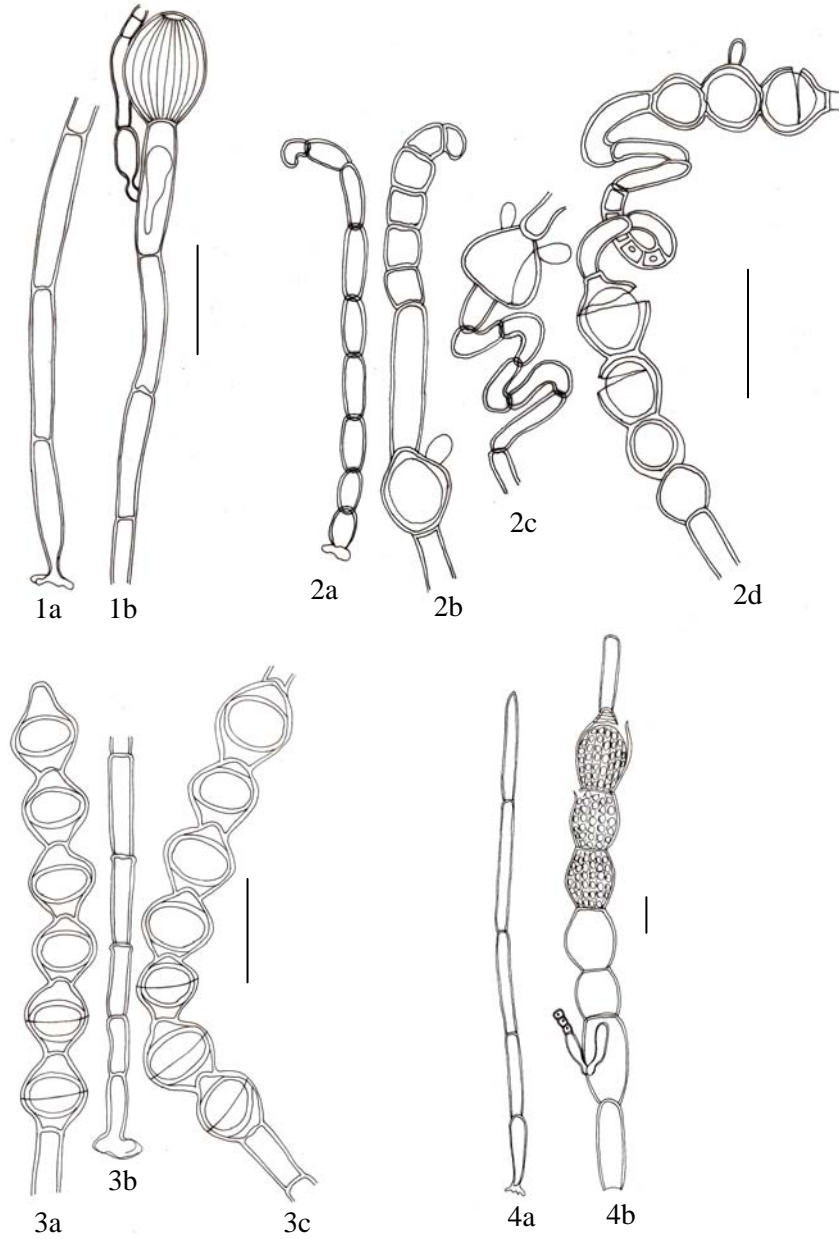
Four species of epiphytic *Oedogonium*, namely *O. acrosporium* var. *acrosporium* De Bary, *O. areschougii* Wittr. Hirn var. *contortifilum* Jao, *O. khannae* Skuja, f. *minus* Gonz. & Jain and *O. striatum* Tiff. var. *denticulatum* Gauthier-Liev., have been described for the first time from Bangladesh.

1. ***Oedogonium acrosporium* var. *acrosporium* De Bary (Figs. 1, 5)**
(Gonzalves, 1981, 502, Pl. 9, Fig. 403A; Gauthier-Lievre, 1963-64, 432, Pl. 93, Figs. 15a-c, o)

Plants nannandrous, idioandrosporous. Vegetative cells cylindrical, 49.5 - 62.7 µm long, 9.9 µm in diameter, basal cell elongate, terminal cell obtuse. Suffultory cells inflated, 33 µm long, 13.2 µm in diameter. Oogonium single, terminal, ellipsoid, 39.6 µm long, 29.7 µm in diameter, operculate, division supreme, oospore quite filling the oogonium. Spore wall two layered, outer layer with long ridges, inner layer smooth. Dwarf male curved, sometimes 3 celled. Upper cells, 42.9 µm long, and 6.6 µm in diameter. Lower cells 33 µm long, 9.9 µm in diameter. Antheridia single exterior, 13.2 µm long, 6.6 µm in diameter, androsporangia not seen.

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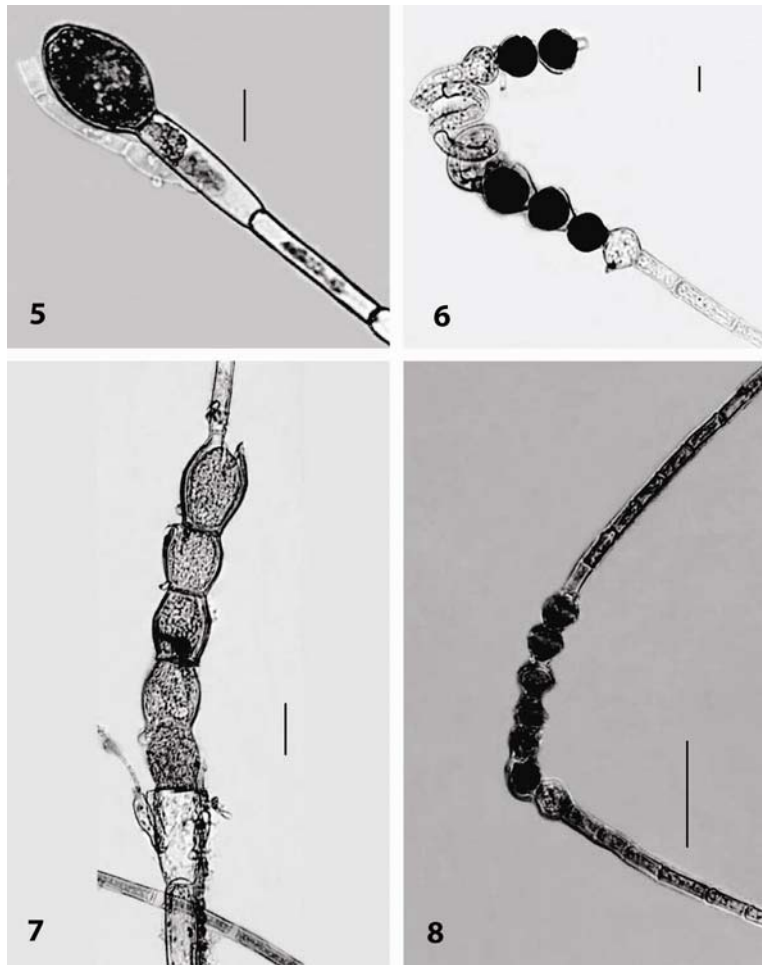
Collection No. Oed 203, 017, 09. 01. 2003, Dharampur Beel, Poba, Rajshahi, growing on *Hygroryza aristata*, pH 7.4.



Figs. 1-4: 1a-1b. *O. acrosporum* var. *acrosporum* showing basal cell with complete filament, oogonium series and dwarf male. 2a-d. *O. areschougii* var. *contortifilum* immature filament, dwarf male on oogonium with androsporangia in tip position dwarf male on oogonium with curve filament, dwarf male on oogonia series and androsporangia. 3a-c. *O. khanne* f. *minus* showing basal cell with oogonia series. 4a-b. *O. striatum* var. *denticulatum* showing basal and cell with complete young filament, oogonium series and dwarf male. (Scales = 50 μ m)

2. ***Oedogonium areschougii* Wittr. Hirn var. *contortifilum* Jao** (Figs. 2a-d, 6)
(Gonzalves 1981, 370, Pl. 9, Fig. 259B)

Plants nannandrous, gynandrosporous. Vegetative cells capitellate, first vegetative cell above oogonium longer than rest of cells, 26.4 - 33.0 μm long, 9.9 μm in diameter and some portions of filament usually curved or spiral. Terminal cell apically obtuse. Oogonia single or up to 4 seriate, depressed-globose, rarely subpyriform globose, 19.8 - 26.4 μm long, 23.1 μm in diameter, operculate, division median and in other case it appeared to be one sided, oospore identical in shape to oogonium, filling it or rarely not filling it longitudinally, 19.8 μm long, 19.8 μm in diameter. Spore wall smooth. Androsporangia single or up to 4 seriate. Dwarf males obovoid, unicellular, situated on oogonia, 9.9 μm long, 6.6 μm in diameter.



Figs. 5-8: 5. *O. acrosporum* var. *acrosporum*. 6. *O. areschougii* var. *contortifilum*.
7. *O. striatum* var. *denticulatum*. 8. *O. khannae* f. *minus*. (Scales = 50 μm).

Notes: It is observed that in vegetative condition, the filament is normally straight but after the formation of oogonium in series, the vegetative portion between such oogonial series become coiled or spiraled. Androsporangia are formed in this spiral portion. A dwarf male filament is usually one celled, as a result of which fewer male gametes are expected. The coiling of the

filament in between the oogonial series may probably facilitate fertilization as all oogonia are brought together each with a dwarf male filament, such an interpretation may also hold good in other spiral types to explain the phenomenon in this taxon.

Collection No. Oed. 84, 04.11.2002, Jahanabad Beel and Rajshahi University Campus pond, growing on *Eichhornia crassipes*, pH 7.4.

3. **Oedogonium khannae** Skuja f. **minus** Gonz. *et* Jain (Figs. 3a-c, 8)
(Gonzalves 1981, 246, Pl. 9, Fig. 127B)

Plants macrandrous, heterothallic. Vegetative cells more or less capitellate, 17 - 27 μm long, 5 - 7 μm in diameter, basal cell depressed hemispheric. Terminal cell apically obtuse. Suffultory cell not inflated. Oogonia up to 7 seriate, pyriform globose, 17 - 23 μm long, operculate, division median, oospore depressed globose to broadly filling the lateral wall of the oogonium, 12 μm long, 13 μm in diameter. Spore wall smooth thick.

Collection No. Oed. 155, 163, 02. 01.2003, Jahanabad Beel and Borokhadia Beel, Rajshahi, growing on *Ipomoea aquatica*, pH 7.4.

4. **Oedogonium striatum** Tiff. var. **denticulatum** Gauthier-Liev. (Figs. 4a-b, 7)
(Gonzalves 1981, 422, Pl. 9, Fig. 317B; Gauthier-Lievre 1963-64, 353, Pl. 63, Figs. 103c-d).

Plants nannandrous, gynandrosporous. Vegetative cells cylindrical, 55 - 120 μm long, 15 - 28 μm in diameter, terminal cell shortly acute. Suffultory cells inflated 86 μm long, 50 μm in diameter. Oogonia 64 - 84 μm long, 55 - 70 μm in diameter, oospore wall with distinctly denticulate costae. Dwarf males situated on the suffultory cell, stipe 57 μm long, 12 μm in diameter. Antheridium 4 μm long, 6 μm in diameter.

Collection No. Oed. 058, 060, 22.10.2001, Paharpur, Godagari, Rajshahi, growing on *Hygroryza aristata*, pH 7.3.

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