

Oedogoniales of Uttar Pradesh, India—*Oedogonium* Link

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Abstract. Seven species of *Oedogonium* Link collected from Mauri lake, Pratapgarh, Uttar Pradesh during July 1984 to August 1986. Of these *Oedogonium boscii* (Wittr.) Hirn var. *minor* var. nov. is new for Phycology; two species viz. *Oedogonium grande* (Kuetz.) Hirn and *Oedogonium praelongum* Hall. ex And. are first records for India and the remaining 4 species viz. *Oedogonium mexicanum* (Wittr.) Hirn, *Oedogonium exocostatum* Tiffany var. *jodhpurensis* Goyal, *Oedogonium costatosporum* Jao var. *longisporum* Gonzalves et Sonnad and *Oedogonium epiphyticum* (Trans. et Tiffany) Tiffany are new records for northern part of India.

Keywords. Epiphytic; Chlorophyceae; Oedogoniales.

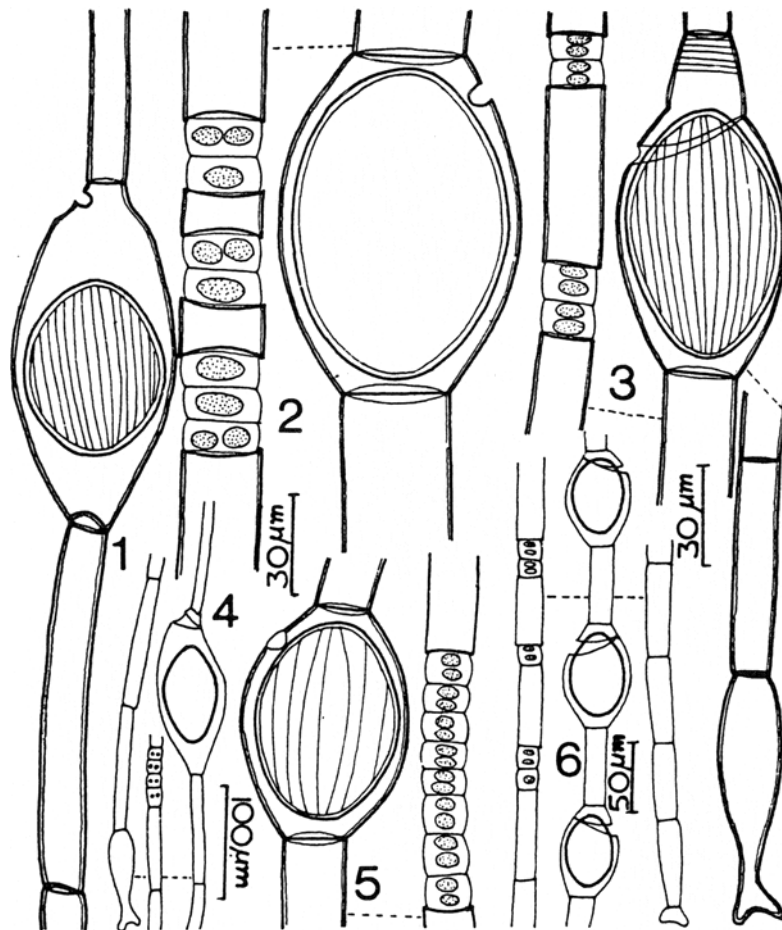
1. Introduction

The genus *Oedogonium* Link, is known to have 531 species (Hirn 1900; Gonzalves 1981) and out of which 310 species are known from India (Gonzalves 1981). So far only 77 species (macrandrous, monoecious) are reported from India and amongst them 19 macrandrous, monoecious species have been recorded from Uttar Pradesh (Singh 1938, 1960; Venkataraman 1957, 1959; Singh 1959; Pandey 1965; Khan and Kukereti 1977). The present communication deals with 7 species of *Oedogonium*, of these *Oedogonium boscii* (Wittr.) Hirn var. *minor* var. nov. is new for phycology; two species viz. *Oedogonium grande* (Kuetz.) Hirn *Oedogonium praelongum* Hall. ex And. are first records from India and 4 species viz. *Oedogonium mexicanum* (Wittr.) Hirn, *Oedogonium exocostatum* Tiffany var. *jodhpurensis* Goyal, *Oedogonium costatosporum* Jao var. *longisporum* Gonzalves et Sonnad and *Oedogonium epiphyticum* (Trans. et Tiffany) Tiffany are new records for northern part of India. All the 7 species were collected from Mauri lake, Pratapgarh, Uttar Pradesh during July 1984 to August 1986.

2. Taxonomic treatment

2.1 *Oedogonium boscii* (Wittrock) Hirn var. *minor* var nov. (figure 1)

Filamenta macrandra, dioecia; cellulae vegetativae cylindricae; cellulis filamentorum masculorum angustiribus quameis filamentae femineae; cellulis filamentorum femineorum 10–12 μm dia., 90–110 μm long; oogonia singula, ellipsoidea, 40–42 μm dia., 85–90 μm long; porus superior, oosporae sphaericae, ovoideae, tribus stratis compositae, strato exteriore longitudinaliter costato, costae 20–25 numero, oosporeae oogonia non complentes, 35–38 μm dia., 42–48 μm long; antheridea



Figures 1–6. 1. *Oedogonium boscii* (Wittrock) Hirn var. *minor* var. nov. 2. *O. grande* (Kuetzing) Hirn. 3. *O. costatosporum* Jao var. *longisporum* Gonzalves et Sonnad. 4. *O. praelongum* Hall. ex And. 5. *O. exocostatum* var. *jodhpurensis* Goyal. 6. *O. epiphyticum* (Trans. et Tiffany) Tiffany.

singula aut usque ad quinque, sparsa, 8–9 μm dia., 8–10 μm long; spermatozoidea duo, divisione verticali.

Locus typi: In loco Mauri lake, Pratapgarh, Uttar Pradesh, dicto. Tempus collectionis 10–12–84; Planta epiphytica in *Hydrilla verticillata*.

Specimen typicum: Algae HMS-2. Materia in departamento Botanico Universitatis Allahabad, Allahabad, India deposita.

Macrandrous, dioecious; vegetative cells cylindrical, cells of male filaments narrower, cells of female filaments 10–12 μm in dia., 90–110 μm in length; oogonia single, ellipsoidal, 40–42 μm in dia., 85–90 μm in length; poriferous, pores superior; oospores spherical, ovoid, 3 layered, outer layer longitudinally costate, costae 20–25 in number, not completely filling the lumen of oogonia, 35–38 μm in dia., 42–48 μm

long; antheridia single or upto 5, scattered, 8–9 μm in diameter, 8–10 μm in length; spermatozoids two, division vertical.

Type locality: Mauri lake, Pratapgarh, Uttar Pradesh; collection date: 10–12–84; Epiphytic on *Hydrilla verticillata*.

Type specimen: Algae HMS-2. Material deposited in the Department of Botany, University of Allahabad, Allahabad.

Except smaller dimensions of vegetative cells, oogonia and oospores the present alga comes close to *Oedogonium boscii* because of the differences mentioned above it has been proposed as a new variety of the type species. The present alga does not resemble in measurements any other varieties and forma of the species.

2.2 *Oedogonium grande* (Kuetzing) Hirn (figure 2).

Gonzalves 1981, 272, figure 9. 151.

Macrandrous, dioecious; vegetative cells cylindrical, male filaments slightly narrower than cells of female filaments, cells (female filaments) 24–34 μm in dia., 130–200 μm in length; basal cell elongated; oogonia single or upto 4, subobovoid, 50–65 μm in dia., 80–100 μm long; poriferous, pore superior; oospores also subobovoid, smooth walled, completely filling the lumen of oogonia, 48–63 μm in dia., 78–85 μm long; antheridia single or upto 4, seriate, 18–22 μm in dia., 7–12 μm in length; spermatozoids two, division vertical.

The present alga has similarities in general appearance with the *Oedogonium crassum* (Wittr.) Hirn and *Oedogonium mexicanum* (Wittr.) Hirn, but the latter species have larger dimensions of vegetative cells and spherical to cylindrical obovoid shape of oogonia. The present alga well agrees with the type description.

Collection no.: 57, 126.

Habitat: Epiphytic on *Hydrilla verticillata* and *Aponogeton crispus*.

Occurrence: September to February.

Distribution: It appears that the species is the first report from India, though it has been reported earlier from other countries of the world viz. Africa, north America, Asia (China and Bangladesh), Europe, Oceania and West Indies (Gonzalves 1981).

2.3 *Oedogonium praelongum* Hall. ex And. (figure 4).

Gonzalves 1981, 345, figure 9. 230.

Macrandrous, dioecious; vegetative cells cylindrical, cells of female filaments slightly smaller than those of male filaments, cells (female) 7–11 μm in dia., 50–150 μm in length; basal cell elongated, 20–25 μm in dia., 80–90 μm in length; oogonia single, ellipsoidal, 35–44 μm in dia., 80–90 μm long; operculate, division superior; oospores ellipsoidal, spherical, smooth walled, not completely filling the lumen of the oogonia, 34–41 μm in diameter, 45–55 μm long; antheridia upto 18 in a series, 14–16 μm in dia., 11–15 μm long; spermatozoids two, division vertical.

The present alga agrees well with the type description.

Collection no.: 50, 181.

Habitat: Epiphytic on *Ipomoea nil* and *Chara zeylanica*.

Occurrence: October to March.

Distribution: As far as the author is aware this species has not been reported earlier from India. Though earlier it was recorded only from Europe (Gonzalves 1981).

2.4 *Oedogonium mexicanum* (Wittrock) Hirn.

Hirn 1900, 147, plate 22, figure 111; Gonzalves 1981, 284, figure 9.163.

The present alga resembles with the type description. The alga can be compared with *Oedogonium grande* (Kuetz.) Hirn, in its general appearance and in measurements. However, *Oedogonium mexicanum* is known to have characteristic cylindrical oogonia and their solitary occurrence.

Collection no.: 57, 220.

Habitat: Epiphytic on *Aponogeton crispus*, *Hydrilla verticillata* and *Cyanodon dactylon*.

Occurrence: October to March.

Distribution: Previously this species has been reported only from Ahmedabad, Gujarat (Kamat 1962).

2.5 *Oedogonium exocostatum* Tiffany var. *jodhpurensis* Goyal (figure 5).

Goyal 1964, 389, plate 1, figures 16–17; Gonzalves 1981, 311, figure 9.186 B.

The present alga agrees well with the variety *jodhpurensis* though differs from the type species, in having inflated suffultory cells and shorter dimensions of vegetative cells.

Collection no.: 56, 181.

Habitat: Epiphytic on *Ceratophyllum demersum*, *Neptunia oleracea* and *Chara zeylanica*.

Occurrence: October to January.

Distribution: First from northern part of India, earlier reported from Jodhpur, Rajasthan (Goyal 1964).

2.6 *Oedogonium costatosporum* Jao var. *longisporum* Gonzalves and Sonnad (figure 3).

Gonzalves and Sonnad 1961, 718, figures 6a–c; Gonzalves 1981, 354, figure 9.239 B.

The present alga resembles the type in all the essential characteristic features. It differs from the type species in having longer oogonia and oospores and also longer and narrower terminal cell.

Collection no.: 86, 194.

Habitat: Epiphytic on *Utricularia aurea* and *Najas graminea*.

Occurrence: November to February.

Distribution: Earlier recorded from Naglavi, Karnataka (Gonzalves and Sonnad 1961).

2.7 *Oedogonium epiphyticum* (Trans. et Tiffany) Tiffany (figure 6).
Gonzalves 1981, 338, figure 9.221.

The present alga agrees well with the type in all essential characters. But for slightly broader oogonia.

Collection no.: 68, 224.

Habitat: Epiphytic on *Aponogeton crispus*, *Cyanodon dactylon*, *Cladophora glomerata* and *Oedogonium princeps*.

Occurrence: November to March.

Distribution: Earlier it was reported from Devarai, Karnataka (Gonzalves and Sonnad 1961), Kolhapur, Maharashtra (Kamat 1963).

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