# A NEW RECORD OF NANNANDROUS SPECIES OF THE GENUS OEDOGONIUM LINK (OEDOGONIALES, CHLOROPHYCEAE) FROM BIHAR, INDIA

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### ABSTRACT

During the survey of Oedogoniales from freshwater bodies of North Bihar, the present authors have encountered several members of green algae belonging to Chlorophyceae growing on aquatic angiosperms as epiphytes. The present communication deals with the description of a single species of the genus *Oedogonium (Oe. incrassatum* Hall. ex And.) collected from freshwater body of Darbhanga district. This is the first record of the species from India.

Keywords: Algae, Bihar, India, New Record, Oedogonium

# **INTRODUCTION**

The genus is represented in the world by over 500 species (Gonzalves, 1981; Mrozińska 1985). Sarma & Khan (1980) mentioned 232 species of the genus in India. Since then several publications appeared and the genus is now represented in India by 365 species (Sarma & Mukherjee, 1982; Compère, 1983; Pandey *et al.*, 1983; Pal & Santra, 1984; Khan, 1985; Saha, 1985; Das & Mahato, 1986; Saha & Pandit, 1987; Agarkar *et al.*, 1986; Sarma *et al.*, 1987; Srivastava & Srivastava, 1987; Patel, 1988,1989; Pramila & Nirmala, 1989; Sarma *et al.*, 1990; Santra & Pal, 1991; Mahato & Das, 1993; Mahato & Mahato, 1996; Mahato *et al.*, 1998, 2006; Misra *et al.*, 2002; Adhikary *et al.*, 2009; Keshri, 2012; Patil *et al.*, 2015). Till date, 185 new taxa (species+varieties) have been described so far as new record to science from India (Dhande & Jawale, 2006; Shukla *et al.*, 1988b; Mahato, 1999ba,1999b; Mahato & Mahato, 2000; Jawale, 2002; Jawale & Patel, 2004a, 2004b, 2005; Kargupta & Keshri, 2006; Keshri, 2012; Patil *et al.*, 2015). Recently Gupta (2012) in his monograph enlisted altogether 294 species of the genus occurring in India. This numerical figure, however seems to be confusing based on available record.

### MATERIALS AND METHODS

Algal materials were collected from fresh water bodies of Darbanga district of Bihar, India during 2013-2014. They were preserved in FAA (Fomaldehyde, Glacial acetic acid and 90% Alcohol). Each litre of the preservative contains 100ml of formaldehyde, 500ml of glacial acetic acid, 150ml of ethyl alcohol and 350ml of water. To each litre of this solution, 50ml of glacerine was added to prevent the material from dessication.

Slides were prepared using 10% glycerine. KOH (Potassium hydroxide) was used to dislodge the epiphytes and decolorize the chloroplast. Lactic acid was used to have clear observation on pores/operculum, division of suffultory cells and especially the ornamentation of oospore wall. Observations were made on Olympus research microscope. Prism type camera lucida was used for drawing and photographs of the material were taken.

### Description

# Oe.incrassatum Hall. ex And. Plate I, Figure 1-5

(Gonzalves, 1981; P.366; figure 9.253)

Nannandrous, gynandrosporous, vegetative cell capitellate, 20.2-52.5  $\mu$ m diameter, 12.1-24.2  $\mu$ m long; suffultory cells inflated, 48.5  $\mu$ m in diameter, 16.2-28.3  $\mu$ m long; oogonia 3 in rows, suboviform to quadrangular-ellipsoid, 36.4-48.5  $\mu$ m in diameter, 40 .4 $\mu$ m long, poriferous, pore supramedian; oospore identical in shape to the oogonium, completely filling it, 32.2-36.4  $\mu$ m diameter, 36 $\mu$ m long; spore wall smooth, thick; dwarf male almost straight, situated on suffultory cell, 28.3  $\mu$ m long, 8.1  $\mu$ m diameter.

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# **Research** Article

### Habitat

Collection no. SK15, Date-15.11.2013, growing as epiphytes on aquatic weeds (pH-5, Temp.-27°C) *Distribution* 

Europe-Denmark (In Gonzalves, 1981)

### **RESULTS AND DISCUSSION**

#### Discussion

During the survey of Oedogoniales from North Bihar the present authors observed on different ecological paprameters of the habitats visited. All the specimens were collected from freshwater bodies only. The species of *Oedogonium* are frequently encountered by the authors as epiphytes on the stems and roots of submerged angiospermic plants, where they were growing in close association with blue green algae and other members of green algae like *Chaetophora, Spirogyra, Bulbochaete* etc. The chemistry of water was found to be an important factor controlling the aquatic environment. Among them pH and temperature were significant, which play a critical role in the distribution of an organism. Some species of *Oedogonium* were collected, when the pH of the medium is as high as 9.5 and as low as 3.4 (Gonzalves, 1981).

However, the species of *Oedogonium* encountered by the authors were found growing mostly at pH range from 5-6. So far as temperature of the habitat is concerned the genus was found to have optimum growth at temperature range of 17°C-35°C during January to December.

The above recorded pH and temperature of the habitat were found conducive for overall growth including fertility of the genus *Oedogonium*. Seasonal variation in hydrological characters of habitat were found influencing on growth, abundance, and reproductive behaviour of *Oedogonium* and it was also found that mature sex organs mostly occur during winter (Dec-Mar).

Rarely some species were found to develop even sex organs in the months from April-November. In flowing water *Oedogonium* species collected from diverse places were all vegetative. For this reason collection from such habitats were avoided.



Figure 1: Oe. incrassatum Hall. ex. And



Figure 2: Camera Lucida Drawing of *Oe. incrassatum* Hall. ex

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**Figure 3: Androsporangium** 





#### Figure 4: Dwarf Male on Figure 5: Oogonium Suffultory Cell PLATE I

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