

ON *OEDOGONIUM ACROSPORUM* DE BARY

R. J. PATEL

Department of Biosciences, Sardar Patel University, Vallabh Vidyanagar 388 120, Gujarat, India

Abstract

Three varieties of *Oedogonium acrosporum* De Bary, viz., *O. acrosporum* and *O. boreale* from Gujarat and *O. bathmidosporum* from Madhya Pradesh, have been described. They are new additions to the Indian algal flora.

Introduction

During the extensive study of Oedogoniales from Gujarat, the author came across *Oedogonium acrosporum* De Bary var. *acrosporum* and *O. acrosporum* var. *boreale* from a pond at Harni near Baroda, Gujarat. *O. acrosporum* var. *bathmidosporum* has also been collected from Pachmarhi, Madhya Pradesh. It seems from the literature available that only one variety, *O. acrosporum floridense* has been reported so far from Ballia District, Uttar Pradesh (Pandey, 1966; Gonzalves, 1981). In the present paper the systematic account of three varieties of *O. acrosporum* are given in detail.

Systematic Description

1. *Oedogonium acrosporum* (De Bary) Hirn var. *acrosporum*
Text-fig. 1, Fig. 1-4

E. A. Gonzalves, 502-503, f. 9. 403, A, 1981.

Nannandrous, idioandrosporous; vegetative cells 11-13.2 μm in diameter, 51-64 μm long; terminal cell obtuse; suffolitary cell inflated, 15-17 μm in diameter, 49-64 μm long, oogonium single, terminal, ellipsoid, 28-37.7 μm in diameter, 32-43.5 μm long; operculate, division supreme, operculum small, deciduous; wall of oogonium with longitudinal sometimes anastomosing ridges (costae), number of costae 22 or more; dwarf males curved, situated on the suffolitary cells, stipes 2-3 celled, upper cell long, 5.6-9.4 μm in diameter, 20-32 μm long; antheridia 5-6.5 μm in diameter, 9-9.5 μm long.

Habitat—In a pond at Harni near Baroda (C. No. 1738).

2. *Oedogonium acrosporum* var. *bathmidosporum* (Nordst.) Hirn.
Text-fig. 1, Figs. 7-12

E. A. Gonzalves, 503-504, f. 9. 403 B, 1981.

Vegetative cells 8-15 μm in diameter, 25-86 μm long; suffolitary cell slightly inflated, 15 μm in diameter, 43.3 μm long; oogonium single, terminal, ellipsoid to ovoid, 26-34 μm in diameter, 40-42 μm long; operculate, division supreme, operculum small, deciduous; wall of oogonia with longitudinal costae, sometimes anastomosing, number of costae fewer, 11-16 in number, crenulate, cross striations distinct. Androsporangia, 11-12.5 μm in

Geophytology, **18**(2) : 158-161, 1988.

diameter, 10-15 μm long. Dwarf on suffoltary cells, stipe unicellular, 6-11 μm broad, 21-25 μm long. Antheridia 6-8.0 μm in diameter, 10.7 μm long.

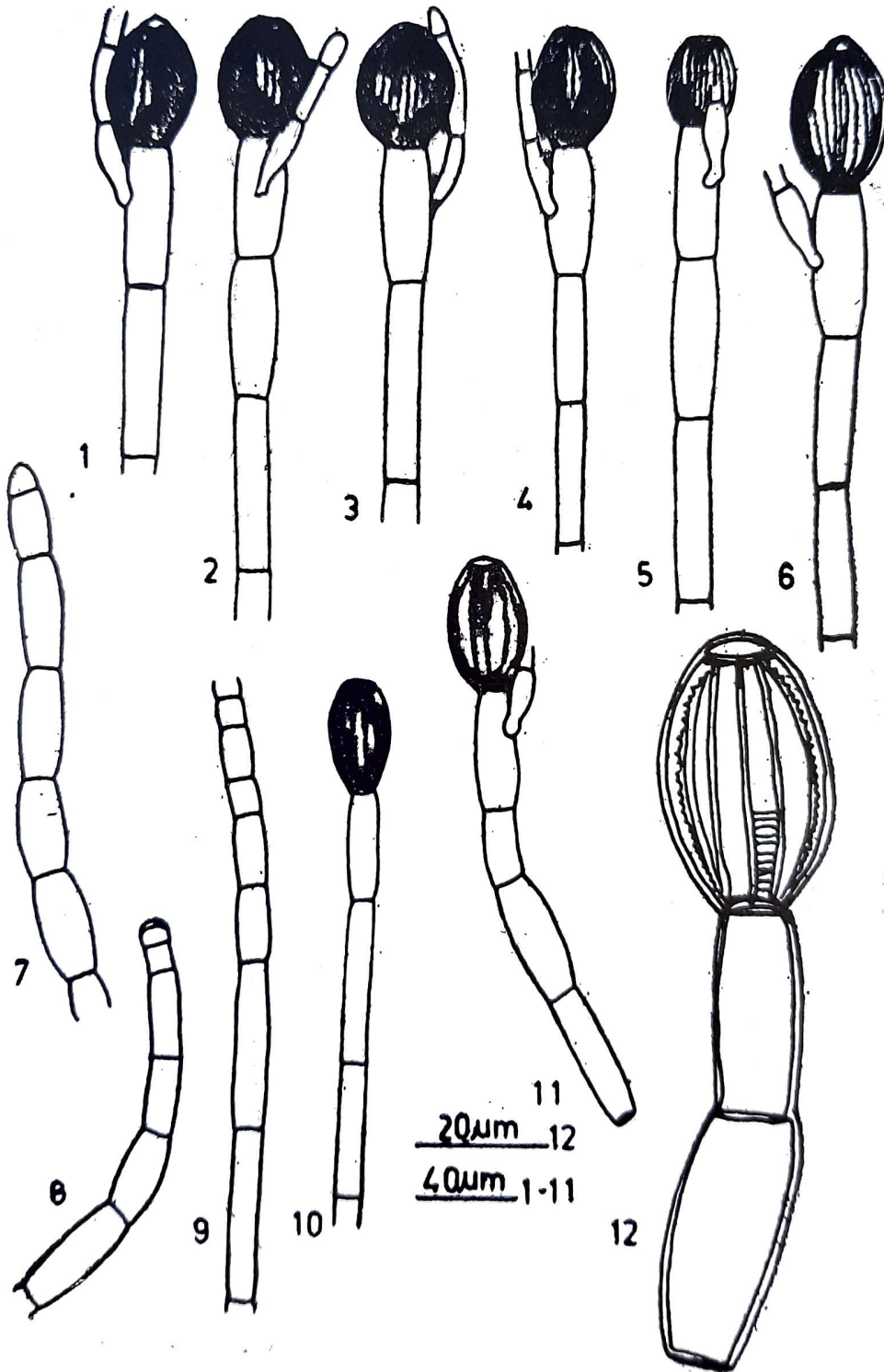
Habitat—In a stream on the way to Chhota-Mahadeo, Pachmarhi, 9.10.67 (C. No. 1194).

3. *Oedogonium acrosporum* var. *boreale* (Wolle) Tiff.

Text-fig. 1, Figs. 5-6

E. A. Gonzalves, 503-504, f. 9.403 C. 1981.

Filaments up to 25 celled; cells 11-13 μm in diameter, 50-71 long; suffoltary cell sligh-



Text-figure 1—1-4, *Oedogonium acrosporum* De Bary var. *acrosporum*; 5, 6, *O. acrosporum* var. *boreale* (Wolle) Tiffany; 7-12, *O. acrosporum* var. *bathmidosporum* (Nordst.) Hirn.

tly inflated, 15-17 μm in diameter, 56-64 μm long. Oogonium single, terminal ellipsoid, 28.3 μm in diameter, 32 μm long, operculate, division supereme, operculum small, deciduous, wall of oogonium with longitudinal costae, number of costae more than 20; dwarf-males situated on suffoltary cells, stipe single-celled, antheridium 5.65 μm in diameter, 9.4 μm long.

Habitat—In a pond at Harni near Baroda (C. No. 1738).

Discussion

Eight varieties of *O. acrosporum* so far, viz., *acrosporum*, *bathmidosporum*, *boreale*, *diplosporum*, *floridense*, *majusculum*, *minor* and *punctatum* have been reported (Hirn, 1900; Tiffany, 1937; Geimhardt, 1939; scott & Prescott, 1958; Gathier-Liéver, 1963-64; Mrozinska-Webb, 1969; Gonzalves, 1981). Most of the varieties are based on dimensions of vegetative filaments, number and nature of oogonia, longitudinal ridges (costae) on the oogonium wall and the nature of the dwarf-males.

O. acrosporum var. *acrosporum* is based on more number of longitudinal ridges on the oogonium wall (20 or more) and the dwarf-male stipe 2-3 celled. *O. acrosporum* var. *bathmidosporum* is separated from other varieties by less number of longitudinal ridges (11-17), crenulate, distinct striations between the ridges and dwarf-male stipe unicellular (Gonzalves, 1981).

O. acrosporum var. *floridense* is only the report of its occurrence from Ballia District, U. P., India (Pandey, 1966). In the figures given for var. *floridense*, the longitudinal ridges on oogonium wall are more than 20, dwarf-male stipe unicellular, vegetative filaments 12-16 μm in diameter and suffoltary cells 18-20 μm in diameter. In the text dimensions of the filaments are not given. It is very clear from the figures that the form collected from Ballia District is not the var. *floridense* (see Hirn, 1900, p. 246, pl. 41, fig. 258; Geimhardt, 1939, p. 327, f. 3.94; Mrozinska-Webb, 1969, p. 451, f. 663; Gonzalves, 1981, p. 505, f. 9. 403. 403 E). On the basis of characters, it is very closely related to var. *boreale*. In var. *boreale*, the filaments are few-celled, usually not more than 10-celled (Tiffany, 1937; Gonzalves, 1981). Tiffany (1930) considers that species of *Oedogonium* might be few-celled due to environmental conditions. If so var. *boreale* represent temporary condition of the species. In the present study, the plants of var. *boreale* collected from Harni pond are up to 25-celled. Now the var. *boreale* is easily distinguishable from var. *acrosporum* by the dwarf-male stipe being unicellular. Hence, the present form described is considered as a distinct entity var. *boreale*. It is also suggested to consider var. *floridense* recorded by Pandey (1966) as a synonym of var. *boreale*. Three varieties of *O. acrosporum*, var. *acrosporum*, var. *bathmidosporum* and var. *boreale* are recorded for the first time which are new additions to the Indian algal flora.

References

- GAUTHIER-LIÉVRE, L. (1963-64). Oedogoniacees Africaines. *Nova Hedwigia*, 6-7 : 151-481, 545-558.
- GEIMNHARDT, K. (1939). Oedogoniales. Pts. 1 & 2, in : *Rabenhorst's Kryptogamen-Flora von Deutschland, Osterreich und der Schweiz*, 454 pp. Leipzig.
- GONZALVES, E. A. (1981). *Oedogoniales*, 757 pp. I.C.A.R., New Delhi.
- HIRN, K. E. (1900). Monographie und Iconographie der Oedogoniaceen. *Acta Soc. Sci. fenn.*, 27 : 1-394.
- MROZINSKA-WEBB, T. (1969). *Flora Slodkowodna Polski. Chlorophyta IV. Oedogoniales*, 659 pp., Krakow.
- PANDEY, D. C. (1966). A study on the algae from paddy fieldsoils of Ballia and Ghazipur districts of Uttar Pradesh, India, Part II (B). *Nova Hedwigia*, 11 : 76-88.

- SCOTT, A. M. & PRESCOTT, G. (1958). Some fresh water algae from Arnhem Land in the northern territory of Australia. *Rec. Amer-Austral. Sci. Exped. Arnhem Land.*, **3** : 9-136.
- TIFFANY, L. (1930). *The Oedogoniaceae, a monograph including all the known species of the genera Bulbochaete, Oedocladium and Oedogonium.* 253 pp. Columbus, Ohio.
- TIFFANY, L. (1937). Oedogoniales. *N. Amer. Flora*, **11** : 1-102.