



DESMIDS OF JANJGIR CHAMPA OF CHHATTISGARH

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Desmids are fresh water algae often considered as indicators of oligotrophic environment for water bodies. Though desmids are reported from several parts of India but some parts of central India especially Chhattisgarh state is lagging behind in the study of this particular microflora inspite of its rich biodiversity. Therefore, an attempt has been made to study the desmid flora of Janjgir Champa of Chhattisgarh. In the present investigation, a total of 49 taxa of desmids including 29 species of *Cosmarium*, 8 species of *Staurastrum*, 5 species of *Closterium*, 1 species and 2 varieties of *Arthodesmus*, 1 species of each *Spondylosium*, *Desmidium*, *Cylindrocystis* and *Euastrum* were recorded respectively. Among all desmid flora *Cosmarium* was found to be the most abundant species followed by *Staurastrum* and *Closterium*.

Key words: Algae, Chhattisgarh, Desmids, Freshwater, Janjgir Chamapa District

Biodiversity is a gift of nature to man. Nature through its animate and inanimate processes has not only given rise to this diversity, but has also given it self-generating characters. India is one of the world's top mega biodiversity countries. The rich biodiversity and ecosystem at species level is due to its varied climatic conditions and geographical physical features. India has some of the world's most bio diverse regions. Preservation of this rich diversity is important for sustainable development. Recent global surveys have revealed that there are number of places in our country which are still untouched by algal taxonomists due to remote and unapproachable habitat sites. The present investigation is an humble effort to study the desmid flora of different freshwater habitats of Jangir Champa district of Chhattisgarh.

The sea-horse shaped Chhattisgarh state came in to existence on November 2000. Janjgir-Champa is one of most attractive district of Chhattisgarh and considered as heart of the state. It is situated between 21°6' to 22°4' N latitude and 82°3' to 83°2' E longitude. This district is a major producer of food grains of the

state. It is a major hub for agricultural trade and a major local market for fresh farm supplies and the district is also famous for lime stone. Thus the whole region has got a unique assemblage of flora and fauna. Very few reports are available on algal flora of Chhattisgarh viz. Toppo and Suseela (2009a, 2009b) Suseela and Toppo (2011, 2007) Agarkar (1977) and Agarkar *et al.* (1983) but there is no information on the desmid flora and their diversity of the region Janjgir-Champa. Therefore, the present investigation has been carried out.

MATERIALS AND METHODS

The Janjir-Champa area is rich in various lotic and lentic water bodies such as rivers, ponds, pools, ditches, streams etc. Depending on the locality of the water body especially away from anthropogenic pollution, a total of eight ponds namely Hasdev pond, Birgani pond, Rani pond, Cosmanda pond-1, Cosmanda pond-2, Cosmanda pond-3, Bagodil pond and Korti Nahar were surveyed. A total of 32 fresh water algal samples were collected in 100 ml sample bottles in the month of November from different localities of above mentioned ponds

Table-1: Distribution of desmids in The Janjgir Champa district

Sr. No.	Taxa	Localities							
		Hasdev river	Birgahni pond	Rani pond	Cosmanda pond-1	Cosmanda pond-2	Cosmanda pond-3	Bagodih pond	Kotri Nahar
1	<i>Cylindrocystis Menegh.</i>	++	+	+++	-	++	+	++	-
2.	<i>Closterium acerosum</i> (Schrank) Ehrenb.	+	++	-	+++	++	+++	+	-
3.	<i>Closterium acutum</i> (Lyngbye) Breb.	+++	+	+	++	++	-	+	-
4.	<i>Closterium parvulum</i> Naegeli	+	++	-	+++	++	+	-	-
5.	<i>Closterium rectimarginatum</i> Scott et Prescott	+++	++	-	+++	-	+	++	+
6.	<i>Closterium venus</i> Kuetz.	++	+	++	+	+++	+++	-	+
7.	<i>Euastrum spinulosum</i> Delp.	-	++	++	-	-	+++	-	-
8.	<i>Micrasterias pinnatifida</i> (Kuetz.) Ralfs Formae	-	++	-	++	-	++	+	++
9.	<i>Cosmarium angulatum</i> Perty forma major Grun.	-	++	-	++	+++	-	++	+
10.	<i>Cosmarium angulosum</i> Breb. var. <i>concinnum</i> (Rab.) West et G.S.West	+++	-	+	-	++	-	++	++
11.	<i>Cosmarium auriculatum</i> Reinsch.	++	-	+	+++	-	-	++	+
12.	<i>Cosmarium botrytis</i> Menegh.	+++	++	-	-	-	+	-	++
13.	<i>Cosmarium candianum</i> Delp. var. <i>Depressum</i> (Irenee-Marie) Croasdale	+	++	-	+++	-	-	++	-
14.	<i>Cosmarium candianum</i> Delp. var. <i>Depressum</i> (Irenee-Marie) Croasdale	+	++	-	+++	-	-	++	-

15.	<i>Cosmarium dubium</i> Borge	+++	+++	-	++	-	-	+	-
16.	<i>Cosmarium formosulum</i> E.T. Hoffman	++	-	+++	-	++	-	++	-
17.	<i>Cosmarium furcatospermum</i> West et G.S. West	-	+++	-	-	+	-	+++	+
18.	<i>Cosmarium holmiense</i> Lund.	-	++	-	+++	++	+++	-	-
19.	<i>Cosmarium lundellii</i> Delp	-	-	+++	-	++	-	++	-
20.	<i>Cosmarium maculatum</i> Turner	-	+++	++	++	-	+++	-	+
21.	<i>Cosmarium magnificum</i> var. <i>granulosum</i> Scott and Prescott	++	-	+	-	+++	-	++	-
22.	<i>Cosmarium margaritatum</i> (Lund.) Roy et Biss	+++	-	-	+++	-	++	-	+
23.	<i>Cosmarium miniata</i> Prasad et Mehrotra	+	++	-	+++	-	-	-	++++
24.	<i>Cosmarium moniliforme</i> (Turnp.) Ralfs.	-	-	++	-	+	++	-	-
25.	<i>Cosmarium obsoletum</i> (Hantzsch) Reinsch.	-	++	+++	-	++	++++	-	-
26.	<i>Cosmarium pseudogranatum</i> Nordst. var. <i>rotundatum</i> (H. Krieger) Messik.	-	++++	-	+++	-	-	+	++
27.	<i>Cosmarium punctulatum</i> Breb.	-	++	+++	-	-	-	++	-
28.	<i>Cosmarium salisburii</i> (Fritsch) Rich	+	++	-	++++	-	-	-	+
29.	<i>Cosmarium subretusiforme</i> West & G.S. West var. <i>crassum</i> Scott & Prescott	-	+++	-	-	++	-	+	++
30.	<i>Cosmarium subspeciosum</i> var. <i>validius</i> Nordst.	-	-	++	++	++	-	++	-

31.	<i>Cosmarium subtumidum</i> Nordst.	-	-	+++	-	+++	-	+	-
32.	<i>Cosmarium trachypleurum</i> var. <i>minus</i> Racib.	+	-	++	-	-	+++	-	-
33.	<i>Cosmarium turgidum</i> var. <i>westii</i> H. Krieg. et G. T. Kraft	-	-	+++	++	+++	-	-	++
34.	<i>Cosmarium variolatum</i> Lund.	-	++	-	-	+	-	-	++
35.	<i>Cosmarium vermae</i> Prasad et Mehrotra	-	-	+++	-	-	-	-	-
36.	<i>Cosmarium vittatum</i> Turner	-	++	-	+++	++	-	+	-
37.	<i>Cosmarium sexangulare</i> Lund	+	-	-	++	-	-	+++	+
38.	<i>Arthrodesmus convergens</i> Ehrenb. var. <i>curtus</i> Turner	-	+++	-	++++	+++	+++	-	-
39.	<i>Arthrodesmus convergens</i> Ehrenb. var. <i>borgei</i> Scott & Prescott	-	++++	-	+++	+++	+++	-	-
40.	<i>Staurastrum alternans</i> Breb.	-	++	-	++	++	-	-	-
41.	<i>Staurastrum freemanii</i> West & West	-	+++	-	-	++	++	-	+
42.	<i>Staurastrum furcatum</i> (Ehrenb.) Breb.	+	-	+++	-	+++	+++	-	-
43.	<i>Staurastrum hexacerum</i> Turner	-	-	++	+++	++	-	-	+++
44.	<i>Staurastrum kalapanii</i> Prasad et Misra	-	-	-	++++	+++	-	+++	-
45.	<i>Staurastrum peristephes</i> Scott & Prescott	-	++	-	++++	++	-	++	+
46.	<i>Staurastrum punctulatum</i> Breb.	-	-	-	++++	++	+++	-	-
47.	<i>Staurastrum saltans</i> Scott & Prescott	++++	++	-	+++	+++	+++	-	+

48.	<i>Spondylosium planum</i> Gutw.	-	-	++	+++	++	-	-	+
49.	<i>Desmidium baileyi</i> (Ralfs.) Nordst.	-	+	-	+++	++	++	-	-

of Janjir-Champa.

As most desmid species have a benthic way of life rather than a planktonic one (Coesel and Meesters 2007), samples were collected by squeezing native aquatic plants. Collected samples were preserved immediately in the 4% formalin solution and deposited in Algology laboratory of National Botanical Research Institute, Lucknow.

Microscopic observations were done with the help of Leciea ACT 4500 microscope. Identification of taxa based on standard literatures (Turner 1892, Tiffany and Britton 1951, Prescott 1951, Kant and Gupta 1998).

RESULTS

A total of 49 desmids species were identified from the samples of natural ponds of Janjgir Champa of Chhattisgarh and their distribution was enumerated in Table-1.

DISCUSSION

Desmids are exclusively freshwater algae, have been shown to be a potential food source for zooplankters. They comprise both solitary and colonial taxa (Coesel and Krientiz, 2007). The presence of certain desmids, even in low numbers, is considered to be a good indicator of mildly acidic, oligotrophic condition (Wehr and Sheath 2003). Desmids are gaining importance because their use as tool of bioindicators. As anthropogenic activities are increasing day by day in natural habitats it is need of the hour to forecast the changing environment of aquatic habitats. The above findings revealed remarkable results on occurrence of desmids flora in this region. A total of 49 taxa of desmids reported in this investigation and windows are open to take further exploratory work of desmids and its

conservation particularly in this resourceful bio geographic region. Most of the species occur at highly specific combinations of habitat variables, they are considered as excellent indicator organisms. As a consequence of their high environmental demands, they are very useful in monitoring conservation value in (semi) aquatic habitats.

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