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FRESH WATER BLUE GREEN ALGAE FROM GOA

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Abstract

The present survey was undertaken along various places of Goa. Blue green algae were collected from various habitats such as astatic ponds, lakes, pools and ditches. The present random survey has resulted in the discovery of 46 species belonging to 23 genera representing 7 families viz. Chroococcaceae, Stigonemataceae, Oscillatoriaceae, Nostocaceae, Scytonemataceae, Microchaetaceae, and Rivulariaceae. *Oscillatoria, Aulosira, Calothrix, Nostoc, Anabaena, Rivularia* and *Cylindrospermum* were found to be dominant in the collection. The Blue green algae are first time studied from Goa region.

Introduction

Blue green algae are the most dominant group of aquatic vegetation and play both beneficial and harmful role in nature. Blue greens are primary producers and provide food to the aquatic animals. These algae are used variously as a source of industrial materials, in pollution control, waste disposal etc. Their role as fertilizers is also accepted. Some of them are known for the production of water blooms which are harmful in several ways such as imparting unpleasant taste to drinking water (Bold & Wynne, 1978).

Enormous information is available on blue green algae from various places of India (Venkataraman, 1961; Singh, 1961). However no report is available from Goa region. Bongale (1981) has listed 43 Cyanophyceae from paddy fields of Panjim (Goa) and Chikkamanchali (Karnataka). Taking into consideration the economic importance of BGA authors have made an attempt to study the blue green algal flora from diversity and distribution point of view. This paper throws light on BGA of Goa.

Materials and methods.

a) Study area and its features:

Study area is restricted to the Goa state which has an area of 3.702 square kilometers, situated between Sindhudurg district of Maharashtra on North and North Canara district of Karnataka on South, Western Ghats on the east and Arabian sea on the West. The region is drained by two major rivers Mandovi and Zuari. Annual rainfall is around 280-350 cm. Humidity is high and varies from 70-95 %. Temperature ranges between 35-38°C (high) and 18-22°C (low) (Fig. 1).

b) Mode of collection:

Blue green algae were collected randomly from various habitats in the state of Goa. Fresh water habitats such as ponds, puddles and tree barks were examined in monsoon season. Temple pond water was also analysed for the blue green algal flora.

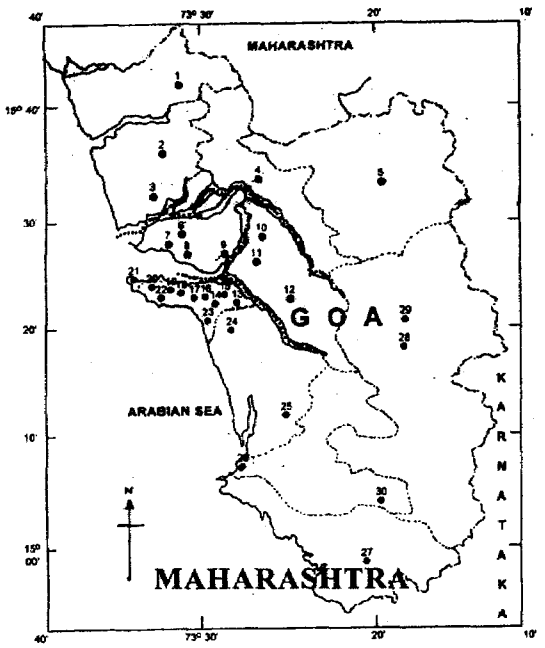

Figure 1. Map of Goa Showing Places of Algal Interest

1. Alorna
2. Mapusa
3. Porvorim
4. Mayem Lake
5. Valpoi
6. Merces
7. Taleigao Plateau
8. Goa University
9. Goa Veilha
10. Banastari
11. Mangueshi
12. Nagueshi
13. Shantinagar
14. Dabolim
15. Chicalim
16. Vasco Railway Station
17. Vaddem
18. Vasco KTC Bus Stand
19. Maimolen
20. Vasco-Da-Gama
21. Sada
22. Mangoor Hill
23. Sancoale
24. Verna
25. Chandranath Hill
26. Canaguinim
27. Poiguinim
28. Melka
29. Mollem
30. Mangal

Specimens were collected by hand picking. Individual collections were kept separate with their respective field number and labels. Collected samples were preserved in 4 % formalin and deposited at Botany Department, Goa University.

c) Microscopic preparations:

Samples were first studied under stereo-microscope for their general morphological features like colony, colour, appearance of thallus etc. Micro-preparations were made for detailed observations under compound microscope. Characters like size and shape of colonies, nature of trichomes, cells, heterocysts, spores and nature of branching were recorded. Sketches were made using mirror type of camera lucida. Taxa were then identified using well known manuals like Desikachary (1959), Anand (1989) and other related research articles.

Results and discussion

The present random survey has resulted in the discovery of 46 species the 23 genera of Cyanophyceae. The collection included 19 heterocystous species. Species such as *O. subbrevis, Phormidium calcicola, Lingbya birgei., Nostoc carneum, N. muscorum, Cyllindrospermum stagnale, Scytonema coactile, Anabaena oryzae, A. variabilis, Aulosira implexa, Rivularia globiceps, Calothrix parietina* were common in the collection. BGA collected from various localities (30) of Goa are enlisted below.

Family: Chroococcaceae

1. *Microcystis aeruginosa* Kiitz.

2. *M. robusta* (Clark) Nygaard
3. *Gleocapsa aeruginosa* (Carm.) Kuetz.
4. *G. gelatinosa* Kuetz.
5. *G. punctata* Nag.
6. *Aphanocapsa roeseana* De Bary
7. *Aphanothece castangnei* (Breb.) Rabenh.
8. *A. microscopica* Nag.
9. *Chroococcus minutus* Nag.
10. *Merismopedia aeruginea* Breb.
11. *M. tenuissima* Lemm.
12. *M. minima* Beck
13. *M. glauca* (Ehrenb.) Nag.
14. *Dactylococcopsis raphidioides* Hansg.

Family: Stigonemataceae

15. *Stigonema informe* Kuetz.
16. *Spirulina gigantea* Schmidle

Family : Oscillatoriaceae

17. *Oscillatoria boryana* Bory ex Gomout
18. *O. mougeotii* Kuetz.
19. *O. subbrevis* Schmidle
20. *O. jasorvensis* Vouk
21. *Trichodesmium thiebautii* Gom.
22. *Phormidium calcicola* Gardner
23. *P. pachydermaticum* Fremy
24. *Lingbya birgei* Smith, G.M.
25. *Microcoleus lacustris* (Rabenh.) Farlow
26. *M. chthonoplastes* Thur.

Family: Microchaetaceae

27. *Microchaete calothricoides* Hansg

Family: Nostocaceae

28. *Cylindrospermum stagnale* (Kuetz.) B. and F.
29. Nostoc carneum Ag.
30. *N. muscorum* Ag.
31. *N. microscopicum* Carm.
32. *N. verrucosum* Vaucher.
33. *N. sphaericum* Vaucher.
34. *Anabaena oryzae* Fritsch.
35. *A. volzii* Lemm.
36. *A. iyengarii* Bharadw.
37. *A. variabilis* Kutz.
38. *Anabaena* sp.
39. *Aulosira implexa* B. and F.

Family: Scytonemataceae

40. *Plectonema radiosum* (Schiederm.) Gom.
41. *Scytonema coactile* Mont.
42. *Scytonema* sp.

Family: Rivulariaceae

43. *Rivularia globiceps* West, G.S.
44. *R. aquatica* De Wilde.
45. *Calothrix parietina* (Nag.) Thuret
46. *C. javanica De* Wilde.

Till date no report was available on the composition of BGA from Goa except for Bongale (1981). His work is restricted to very few paddy fields around Panjim city (Tiswadi

Taluka) whereas in the present study authors have made attempt to survey and study BGA from almost all important representative areas of Goa.

It is evident from the analysis that Goa soils support a rich blue green algal flora. Many heterocystous species are available from this region which may be of future use. Further systematic survey may lead to the discovery of some more economically important taxa of BGA.

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