

STUDIES ON THE ALGAL FLORA OF NEPAL— I. CHLOROPHYCEAE

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Abstract

Sixty-five species belonging to twenty-six genera of Chlorophyceae have been reported for the first time from the terai belt of Nepal.

Introduction

Nepal is a Central Himalayan Kingdom, situated between 26°20'—30°10' N latitudes and 80°15'—88°19' E longitudes. The entire country can be divided into four physical divisions, viz., the great Himalayan range—Himadri, the Central Himalayan range—Himachal, Siwalik range and terai belt. The latter is the southern most part of Nepal marking slope of Himalayan range to Gangetic plain. It is the zone of marshy land enjoying maximum rainfall and has rivers, rivulets, ponds and ditches which are good homes of algae. Unfortunately, no attention has been paid on exploration of this algae rich area except solitary attempt of Prasad, Sinha and Verma (1985) who, however, also reported only four taxa belonging to green algae from the selected habitats along Indo-Nepal international boundary in North Bihar. Under the circumstances, extensive exploration of this area was undertaken by the authors to fill up the void. Present communication in which reporting of 65 taxa belonging to different orders of Chlorophyceae has been made, is only a part of the exploration undertaken by the authors during the month of December, 1988.

Algal spectrum

1. *Scenedesmus bijugatus* (Turpin) Kuetzing
Cells 4-4.5 μm broad and 10-11.5 μm long.
Habitat—Bakeya River (River bank).

2. *S. bijugatus* var. *gravenitzi* (Barnad) Philipose
Cells 7.2-7.8 μm broad and 15.6-16.2 μm long.
Habitat—Lamaha River (River bed).
3. *S. bijugatus* var. *flexuosus* Lemmermann
Cells 5.4-6.2 μm broad and 11-12 μm long.
Habitat—Rapti River at Hetauda.
4. *S. bijugatus* forma *parvus* (G. M. Smith) Philipose
Cells 3.8-4.2 μm broad and 5-6 μm long.
Habitat—Maccha Plan Pond at Hetauda.
5. *S. bijugatus* forma *irregularis* Wille
Cells 4.5-5.2 μm broad and 8-10 μm long.
Habitat—Chandi River at Chandranigahpur.
6. *S. arcuatus* (Lemmermann) Lemmermann
Cells 7-7.5 μm broad and 14-15 μm long.
Habitat—Chandi River at Chandranigahpur, Rapti River, and Maccha Plan Pond at Hetauda.
7. *S. arcuatus* var. *capitatus* G. M. Smith
Cells 5-6.2 μm broad and 22-23.5 μm long.
Habitat—Karra River at Hetauda.
8. *S. quadricauda* var. *longispina* (Chodat) G. M. Smith
Cells 2.6-3.2 μm broad and 8-8.6 μm long, spines 7.5-8 μm long.
Habitat—Maccha Plan Pond and

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- Karra River at Hetauda.
9. *S. quadricauda* var. *westii* G. M. Smith
Cells 5-6.5 μm broad and 18-19.5 μm long, spines 8.5-9.2 μm long.
Habitat—Maccha Plan Pond at Hetauda.
 10. *S. dimorphus* (Turpin) Kuetzing
Cells 2.5-3.2 μm broad and 14-15 μm long.
Habitat—Maccha Plan Pond at Hetauda.
 11. *S. dimorphus* forma *tortus* G. M. Smith
Cells 5-6 μm broad and 22-23.2 μm long.
Habitat—Maccha Plan Pond at Hetauda.
 12. *S. prismatius* Bruhl & Biswas
Cells 5.5-6.2 μm broad and 14-14.5 μm long.
Habitat—Karra River at Hetauda.
 13. *S. acutiformis* Schroeder
Cells 5.2-6 μm broad and 21.5-22.5 μm long.
Habitat—Karra River at Hetauda.
 14. *S. obliquus* (Turpin) Kuetzing
Cells 4-6 μm broad and 18-26 μm long.
Habitat—Rapti River at Hetauda.
 15. *S. armatus* var. *boglariensis* forma *bicaudatus* Hortobagyi
Cells 4.6-6 μm broad and 13-15 μm long, spines 2-2.5 μm long.
Habitat—Maccha Plan Pond at Hetauda.
 16. *S. bernardii* G. M. Smith
Cells 3.5-4.2 μm broad and 18.2-19.8 μm long.
Habitat—Maccha Plan Pond at Hetauda.
 17. *S. longus* var. *naegelii* (Brebisson) G. M. Smith
Cells 6.5-7.4 μm broad and 17-18 μm long.
Habitat—Bagmati River at Karmaaiya.
 18. *Pediastrum duplex* Meyen
Cells 14-15.5 μm and colonies 52-53.6 μm in diameter.
Habitat—Maccha Plan Pond at Hetauda.
 19. *P. duplex* var. *gracillimum* W. et G. S. West
Cells 10-11.5 μm broad and 13.5-15 μm long and colonies 40-42 μm in diameter.
Habitat—Maccha Plan Pond at Hetauda.
 20. *P. duplex* var. *clathratum* (A. Braun) Lagerheim
Cells 10.5-12.3 μm in diameter and colonies 46-47.8 μm in diameter.
Habitat—Maccha Plan Pond at Hetauda.
 21. *P. duplex* var. *reticulatum* Lagerheim
Cells 8.4-10 μm in diameter and colonies 57.6-60 μm in diameter.
Habitat—Karra River at Hetauda.
 22. *P. tetras* var. *excisum* (Rabenh.) Hensgirg
Cells 10-12.6 μm in diameter and colonies 29.2-30.4 μm wide.
Habitat—Bakeya River (River bank).
 23. *P. tetras* var. *apiculatum* Fritsch
Cells 8-9.4 μm in diameter and colonies 20.5-22.3 μm wide.
Habitat—Maccha Plan Pond at Hetauda.
 24. *P. obtusum* Lucks
Cells 11-12.5 μm in diameter and colonies 30-34 μm wide.
Habitat—Bakeya River (River bank) and Maccha Plan Pond at Hetauda.
 25. *P. simplex* var. *duodenarium* (Bailey) Rabenhorst
Cells 8-9.6 μm broad, 24.6-26.2 μm long and colonies 82-84.5 μm in diameter.
Habitat—Maccha Plan Pond at Hetauda.
 26. *P. biradiatum* Meyen
Cells 11.4-13.4 μm broad, 18-19.8 μm long and colonies 85.4-86.5 μm in diameter.
Habitat—Maccha Plan Pond at Hetauda.
 27. *P. ovatum* (Ehr.) A. Braun
Cells 10.5-12.3 μm broad, 17.4-19.6 μm long and colonies 78.8-80 μm in diameter.
Habitat—Maccha Plan Pond at Hetauda.
 28. *Chlorella vulgaris* Beijerinck
Cells 8.2-9.2 μm in diameter.
Habitat—Haldia River at Chandranigahpur.
 29. *Kirchneriella obesa* (W. West) Schmidle
Cells 5.2-6.3 μm broad and 11.2-12 μm long.
Habitat—Chandi River at Chandranigahpur.
 30. *Coelastrum microporum* Naegeli
Cells 5-12.5 μm and colonies 25-35 μm in diameter.
Habitat—Lamaha River (River bank), Chandi River at Chandranigahpur and Maccha Plan Pond and Karra River at Hetauda.

31. *C. proboscideum* Bohlin
Cells 12-15 μm and colonies 45-60 μm in diameter.
Habitat—Lamaha River (River bank).
32. *Selenastrum uestii* G. M. Smith.
Cells 2.5-3.2 μm broad and 18-23 μm long.
Habitat—Karra River bed at Hetauda.
33. *S. bibrainum* Reinsch
Cells 5-7 μm broad and 17-20 μm long.
Habitat—Maccha Plan Pond at Hetauda.
34. *S. gracile* Reinsch
Cells 3.5-4.5 μm broad and 16-19 μm long.
Habitat—Maccha Plan Pond at Hetauda.
35. *Closteridium bengalicum* Turner
Cells 4.5-5.5 μm broad and 18-25 μm long. Spines 5-5.6 μm long.
Habitat—Maccha Plan Pond at Hetauda.
36. *Ankistrodesmus falcatus* (Corda) Ralfs
Cells 2.2-5.5 μm broad and 45-60 μm long.
Habitat—Maccha Plan Pond at Hetauda.
37. *A. convolutus* Corda
Cells 1.5-2 μm broad and 25-28.5 μm long.
Habitat—Maccha Plan Pond at Hetauda.
38. *A. sigmoides* (Rabenh.) Bruhl et Biswas
Cells 2.5-2.8 μm broad and 24-26 μm long.
Habitat—Maccha Plan Pond at Hetauda.
39. *Tetraedron minimum* (A. Braun) Hansgirg
Cells 12-16 μm in diameter.
Habitat—Maccha Plan Pond at Hetauda.
40. *Actinastrum hantzschii* Lagerheim
Cells 4-5 μm broad, 22-25 μm long and colonies up to 45 μm in diameter.
Habitat—Maccha Plan Pond at Hetauda.
41. *Gloeocystis gigas* (Kuetz.) Lagerheim
Cells 11-12 μm in diameter.
Habitat—Maccha Plan Pond at Hetauda.
42. *Crucigenia crucifera* (Wolle) Collins.
Cells 3-4 μm broad and 5-7 μm long.
Colonies 10-11 μm broad and 14-15 μm long.
Habitat—Maccha Plan Pond at Hetauda.
43. *Trochiscia reticularis* (Reinsch.) Hansgirg
Cells 11.5-12.5 μm in diameter.
Habitat—Maccha Plan Pond at Hetauda.
44. *Dictyosphaerium pulchellum* Wood.
Cells 4-6 μm in diameter. Colonies 35-40 μm in diameter.
Habitat—Maccha Plan Pond at Hetauda.
45. *Conococcus elongatus* Carter
Cells 5.5-6.2 μm in diameter.
Habitat—Maccha Plan Pond at Hetauda.
46. *Schroederia setigera* (Schroeder) Lammermann
Cells 6-7.2 μm broad and 100-105 μm long with spines 25-28 μm long.
Habitat—Maccha Plan Pond at Hetauda.
47. *Oocystis borgei* Snow.
Cells 10-12 μm broad and 13-15 μm long.
Habitat—Maccha Plan Pond at Hetauda.
48. *Hydrodictyon reticulatum* (Linn.) Lagerheim
Cells 135-145 μm broad, 1-1.5 μm long and nets 2-2.5 μm long.
Habitat—Rapti River at Hetauda.
49. *Ulothrix tenuissima* Kuetzing
Cells 16.2-18.2 μm broad. Length shorter than breadth.
Habitat—Bakeya River (River bank)
50. *U. subconstricta* G. S West
Cells 8.4-9.7 μm broad. 21.4-22.8 μm long.
Habitat—Haldia River at Chandranigahpur.
51. *U. zonata* (Weber & Mohr) Kuetzing
Cells 30.5-32.4 μm broad and 30.4-32.5 μm long.
Habitat—Maccha Plan Pond at Hetauda.
52. *Rhizoclonium hieroglyphicum* Kuetzing
Cells 21.2-22.5 μm broad and 115.2-120.4 μm long.
Habitat—Lamaha River (River bank).
53. *Chaetophora attenuata* Hazen
Cells 5.5-6.2 μm broad and 22.2-23.6 μm long.
Habitat—Lamaha River (River bank).
54. *Microthamnion strictissimum* Rabenhourst
Cells 2.8-3.8 μm broad and 23.8-25 μm long.
Habitat—Bakeya River (River bank).
55. *Spirogyra hyalina* Cleve
Cells 50.4-57.2 μm broad, 162.5-168 μm long. Zygosporangia 50-52.5 μm

- broad and 72.4-75.6 μm long
Habitat—Chandi River at Chandranigahpur.
56. *S. suecica* Transeau
Cells 27.5-28.8 μm broad, 142-149 μm long. Zygospores 34-35.6 μm broad 60-64.8 μm long.
Habitat—Chandi River at Chandranigahpur.
57. *S. sprengiana* Rabenhorst
Cells 18.3-20.4 μm broad, 207.2-209.5 μm long. Zygospores 30-31 μm broad and 55.6-56.8 μm long.
Habitat—Chandi River at Chandranigahpur.
58. *S. gallica* Petit
Cells 72.5-73.8 μm broad, 150.9 to 152.4 μm long. Zygospores 62.3-64.9 μm broad and 90-91.6 μm long.
Habitat—Chandi River at Chandranigahpur.
59. *Spirogyra* sp.
Cells 14-16 μm broad and 70-122 μm long. Zygospores not observed. Specimen very close to *S. perforans* Transeau (Randhawa, 1959).
Habitat—Bakeya River (River bank).
60. *Spirogyra* sp.
Cells 28-32 μm broad and 110-113 μm long. Zygospores not observed. The present dimension not agreeable to any of the species of *Spirogyra* reported by Randhawa (1959).
Habitat—Bakeya River (River bank).
61. *Mougeotia floridana* Transeau
Cells 16.2-17.6 μm broad, 65.4-66.8 μm long. Zygospores 30.5-31.8 μm in diameter.
Habitat—Bakeya River (River bank).
62. *M. viridis* (Kuetzing) Wittrock
Cells 8.2-9 μm broad, 78.4-80.3 μm long. Zygospores 20.2-21.4 μm broad, 20.4-21.8 μm long.
Habitat—Bakeya River (River bank).
63. *M. calcarea* (Cleve) Wittrock
Cells 14-16 μm broad, 136.4-138.2 μm long. Zygospores 26.6-27.8 μm in diameter.
Habitat—Chandi River at Chandranigahpur.

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64. *Zygnema gangeticum* Rao
Cells 19.2-20.4 μm broad, 58.4-59.6 μm long. Zygospores 34.3-35.6 μm broad and 37.8-39.4 μm long.
Habitat—Road side ditch at Nijgarh.
65. *Sirogonium* sp.
Cells 13-15 μm broad and 36-39.6 μm long. Zygospores not observed. The specimen is narrower than any species reported by Randhawa (1959).
Habitat—Bakeya River (River bank).

The diagnoses of the specimens agree almost completely with the respective taxa described by Prescott (1951) in general. The taxa belonging to Chlorococcales, Ulotrichales and Conjugales resemble the specimens of Philipose (1967), Ramanathan (1964) and Randhawa (1959) respectively. However, the distinction of Nepal specimen was apparently noted in the variations of cell dimensions. These variations have been overlooked keeping different ecological situations into the consideration. The taxa reported here are the first record from Nepal.

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