

Cyanobacteria of Nepal: A Checklist with Distribution

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Abstract

This compilation work presents an up-to-date list of the cyanophycean algae reported by various workers in past from Nepal. It comprises a total 274 taxa belonging to 61 genera under 12 families.

Key words: Cyanobacteria, blue-green algae, enumeration, checklist, Nepal

Introduction

Nepal (26°22'-30°27'N, 80°04'-88°12'E), a small Himalayan country (area ca 147181 km²), is very rich in water resources as it has about 2323 glacier lakes and 2252 snow fed rivers in the Himalaya; about 6000 rivers, streams and thousand of waterfalls in the mountain; and many lakes, ponds, puddles and wetlands in the terai regions of the country; altogether about 7437 km² (5% of the total land) area as the favourite habitats for algae. Besides these, the diverse topography (elevation range 56 m to 8848 m) and climate also make the country rich in algal diversity. However, except sporadic collections, the extensive exploration of algae in the country has never been done as it has been given least preference in comparison to land vegetation specially the phanerogams.

This is an attempt to list out the total blue-green algae reported from Nepal by various phycologists at different time intervals till the date mainly on the basis of available literature. It includes a total 274 taxa as the latest data on the cyanophycean algae of Nepal. Here, the families are

arranged following Desikachary (1959) and taxa are arranged alphabetically in each family.

Checklist with distribution

Family: **Chroococcaceae** Nägeli (1849)

1. *Aphanocapsa anodontae* Hansg.: Mingled with mosses on a brick wall at Balaju water garden, 1300 m, Kathmandu (Watanabe and Komarek, 1988).
2. *Aphanocapsa biformis* A.Br.: Madhuban and Kusaha, Sunsari (Jha and Kargupta, 2001).
3. *Aphanocapsa delicatissima* W. West et G.S. West: A stream at Pisang, 3100 m, Manang (Hirano, 1955).
4. *Aphanocapsa elachista* W. West et G.S. West var. *conferta* W. West et G.S. West: Khageri Khola at Tikauli, Chitwan (Das and Verma, 1996).
5. *Aphanocapsa elachista* W. West et G.S. West var. *planctonica* Smith: A glacier lake at Langtang Himal, 3700 m, Rasuwa (Hirano, 1969).

6. *Aphanocapsa grevillei* (Hass.) Rabenh.: A pond at Luitel Bhanjyang, 770 m, Gorkha (Hirano, 1955); Langtang river, 2000 m, Rasuwa (Hirano, 1969); mingled with mosses on a brick wall at Balaju water garden, 1300 m, Kathmandu (Watanabe and Komarek, 1988); a pond at Mahendra Morang Campus, 72 m, Biratnagar, Morang (Rai and Misra, 2010).
7. *Aphanocapsa* cf. *musciicola* (Menegh.) Wille: Sagarmatha National Park, Solukhumbu (Komarek and Watanabe, 1998).
8. *Aphanocapsa pulchra* (Kütz.) Rabenh.: Planktonic in stagnant water of Pimbahal pond at Pimbahal, 1300 m, Lalitpur (Joshi, 1979); a pond at Godawari, Lalitpur (Shrestha and Manandhar, 1983).
9. *Aphanocapsa rivularis* (Carm.) Rabenh.: Khair Khola at Tandī, Chitwan (Das and Verma, 1996).
10. *Aphanocapsa roeseana* De Bary: On damp bank by roadside at Godawari, 1400 m, Lalitpur (Watanabe and Komarek, 1988); planktonic in a pond near Sarda dam, Mahendranagar, Kanchanpur (Habib, 1997).
11. *Aphanothece castagnei* (Bréb.) Rabenh.: A glacial lake at Rarkya pass, 4850 m, Manang (Hirano, 1963); Under a cliff with dripping water at Phakdingma, 2700 m, Sagarmatha National Park, Solukhumbu (Watanabe and Komarek, 1994).
12. *Aphanothece microscopica* Näg.: A glacial lake at Langtang Himal, 3700 m, Rasuwa (Hirano, 1969); roadside ditches at Mahendranagar, Kanchanpur (Habib, 1997).
13. *Aphanothece naegelii* Wartm.: On damp bank by roadside at Godawari, 1400 m, Lalitpur (Watanabe and Komarek, 1988); rice field at Phoksiltar, 400 m, near Sun Koshi river, Udayapur (Rai and Misra, 2010).
14. *Aphanothece* cf. *nidulans* Richt. in Wittr. et Nordst.: Under a cliff with dripping water at Phakdingma, 2700 m, Sagarmatha National Park, Solukhumbu (Watanabe and Komarek, 1994).
15. *Aphanothece pallida* (Kütz.) Rabenh.: Langtang river, 2000 m, Rasuwa (Hirano, 1969); mingled with mosses on a brick wall at Balaju Water Garden, 1300 m, Kathmandu (Watanabe and Komarek, 1988).
16. *Aphanothece stagnina* (Spreng.) A.Br.: Floating on Rara lake, 2970 m, Mugu (Watanabe, 1995).
17. *Chroococcus hansgirgi* Schmidle: Madhuban and Kusaha, Sunsari (Jha and Kargupta, 2001).
18. *Chroococcus limneticus* Lemm.: Lower valley below Namchebazar along different habitats and smaller streams flowing into Dudh Koshi river, 2900 m to 4200 m, Solukhumbu (Subba Raju and Suxena, 1979); on moist soil at Kirtipur, 1300 m, Kathmandu (Shrestha and Manandhar, 1983).
19. *Chroococcus limneticus* Lemm. var. *distans* G.M. Smith: Chandī river at Chandranigahapur, Rautahat (Sahay *et al.*, 1993).
20. *Chroococcus minor* (Kütz.) Näg.: On damp bank by roadside at Godawari, 1400 m, Lalitpur (Watanabe and Komarek, 1988).

21. **Chroococcus minutus** (Kütz.) Näg.: A stream at Tukucha moor, 2600 m, Mustang (Hirano, 1955); lower valley below Namchebazar along different habitats and smaller streams flowing into Dudh Koshi river, 2900 m to 4200 m, Solukhumbu (Subba Raju and Suxena, 1979); Chandi river and Bakaya river at Chandranigahapur, Rautahat (Sahay *et al.*, 1993); a shallow lake near Kongma La, 5300 m, Sagarmatha National Park, Solukhumbu (Watanabe and Komarek, 1994); on a dead tree in the south shore of Rara lake, 2970 m, Mugu (Watanabe, 1995); on decaying substratum in a ditch at Narayanghat, Chitwan (Das and Verma, 1996); Madhuban and Kusaha, Sunsari (Jha and Kargupta, 2001); Titrigachi pond at Koshi Tappu, 206 m, Kusaha, Sunsari (Rai and Misra, 2010).
22. **Chroococcus schizodermaticus** West: A pond at Mechi Campus, 93 m, Bhadrapur, Jhapa (Rai and Misra, 2010).
23. **Chroococcus tenax** (Kirchn.) Hieron.: Chandi river at Chandranigahapur, Rautahat (Sahay *et al.*, 1993); under a cliff with dripping water at Phakdingma, 2700 m, Sagarmatha National Park, Solukhumbu (Watanabe and Komarek, 1994).
24. **Chroococcus turgidus** (Kütz.) Näg.: A stream at Tukucha moor, 2600 m, Mustang; A pond at Pisang, 3100 m and Thaple Himal, 4000 m, Manang (Hirano, 1955); Chandi river at Chandranigahapur, Rautahat (Sahay *et al.*, 1993).
25. **Chroococcus** cf. **turicensis** (Näg.) Hansg.: A shallow lake near Kongma La, 5300 m, Sagarmatha National Park, Solukhumbu (Watanabe and Komarek, 1994).
26. **Chroococcus varius** A.Br. in Rabenh.: Under a cliff with dripping water at Phakdingma, 2700 m, Sagarmatha National Park, Solukhumbu (Watanabe and Komarek, 1994).
27. **Coelosphaerium dubium** Grun.: Rice field at Phoksiltar, 400 m, near Sunkoshi river, Udayapur (Rai and Misra, 2010).
28. **Cyanobacteria epiphyticum** Kom. et Watn.: Sagarmatha National Park, Solukhumbu (Komarek and Watanabe, 1998).
29. **Dactylococcopsis acicularis** Lemm.: Fish pond at Hetauda, Makawanpur (Sahay *et al.*, 1993).
30. **Dactylococcopsis raphidioides** Hansg.: A pond at Ankhu Khola, 640 m, Gorkha (Hirano, 1955); Bakeya river (Sahay *et al.*, 1993).
31. **Eucapsis himalayensis** Watn. et Kom.: Under a cliff with dripping water at Phakdingma, 2700 m and a shallow lake near Kongma La, 5300 m, Sagarmatha National Park, Solukhumbu (Watanabe and Komarek, 1994); a pond at Mechi Campus, 93 m, Bhadrapur, Jhapa (Rai and Misra, 2010).
32. **Eucapsis minuta** Fritsch: Haldia river at Chandranigahapur, Rautahat (Sahay *et al.*, 1993).
33. **Gloeocapsa aeruginosa** (Carm.) Kütz.: On moist calcareous rock at Chandragiri, 2000 m, Kathmandu (Watanabe and Komarek, 1988).
34. **Gloeocapsa atrata** (Turp.) Kütz.: Mingled with mosses on a brick wall at Balaju water garden, 1300 m,

- Kathmandu (Watanabe and Komarek, 1988).
35. *Gloeocapsa decorticans* (A.Br.) Richter: Wheat fields at Bara, Parsa and Rautahat (Prasad, 1999).
 36. *Gloeocapsa dermochroa* Näg.: On bank by roadside at Nagarjun, 1500 m, Kathmandu (Watanabe and Komarek, 1988).
 37. *Gloeocapsa montana* Kütz.: On moist rocks at Phulchoki, 2000 m, Kavrepalanchok (Watanabe and Komarek, 1988).
 38. *Gloeocapsa* cf. *muralis* Kütz.: On damp bank by roadside at Godawari, 1400 m, Lalitpur (Watanabe and Komarek, 1988).
 39. *Gloeocapsa nigrescens* Näg.: Bakeya river (Sahay *et al.*, 1993).
 40. *Gloeocapsa rupestris* Kütz.: On moist soil, rice field and Sugarcane field at Birganj, Parsa (Prasad, 1996).
 41. *Gloeocapsa sanguinea* (Ag.) Kütz.: On bank by roadside at Nagarjun, 1500 m, Kathmandu (Watanabe and Komarek, 1988).
 42. *Gloeocapsopsis ferruginea* Kom. et Watn.: Sagarmatha National Park, Solukhumbu (Komarek and Watanabe, 1998).
 43. *Gloeotheca fusco-lutea* Näg.: On damp cliff by roadside at Chobhar, 1350 m, Kathmandu (Watanabe and Komarek, 1988).
 44. *Gloeotheca rupestris* (Lyngb.) Born.: Wheat fields at Bara, Parsa and Rautahat (Prasad, 1999).
 45. *Gomphosphaeria aponina* Kütz.: A pond at Pisang, 3100 m, Manang; A stream at Tukucho moor, 2600 m, Mustang (Hirano, 1955).
 46. *Holopodium irregulare* Lagerh.: On damp soil at Balaju, 1300 m, Kathmandu (Shrestha and Manandhar, 1983).
 47. *Lemmermanniella* sp.: Sagarmatha National Park, Solukhumbu (Komarek and Watanabe, 1998).
 48. *Mantellum himalayense* Kom. et Watn.: Sagarmatha National Park, Solukhumbu (Komarek and Watanabe, 1998).
 49. *Merismopedia elegans* A.Br.: Phewa lake, 967 m, Pokhara, Kaski (Nakanishi, 1986); Chandi river at Chandranigahapur, Rautahat, and Rapti river at Hetauda, Makawanpur (Sahay *et al.*, 1993); rice field and on damp soil around a tap at Hongchur, 850 m, Khotang (Rai and Misra, 2010).
 50. *Merismopedia glauca* (Ehr.) Näg.: A pond at Tadikhola, 630 m, Manang (Hirano, 1955); planktonic in lake, Taudaha, Kathmandu (Joshi, 1979); Chandi river at Chandranigahapur, Rautahat and Lamaha river (Sahay *et al.*, 1993); a stream between Chhukung and Amphu, 4770 m, Sagarmatha National Park, Solukhumbu (Watanabe and Komarek, 1994).
 51. *Merismopedia minima* Beck: Chandi river at Chandranigahapur, Rautahat (Sahay *et al.*, 1993).
 52. *Merismopedia punctata* Meyen: A stream at Tukucho moor, 2600 m, Mustang (Hirano, 1955); planktonic in lake Taudaha, Kathmandu (Joshi, 1979); Chandi river at Chandranigahapur, Rautahat and Bakaya river (Sahay *et al.*, 1993); ditches at Narayanghat, Chitwan (Das and Verma, 1996).
 53. *Merismopedia tenuissima* Lemm.: A pond at Ankhu Khola, 640 m, Gorkha

- (Hirano, 1955); lakes in Pokhara valley, Kaski (Nakanishi, 1986).
54. *Trochiscia* sp.: Shallow ice core from Yala glacier, 5350 m, Langtang region (Yoshimura *et al.*, 1997; 2006).
 55. *Microcystis aeruginos* Kütz.: Lakes in Pokhara valley, Kaski (Hickel, 1973a; Nakanishi, 1986); Chhapkaiya pond, Birganj, Parsa (Prasad, 1996); pond at P.G. Campus, 73 m, Biratnagar (Rai and Misra, 2010).
 56. *Microcystis flos-aquae* (Wittr.) Kirchn.: Phewa lake, 967 m, Pokhara, Kaski (Hirano, 1955); planktonic in lake Taudaha as a water bloom, Kathmandu (Joshi, 1979); Chhapkaiya pond, Birganj, Parsa (Prasad, 1996).
 57. *Microcystis incerta* Lemm.: A pond at Hattisar Campus, 511 m, Dharan, Sunsari (Rai and Misra, 2010).
 58. *Microcystis marginata* (Menegh.) Kütz.: Roadside ditches at Mahendranagar, Kanchanpur (Habib, 1997).
 59. *Microcystis robusta* (Clark) Nygaard: Planktonic in lake Taudaha, Kathmandu (Joshi, 1979); Kamal pokhari, 73 m, Sukrabare, Kechana, Morang (Rai and Misra, 2010).
 60. *Microcystis stagnalis* Lemm.: A stream at Tukucha moor, 2600 m, Mustang (Hirano, 1955); Pimbahal pond at Pimbahal, 1300 m, Patan, Lalitpur (Joshi, 1979).
 61. *Nephrococcus* sp.: On moist calcareous rock at Chandragiri, 2000 m, Kathmandu (Watanabe and Komarek, 1988).
 62. *Synechococcus aeruginosus* Näg.: A stream at Tukucha moor, 2600 m, Mustang (Hirano, 1955).
 63. *Synechococcus elongatus* Näg.: Haldia river at Chandranigahapur, Rautahat (Sahay *et al.*, 1993).
 64. *Synechocystis aquatilis* Sauvageau: Chandi river at Chandranigahapur, Rautahat and Kara river at Hetauda, Makawanpur (Sahay *et al.*, 1993); Khageri Khola at Tikauli, Chitwan (Das and Verma, 1996); Madhuban and Kusaha, Sunsari (Jha and Kargupta, 2001).
 65. *Synechocystis pevalekii* Ercegovic: Fish pond at Hetauda, Makawanpur (Sahay *et al.*, 1993); Khageri Khola at Tikauli, Chitwan (Das and Verma, 1996).
 66. *Woronichinia kuselae* Watn. et Kom.: A shallow lake near Kongma La, 5300 m, Sagarmatha National Park, Solukhumbu (Watanabe and Komarek, 1994); Titrigachi pond, 206 m, Koshi Tappu, Sunsari (Rai and Misra, 2010)
- Family: **Entophysalidaceae** Geitler
67. *Chlorogloea* cf. *microcystoides* Geitler: Sagarmatha National Park, Solukhumbu (Komarek and Watanabe, 1998).
 68. *Chlorogloea simplex* Watn. et Kom.: Under a cliff with dripping water at Phakdingma, 2700 m, SNP, Solukhumbu (Watanabe and Komarek, 1994); Gupha Pokhari lake, 2950 m, Nundhaki, Sankhuwasabha (Rai and Misra, 2010).
 69. *Entophysalis rubra* Watn. et Kom.: A shallow lake near Kongma La, 5300 m; a stream at Dusa, 4530 m, Sagarmatha National Park, Solukhumbu (Watanabe and Komarek, 1994)

Family: **Chamaesiphonaceae** Borzi

70. *Chamaesiphon confervicola* A.Br. ex Rabenh.: A rapid stream of holy bathing water in a small temple at Godawari, 1400 m, Lalitpur (Watanabe and Komarek, 1988).
71. *Chamaesiphon incrustans* Grun. f. *asiatica* Will.: A glacier lake at Gosain kunda, 4500 m, Rasuwa (Hirano, 1969).
72. *Chamaesiphon* cf. *jaoi* Hällfors (Syn. *Ch. Clavatus* Jao): Sagarmatha National Park, Solukhumbu (Komarek and Watanabe, 1998).
73. *Chamaesiphon* cf. *minimus* Schmidle: Sagarmatha National Park, Solukhumbu (Komarek and Watanabe, 1998).
74. *Chamaesiphon minutus* Rostaf. ex Lemm.: A rapid stream of holy bathing water in a small temple at Godawari, 1400 m, Lalitpur (Watanabe and Komarek, 1988).
75. *Chamaesiphon palssahtiae* Kom. et Watn.: Sagarmatha National Park, Solukhumbu (Komarek and Watanabe, 1998).
76. *Clastidium nepalense* Kom. et Watn.: Sagarmatha National Park, Solukhumbu (Komarek and Watanabe, 1998).
77. *Clastidium* cf. *sicyoideum* Li: Sagarmatha National Park, Solukhumbu (Komarek and Watanabe, 1998)

Family: **Pleurocapsaceae** Geitler

78. *Cyanosarcina* sp.: Mingled with mosses on a brick wall at Balaju water garden, 1300 m, Kathmandu (Watanabe and Komarek, 1988).
79. *Myxosarcina spectabilis* Geitler: Periphyton on stones in Sera Khola,

430 m, Panchakanya, Sunsari (Rai and Misra, 2010).

Family: **Hyellaceae** Borzi

80. *Xenococcus luteo-violaceus* Kom. et Watn.: Sagarmatha National Park, Solukhumbu (Komarek and Watanabe, 1998).

Family: **Oscillatoriaceae** Kirchner

81. *Arthrospira gomontiana* Setchell: Haripur and Kusaha, Sunsari (Jha and Kargupta, 2001).
82. *Arthrospira khannae* Drouet et Strickland: Pitchhra pond and canal, 72 m, Biratnagar, Morang (Rai and Misra, 2010).
83. *Arthrospira massartii* Kuffareth: Haldia river at Chandranigahapur, Rautahat (Sahay *et al.*, 1993).
84. *Arthrospira platensis* Nordst. ex Gom.: A pond at Nagwa, Birganj, Parsa (Prasad, 1996).
85. *Arthrospira spirulinoides* Ghose: Municipal drain near Bus stand at Narayanghat, Chitwan (Das and Verma, 1996).
86. *Blennothrix ganeshii* Watn. et Kom.: Stony substrate in the stream at Godawari, 1400 m, Lalitpur (Watanabe and Komarek, 1988).
87. *Hydrocoleus homoeotrichum* Kütz.: Stream at Kungbachen, 4000 m (Hirano, 1984).
88. *Leptolyngbya perelegans* Lemm. ex Anagn. et Kom. (Syn. *Lyngbya perelegans* Lemm.): A small pond south of Rara lake, 3030 m, Mugu (Watanabe, 1995).
89. *Leptolyngbya rivulariarum* Gom. ex Anagn. et Kom. (Syn. *Lyngbya rivulariarum* Gom.): Submerged rock

- in a streamlet flowing into Rara lake, 2970 m, Mugu (Watanabe, 1995).
90. *Lyngbya aerugineo-coerulea* Kütz. ex Gom.: Langtang river, 2000 m, Rasuwa (Hirano, 1969); A rapid stream outpouring over a concrete dam at Taudaha, 1350 m, Kathmandu (Watanabe and Komarek, 1988).
 91. *Lyngbya allorgei* Frémy: On damp bank by roadside at Godawari; on brick wall near the gates of fish farm at Godawari, 1400 m, Lalitpur; on moist concrete wall by roadside, 2 km north of Chabahil, 1300 m, Kathmandu (Watanabe and Komarek, 1988); Sharda river near Mahendranagar, Kanchanpur (Habib, 1997).
 92. *Lyngbya bipunctata* Lemm.: On brick wall near the gates of fish farm at Godawari, 1400 m, Lalitpur (Watanabe and Komarek, 1988).
 93. *Lyngbya birgei* Smith: Sundarijal, Kathmandu; Patan, Lalitpur (Shrestha and Manandhar, 1983); Betana wetland, 123 m, Belbari, Morang (Rai and Misra, 2010).
 94. *Lyngbya confervoides* Ag. ex Gom.: Rice field at Lamjung (Panta and Gupta, 1999).
 95. *Lyngbya contorta* Lemm.: A pond at Indo-Nepal roadside at Mahendranagar, Kanchanpur (Habib, 1997).
 96. *Lyngbya epiphytica* Hieron.: A glacier lake at Langtang Himal, 3700 m, Rasuwa (Hirano, 1969).
 97. *Lyngbya hieronymusii* Lemm.: A pond near Sharda river, Mahendranagar, Kanchanpur (Habib, 1997); pond at Birendra Sabha Griha, 72 m, Biratnagar, Morang (Rai and Misra, 2010).
 98. *Lyngbya lagerheimii* Mob. ex Gom.: A rapid stream outpouring over a concrete dam at Taudaha lake, 1350 m, Kathmandu (Watanabe and Komarek, 1988).
 99. *Lyngbya lattissima* Prescott: Budhi Rapti river at Chitrasari, Chitwan (Das and Verma, 1996).
 100. *Lyngbya limnetica* Lemm.: On a submerged stone in a stream at Walangchung and Kungbachen, 4000 m (Hirano, 1984).
 101. *Lyngbya maior* Menegh.: On moist concrete wall by roadside, 2 km north of Chabahil, 1300 m, Kathmandu (Watanabe and Komarek, 1988).
 102. *Lyngbya majuscula* Harv. ex Gom.: Betana wetland, 123 m, Belbari, Morang (Rai and Misra, 2010).
 103. *Lyngbya sordida* Zanard. ex Gom.: A stream at Lirum glacier, 3900 m, Rasuwa (Hirano, 1969).
 104. *Microcoleus chthonoplastes* Thuret ex Gom.: Khair Khola at Tandi, Chitwan (Das and Verma, 1996); rice field at Sawane-Thingabari, 500 m, Panchakanya, Sunsari (Rai and Misra, 2010).
 105. *Microcoleus lacustris* Rabenh. ex Farlow: Rice field at Lamjung (Panta and Gupta, 1999); Madhuban, Sunsari (Jha and Kargupta, 2001).
 106. *Microcoleus sociatus* W. West et G.W. West: Damp soil by roadside at Jasbire on the way to Maipokhari, 2010 m, Ilam (Rai and Misra, 2010).
 107. *Microcoleus subtorulosus* Bréb. ex Gom.: Wheat fields at Bara, Parsa and Rautahat (Prasad, 1999).
 108. *Microcoleus vaginatus* Vauch. ex Gom.: On damp cliff by roadside at Chobhar, 1350 m, Kathmandu (Watanabe and Komarek, 1988).

109. *Oscillatoria acuminata* Gom.: A rapid stream outpouring over a concrete dam at Taudaha lake, 1350 m, Kathmandu (Watanabe and Komarek, 1988).
110. *Oscillatoria acuta* Bruhl et Biswas, orth. mut. Geitler: Haripur, Sunsari (Jha and Kargupta, 2006).
111. *Oscillatoria acutissima* Kufferath: Khumbu, East Nepal (Kuselfetzmann, 1969); a streamlet connecting fish pond at Godawari, 1400 m, Lalitpur (Watanabe and Komarek, 1988).
112. *Oscillatoria agardhii* Gom.: A small stream near Langtang Base Camp, 3800 m, Rasuwa (Hirano, 1969); Rapti river at Hetauda, Makawanpur (Sahay *et al.*, 1993); Jayashree khola at Gaindakot, Nawalparasi (Das and Verma, 1996).
113. *Oscillatoria amoena* Kütz. ex Gom.: Langtang, 2500 m, Rasuwa (Hirano, 1969); on damp wall at Alko Hiti, Patan, Lalitpur (Joshi, 1977); roadside ditches at Mahendranagar, Kanchanpur (Habib, 1997).
114. *Oscillatoria amoena* (Kütz.) Gom. var. *non-granulata* Ghose: Dharapani Pandhero at Damku, 1690 m, Khotang (Rai and Misra, 2010).
115. *Oscillatoria amphibia* Ag. ex Gom.: A pond at Pisang, 3100 m, Manang (Hirano, 1955).
116. *Oscillatoria anguina* Bory ex Gom.: A rapid stream outpouring over a concrete dam at Taudaha lake, 1350 m, Kathmandu (Watanabe and Komarek, 1988); Malaya roadside ditches, 72 m, Biratnagar, Morang (Rai and Misra, 2010).
117. *Oscillatoria animalis* Ag. ex Gom.: A glacier lake at Langtang Himal, 3700 m, Rasuwa (Hirano, 1969).
118. *Oscillatoria annae* van Goor: Rice field at Malangwa, Sarlahi; Kara river at Hetauda, Makawanpur (Sahay *et al.*, 1993).
119. *Oscillatoria articulata* Gardner: Haldia river at Chandranigahapur, Rautahat (Sahay *et al.*, 1993).
120. *Oscillatoria borneti* Zukal: Jayashree khola at Gaindakot, Nawalparasi (Das and Verma, 1996).
121. *Oscillatoria brevis* Kütz. ex Gom.: Langtang river near Langtang Base Camp, 3800 m, Rasuwa (Hirano, 1969).
122. *Oscillatoria chalybea* Mertens ex Gom.: Haripur, Madhuban and Kusaha, Sunsari (Jha and Kargupta, 2001; 2006).
123. *Oscillatoria chlorina* Kütz. ex Gom.: Moist soil at Chakupat, Patan, Lalitpur (Joshi, 1977); Haripur and Kusaha, Sunsari (Jha and Kargupta, 2001; 2006).
124. *Oscillatoria cortiana* Menegh. ex Gom.: Dharapani pandhero at Damku, 1690 m, Khotang (Rai and Misra, 2010).
125. *Oscillatoria curviceps* Ag. ex Gom.: Rice field at Lamjung (Panta and Gupta, 1999).
126. *Oscillatoria deflexa* G. West et G.S. West: Kathmandu (Watanabe, 1971); on damp cliff by roadside at Chobhar, 1350 m, Kathmandu (Watanabe and Komarek, 1988).
127. *Oscillatoria foreaui* Frémy: A pond near Sharda dam, Mahendranagar, Kanchanpur (Habib, 1997).
128. *Oscillatoria formosa* Bory ex Gom.: A pond at Arughat Bazaar, 640 m and

- Luitel Bhanjyang, 770 m, Gorkha (Hirano, 1955); on water-logged soil at Patan, Lalitpur and drainage soil at Sundarijal, Kathmandu (Joshi, 1977); water logged soil, Lamosangu, Sindhupalchok (Joshi, 1979); Bagmati river at Karmaiya (Sahay *et al.*, 1993); Kaparphori ditches at Tikauli, Chitwan (Das and Verma, 1996); Ghariyar pond, rice, wheat and sugarcane fields, Birganj, Parsa (Prasad, 1996); rice fields at Sardanagar, Rampur, Chitwan (Prasad and Prasad, 2001).
129. *Oscillatoria granulata* Gardner: A shallow stagnant water, 3 km north of Chabahil, 1300 m, Kathmandu (Watanabe and Komarek, 1988).
130. *Oscillatoria hamelii* Frémy: Haripur and Kusaha, Sunsari (Jha and Kargupta, 2001; 2006).
131. *Oscillatoria irrigua* Kütz. ex Gom.: A stream at Kali Gandaki, 2540 m, Mustang (Hirano, 1955); Khageri Khola at Tikauli, Chitwan (Das and Verma, 1996); Bhandara, Chitwan (Prasad and Prasad, 2001).
132. *Oscillatoria jasorvensis* Vouk.: Moist soil at Chakupat, 1300 m, Lalitpur; near Pashupatinath, 1300 m, Kathmandu (Joshi, 1977); on wall of hot spring water at Tatopani, 700 m, Sindhupalchok (Joshi, 1979).
133. *Oscillatoria laete-virens* Crouan ex Gom.: Rice field at Lamjung (Panta and Gupta, 1999).
134. *Oscillatoria limosa* Ag. ex Gom.: On soil of hot spring water at Tatopani, 700 m, Sindhupalchok (Joshi, 1979); Kathmandu (Shrestha and Manandhar, 1983); Chandi river at Chandranigahapur, Rautahat and Kara river at Hetauda, Makawanpur (Sahay *et al.*, 1993); main dam of Khageri Khola at Tikauli, Chitwan (Das and Verma, 1996); Madhuban, Haripur and Kusaha, Sunsari (Jha and Kargupta, 2001; 2006); rice fields at Sardanagar, Rampur, Chitwan; rice field at Khumaltar, 1300 m, Lalitpur; rice fields at Thimi, Bhaktapur (Prasad and Prasad, 2001); Naharchowk ditches near Satasidham river, 128 m, Shivaganj, Jhapa (Rai and Misra, 2010).
135. *Oscillatoria mougeotii* Kütz.: Rice field at Malangwa, Sarlahi (Sahay *et al.*, 1993).
136. *Oscillatoria nigra* Vaucher: Fish pond at Hetauda, Makawanpur (Sahay *et al.*, 1993).
137. *Oscillatoria obscura* Bruhl et Biswas: On water logged soil, Lamosangu, Sindhupalchok (Joshi, 1979); Haripur, Sunsari (Jha and Kargupta, 2006).
138. *Oscillatoria okeni* Ag. ex Gom. var. *gracilis* Kütz.: Kathmandu (Watanabe, 1971); on damp cliff by roadside at Chobhar, 1350 m; a small pond at Bajrabarahi, 1300 m; a rapid stream outpouring over a concrete dam at Taudaha lake, 1350 m, Kathmandu (Watanabe and Komarek, 1988).
139. *Oscillatoria ornata* Kütz. ex Gom.: Haripur, Sunsari (Jha and Kargupta, 2006).
140. *Oscillatoria princeps* Vauch. ex Gom.: A pond at Patan Dhoka, 1300 m, Lalitpur (Hirano, 1963); Narayani river side at Narayanghat, Chitwan (Upadhyaya, 1979); Jayashree khola at Gaindakot, Nawalparasi; Kara river at Hetauda, Makawanpur; Khageri Khola at Tikauli, Chitwan (Das and Verma, 1996); rice and sugarcane

- fields, Birganj, Parsa (Prasad, 1996); roadside ditches at Mahendranagar, Kanchanpur (Habib, 1997); Madhuban, Haripur and Kusaha, Sunsari (Jha and Kargupta, 2001; 2006); Malaya roadside ditches, 72m, Biratnagar, Morang (Rai and Misra, 2010).
141. *Oscillatoria proboscidea* Gom.: Hot spring of Tatopani on the way to jomsom, 1300m, Mustang (Upadhyaya, 1979); on damp cliff by roadside at Chobhar, 1350 m, Kathmandu (Watanabe and Komarek, 1988); on moist soil at Birganj (Prasad, 1996); roadside ditches at Mahendranagar, Kanchanpur (Habib, 1997); Sarochia pond, 72 m, Biratnagar, Morang (Rai and Misra, 2010).
142. *Oscillatoria* cf. *proteus* Skuja: On moist concrete wall by roadside, 2 km north of Chabahil, 1300 m, Kathmandu (Watanabe and Komarek, 1988).
143. *Oscillatoria pseudominima* Skuja: A glacier lake at Langtang Himal, 3700 m, Rasuwa (Hirano, 1969).
144. *Oscillatoria sancta* Kütz. ex Gom.: Kaparphori ditches at Tikauli, Chitwan (Das and Verma, 1996); Madhuban, Haripur and Kusaha, Sunsari (Jha and Kargupta, 2001; 2006); Raja Rani lake, 500 m, Bhogateni, Morang (Rai and Misra, 2010).
145. *Oscillatoria splendida* Grev. ex Gom.: A stream at Lirum glacier, 3900 m, Rasuwa (Hirano, 1969); Chimdi lake, 73 m, Sunsari (Rai and Misra, 2010).
146. *Oscillatoria subbrevis* Schmidle: On moist soil at Patan Dhoka, 1300 m, Lalitpur (Joshi, 1977); on wall of hot spring water, Tatopani, Sindhupalchok (Joshi, 1979); Kara river at Hetauda, Makawanpur and rice field at Malangwa, Sarlahi (Sahay *et al.*, 1993).
147. *Oscillatoria subproboscidea* G. West et G.S. West: On damp cliff by roadside at Chobhar, 1350 m, Kathmandu (Watanabe and Komarek, 1988).
148. *Oscillatoria terebriformis* Ag.: A pond at Thaple Himal, 4000 m, Manang (Hirano, 1955).
149. *Oscillatoria vizagapatensis* Rao: Haripur, Sunsari (Jha and Kargupta, 2006).
150. *Phormidium ambiguum* Gom.: A pond at Boudhanath, 1300 m, Kathmandu (Hirano, 1963); rice fields at Kathmandu (Baral *et al.*, 1988); on damp soil around a tap water, 2 km below Makpa, 1440 m, Khotang (Rai and Misra, 2010).
151. *Phormidium anomala* Rao: A fish pond at Mahendranagar, Kanchanpur (Habib, 1997).
152. *Phormidium autumnale* Ag. ex Gom.: A pond at Chittrey pass, 2660 m, Manang (Hirano, 1955); Thimi, Bhaktapur (Shrestha and Manandhar, 1983).
153. *Phormidium corium* Ag. ex Gom.: A pond at Patan Dhoka, 1300 m, Lalitpur (Hirano, 1963); on damp bank by roadside at Godawari, 1400 m, Lalitpur (Watanabe and Komarek, 1988).
154. *Phormidium favosum* Bory ex Gom.: A stream at Mewa valley, 4150 m (Hirano, 1984).

155. *Phormidium fragile* Menegh. ex Gom.: Rani pokhari, 1300 m, Kathmandu (Hirano, 1963).
156. *Phormidium incrustatum* Näg. ex Gom.: A fish pond at Mahendranagar, Kanchanpur (Habib, 1997).
157. *Phormidium inundatum* Kütz. ex Gom.: A stream at Mewa valley, 4150 m (Hirano, 1984).
158. *Phormidium jadinianum* Gom.: Rice field at Lamjung (Panta and Gupta, 1999).
159. *Phormidium laminnatum* Ag. ex Gom.: Fresh water at Kaligandaki, 2500 m, Mustang; a stream at Tukucha moor, 2600 m, Mustang (Hirano, 1955).
160. *Phormidium laminosum* Gom.: A stream at Mewa valley, 4150 m (Hirano, 1984).
161. *Phormidium lucidum* Kütz. ex Gom.: Sirsiya river and moist soils at Birganj, Parsa (Prasad, 1996); wheat fields at Bara, Parsa and Rautahat (Prasad, 1999).
162. *Phormidium molle* Kütz. ex Gom.: Madhuban and Haripur, Sunsari (Jha and Kargupta, 2001).
163. *Phormidium papyraceum* Ag. ex Gom.: A glacier lake at Rarkya pass, 4850 m, Manang (Hirano, 1963?).
164. *Phormidium purpurascens* Kütz. ex Gom.: A stream at Pisang, 3100 m, Manang (Hirano, 1955).
165. *Phormidium retzii* Ag. ex Gom.: Kathmandu (Watanabe, 1971); a stream at Mewa valley, 4150 m (Hirano, 1984); on damp cliff by roadside at Chobhar, 1350 m, Kathmandu (Watanabe and Komarek, 1988).
166. *Phormidium rubroterricola* Gardner: Haripur and Kusaha, Sunsari (Jha and Kargupta, 2001).
167. *Phormidium stagnina* Rao: Rice field at Lamjung (Panta and Gupta, 1999).
168. *Phormidium subfuscum* Kütz. ex Gom.: Roadside drains at Ilam Bazaar, 1208 m, Ilam (Rai and Misra, 2010).
169. *Phormidium tenue* (Ag. ex Gom.) Anagn. et Kom. (Syn. *Oscillatoria tenuis* Ag. ex Gom.): A small pond south of Rara lake, 3030 m, Mugu (Watanabe, 1995); Rapti river at Hetauda, Makawanpur (Sahay *et al.*, 1993).
170. *Phormidium uncinatum* Ag. ex Gom.: Kathmandu (Watanabe, 1971); on damp bank by roadside at Godawari, 1400 m, Lalitpur (Watanabe and Komarek, 1988).
171. *Phormidium usterii* Schmidle: A fish pond at Mahendranagar, Kanchanpur (Habib, 1997).
172. *Phormidium valderiae* Schmidle: A small stream near Langtang Base Camp, 3800 m, Rasuwa (Hirano, 1969).
173. *Schizothrix flammea* Kom. et Watn.: Sagarmatha National Park, Solukhumbu (Komarek and Watanabe, 1998).
174. *Schizothrix friesii* Ag. ex Gom.: On banks by roadside at Nagarjun, 1500 m, Kathmandu (Watanabe and Komarek, 1988).
175. *Schizothrix heufleri* Grun.: On moist calcareous rock at Chandragiri, 2000 m, Kathmandu (Watanabe and Komarek, 1988).
176. *Schizothrix lacustris* A.Br. ex Gom.: A glacier lake at Langtang Himal, 3700 m, Rasuwa (Hirano, 1969).

177. *Schizothrix pulvinata* Kütz. ex Gom.: Rice fields at Kathmandu (Baral *et al.*, 1988).
178. *Schizothrix purpurascens* Kütz. ex Gom.: Mingled with mosses at Nagarkot, 1600 m, Bhaktapur (Watanabe and Komarek, 1988).
179. *Schizothrix radius-solis* Watn. et Kom.: A small pond north west of Pangpoche, 4550 m, SNP, Solukhumbu (Watanabe and Komarek, 1994).
180. *Spirulina gigantea* Schmidle: Rupa and Khaste lakes, 900 m, Pokhara, Kaski (Hickel, 1973a); fish pond at Hetauda, Makawanpur (Sahay *et al.*, 1993); Jayashree khola at Gaidakot, Nawalparasi (Das and Verma, 1996); Haripur and Kusaha, Sunsari (Jha and Kargupta, 2001).
181. *Spirulina major* Kütz. ex Gom.: Bagmati river at Karmaiya and rice field at Malangwa, Sarlahi (Sahay *et al.*, 1993); Rawa Khola, 720 m, Manglabare, Khotang (Rai and Misra, 2010).
182. *Spirulina meneghiniana* Zanard. ex Gom.: Fish pond and Kara river at Hetauda, Makawanpur (Sahay *et al.*, 1993); Madhuban and Kusaha, Sunsari (Jha and Kargupta, 2001).
183. *Spirulina princeps* W. West et G.S. West: Fish pond at Hetauda, Makawanpur (Sahay *et al.*, 1993); Madhuban, Haripur and Kusaha, Sunsari (Jha and Kargupta, 2001); Kamal pokhari, 73 m, Sukrabare, Kechana, Morang (Rai and Misra, 2010).
184. *Spirulina subsalsa* Oerst. ex Gom.: Bagmati river at Karmaiya and Rice field at Malangwa, Sarlahi (Sahay *et al.*, 1993); Madhuban and Kusaha, Sunsari (Jha and Kargupta, 2001); Pitchhra pond and canal, 72 m, Biratnagar, Morang (Rai and Misra, 2010).
185. *Spirulina subtilissima* Kütz. ex Gom.: Madhuban and Kusaha, Sunsari (Jha and Kargupta, 2001).
186. *Symploca flotowiana* Kütz.: On moist concrete wall by roadside, 2 km north of Chabahil, 1300 m, Kathmandu (Watanabe and Komarek, 1988).
- Family: **Nostocaceae** Kütz.
187. *Anabaena augstumalis* var. *marchica* Lemm.: A ditch at Jayashree khola at Gaidakot, Nawalparasi (Das and Verma, 1996).
188. *Anabaena azollae*: Rice field at Birganj, Parsa (Prasad, 1996).
189. *Anabaena circinalis* Rabenh. ex Born. et Flah.: Rupa lake, 967 m, Pokhara, Kaski (Nakanishi, 1986).
190. *Anabaena doliolum* Bhardwaja: Rice fields at Kathmandu (Baral *et al.*, 1988); rice field at Birganj, Parsa (Prasad, 1996).
191. *Anabaena fertilissima* Rao: Rice fields at Kathmandu (Baral *et al.*, 1988).
192. *Anabaena flos-aquae* (Lyngb.) Bréb. ex Born. et Flah.: Rice field at Lamjung (Panta and Gupta, 1999).
193. *Anabaena globosa* Hirano: Rani pokhari, 1300 m, Kathmandu (Hirano, 1963).
194. *Anabaena iyengarü* Bharadwaja: Chandi river at Chandranigahapur, Rautahat (Sahay *et al.*, 1993); a pond near Sharda dam, Mahendranagar, Kanchanpur (Habib, 1997); Titrigachi pond, 206 m, Koshi Tappu, Sunsari (Rai and Misra, 2010).

195. *Anabaena iyengarii* Bharadwaja var. *tenuis* Rao: Haripur and Kusaha, Sunsari (Jha and Kargupta, 2001); rice field at Phoksiltar, 400 m, near Sunkoshi river, Udayapur (Rai and Misra, 2010).
196. *Anabaena lapponica* Borge: A small pond south of Rara lake, 3030 m, Mugu (Watanabe, 1995).
197. *Anabaena* cf. *laxa* (Rabenh.) A.Br. in Born. et Flah.: Under a cliff with dripping water at Phakdingma, 2700 m; a shallow streamlet north east of Chhukung, 4770 m; a shallow lake near Kongma La, 5300 m, Sagarmatha National Park, Solukhumbu (Watanabe and Komarek, 1994).
198. *Anabaena naviculoides* Fritsch: Haripur and Kusaha, Sunsari (Jha and Kargupta, 2001).
199. *Anabaena oscillarioides* Bory ex Born. et Flah.: A small pond south of Rara lake, 3030 m, Mugu (Watanabe, 1995).
200. *Anabaena papillosa* Hirano: A branch stream of Langtang river, 2800 m, Rasuwa (Hirano, 1969).
201. *Anabaena sphaerica* Born. et Flah. var. *tenuis* G.S. West: Khageri Tal at Tikauli, Chitwan (Das and Verma, 1996).
202. *Anabaena unispora* Gardner: A ditch along by-pass road at Gaindakot, Nawalparasi (Das and Verma, 1996).
203. *Anabaena variabilis* Kütz. ex Born. et Flah.: A ditch along by-pass road at Gaindakot, Nawalparasi (Das and Verma, 1996); rice field at Khumaltar, 1300 m, Lalitpur; rice field at Thimi, Bhaktapur (Prasad and Prasad, 2001).
204. *Anabaena volzii* Lemm.: A puddle along Khair Khola at Belchi, Tandī, Chitwan (Das and Verma, 1996); rice field at Phoksiltar, 400 m, near Sunkoshi river, Udayapur (Rai and Misra, 2010).
205. *Anabaenopsis raciborskii* Wolosz.: Chhapkaiya pond, Birganj, Parsa (Prasad, 1996).
206. *Aulosira fertilissima* Ghose: Nepal (Singh, 1961); Municipal drain near Bus stand at Narayanghat, Chitwan (Das and Verma, 1996); rice field at Jagannathpur, Parsa; rice field at Parwanipur, Bara (Prasad and Prasad, 2001).
207. *Aulosira fertilissima* Ghose var. *tenuis* Rao: A pond near Indo-Nepal border, Mahendranagar, Kanchanpur (Habib, 1997).
208. *Aulosira fritschii* Bharadwaja: Khageri Tal at Tikauli, Chitwan (Das and Verma, 1996).
209. *Aulosira implexa* Born. et Flah.: Suryabinayak, 1300 m, Bhaktapur; Godawari pond, 1300 m, Lalitpur (Shrestha and Manandhar, 1983).
210. *Aulosira prolifica* Bharadwaja: Khair Khola at Tandī, Chitwan (Das and Verma, 1996).
211. *Cylindrospermum* cf. *breve* Welsh: Epiphytic on *Scytonema* among wet mosses on rocky substrate and on roots of trees in streaming and dripping water at Phakdingma, 2700 m, Sagarmatha National Park, Solukhumbu (Watanabe and Komarek, 1994).
212. *Cylindrospermum indicum* Rao: Rocky substrate overflowed by spring water between Lardze and Namche Bazaar, 3100 m, Sagarmatha National Park, Solukhumbu (Watanabe and Komarek, 1994).

213. *Cylindrospermum majus* Kütz. ex Born. et Flah.: Chandi river at Chandranigahapur, Rautahat (Sahay *et al.*, 1993); Suryabinayak, 1300 m, Bhaktapur (Shrestha and Manandhar, 1983).
214. *Cylindrospermum minutissimum* Collins: On damp cliff by roadside at Chobhar, 1350 m, Kathmandu (Watanabe and Komarek, 1988); a small pond south of Rara lake, 3030 m, Mugu (Watanabe, 1995).
215. *Cylindrospermum stagnale* Kütz. ex Born. et Flah.: In stagnant water at Senegaun, Patan, Lalitpur (Joshi, 1979); gelatinous aggregation in mosses at Nagarkot, 1600 m, Bhaktapur; on damp bank by roadside at Godawari, 1400 m, Lalitpur (Watanabe and Komarek, 1988); rice fields at Kathmandu (Baral *et al.*, 1988); a pond at Mahendranagar, Kanchanpur (Habib, 1997).
216. *Cylindrospermum stagnale* Kütz. ex Born. et Flah. forma *variabilis* Prasad: Chimdi lake, 73 m, Sunsari (Rai and Misra, 2010).
217. *Nodularia harveyana* (Thw. in Harv.) Thur. ex Born. et Flah.: Kathmandu (Watanabe, 1971); shallow water near west shore of Rara lake, 2970 m, Mugu (Watanabe, 1995).
218. *Nostoc calcicola* Bréb. ex Born. et Flah.: On damp bank by roadside at Godawari, 1400 m, Lalitpur (Watanabe and Komarek, 1988); rice fields at Kathmandu (Baral *et al.*, 1988).
219. *Nostoc commune* Vauch. ex Born. et Flah.: Water tank, rice field and sugarcane fields at Birganj, Parsa (Prasad, 1996); rice fields at Parwanipur, Bara (Prasad and Prasad, 2001); Maipokhari lake, 2150 m, Ilam (Rai and Misra, 2010).
220. *Nostoc ellipso sporum* (Desm.) Rabenh. ex Born. et Flah.: On moist soil at Senegaun, Patan, Lalitpur (Joshi, 1979); on damp cliff by roadside at Chobhar, 1350 m, Kathmandu; on damp bank by roadside at Godawari, 1400 m, Lalitpur (Watanabe and Komarek, 1988); rice fields at Kathmandu (Baral *et al.*, 1988).
221. *Nostoc linckia* (Roth.) Bornet ex Born. et Flah.: Godawari, 1400 m, Lalitpur; Thimi, Bhaktapur (Shrestha and Manandhar, 1983); a pond at Mahendranagar, Kanchanpur (Habib, 1997); rice fields at Sardanagar, Rampur, Chitwan; rice fields at Parwanipur, Bara; rice field at Khumaltar, 1300 m, Lalitpur; rice fields at Panga, Kirtipur, Kathmandu (Prasad and Prasad, 2001).
222. *Nostoc microscopicum* Carm. ex Born. et Flah.: Wheat fields at Bara, Parsa and Rautahat (Prasad, 1999).
223. *Nostoc muscorum* Ag. ex Born. et Flah.: On water logged soil in rice field at Senegaun, Patan, Lalitpur (Joshi, 1979).
224. *Nostoc paludosum* Kütz. ex Born. et Flah.: A pond at Patan Dhoka, 1300 m, Lalitpur (Hirano, 1963).
225. *Nostoc sphericum* Vauch. ex Born. et Flah.: Rice fields at Thimi, Bhaktapur (Prasad and Prasad, 2001).
226. *Nostoc spongiaeforme* Ag. ex Born. et Flah.: On moist concrete wall by roadside, 2 km north of Chabahil, 1300 m, Kathmandu (Watanabe and Komarek, 1988); rice fields at Tamnagar, Belbas and Devinagar at Butawal (Gyawali and Prasad, 1999).

227. *Pseudanabaena catenata* Lauterb.: On damp cliff by roadside at Chobhar, 1350 m; Taudaha lake, 1350 m, Kathmandu (Watanabe and Komarek, 1988).
228. *Pseudanabaena mucicola* (Naum. et Huber-Pest.) Bourr. Emend. Chang, Koest et Wanner (Syn. *Phormidium mucicola* Naum. et Huber-Pest.): Submerged rock in a streamlet flowing into Rara lake, 2970 m, Mugu (Watanabe, 1995).
229. *Arthronema africanum* (Schwabe et Simonsen) Komárek et Lukavský: High plateaus in Nepal (Komárek and Lukavský, 1988).
230. *Raphidiopsis curvata* Fritsch et Rich.: Sirsiya river and sewage site at Birganj, Parsa (Prasad, 1996)
- Family: **Scytonemataceae** Rabenhorst
231. *Scytonema arcangelii* Born. et Flah.: Thankot, 1300 m, Kathmandu (Shrestha and Manandhar, 1983).
232. *Scytonema bewsii* Fritsch et Rich.: On damp bank by roadside at Godawari, 1400 m, Lalitpur; gelatinous aggregation in mosses at Nagarkot, 1600 m, Bhaktapur (Watanabe and Komarek, 1988).
233. *Scytonema burmanicum* Skuja: Sabha Pokhari lake, 4100 m, Sankhuwasabha (Rai and Misra, 2010).
234. *Scytonema contorta* Watn. et Kom.: On bank by roadside at Nagarjun, 1500 m, Kathmandu (Watanabe and Komarek, 1988).
235. *Scytonema fertilia* Watn. et Kom.: Mingled with mosses at Nagarkot, 1600 m, Bhaktapur (Watanabe and Komarek, 1988).
236. *Scytonema javanicum* (Kütz.) Born. ex Born. et Flah.: Roadside ditches at Itahari, 120 m, Sunsari (Rai and Misra, 2010).
237. *Scytonema mirabile* Dillw. ex Born.: A glacier lake at Langtang Himal, 3700 m, Rasuwa (Hirano, 1969).
238. *Scytonema myochrous* (Dillw.) Ag. ex Born. et Flah.: Khumbu, East Nepal (Kusel-fetzmann, 1969); on moist calcareous rock at Chandragiri, 2000 m, Kathmandu (Watanabe and Komarek, 1988).
239. *Scytonema ocellatum* Lyngb. ex Born. et Flah.: On rocks by roadside at Swayambhu, 1300 m, Kathmandu; on brick wall near the gates of fish farm at Godawari, 1400 m, Lalitpur (Watanabe and Komarek, 1988).
240. *Scytonema schmidtii* Gom.: On brick wall by roadside at Nagarjun, 1500 m, Kathmandu (Watanabe and Komarek, 1988).
241. *Scytonema stuposum* (Kütz.) Born. ex Born. et Flah.: Epiphytic on bark of *Accasia auriculiformis* at Botany Department, P.G. Campus, 72 m, Biratnagar, Morang (Rai and Misra, 2010).
242. *Tolypothrix* cf. *arenophila* G. West et G.S. West: Mingled with mosses on a brick wall at Balaju water garden, 1300 m, Kathmandu (Watanabe and Komarek, 1988).
243. *Tolypothrix distorta* Kütz. ex Born. et Flah.: A small pond south of Rara lake, 3030 m and floating on Rara lake, 2970 m, Mugu (Watanabe, 1995); Mechi pond at Maheshpur, 80 m, Bhadrapur, Jhapa (Rai and Misra, 2010).
244. *Tolypothrix phyllophila* G. West et G.S. West: On moist calcareous rocks

at Chandragiri, 2000 m, Kathmandu (Watanabe and Komarek, 1988)

Family: **Microchaetaceae** Limm.

245. *Coleodesmium sagarmathae* Kom. et Watn.: Periphyton on stones at streams of Imja river south from Lhotse Shar, 4770 m; outlet of lake near Longponga, south from Ngozumpa glacier, 4650 m; shallow pool east from Kongma La, south west from Nuptse, 5250 m; shallow lake north west from Pangpoche, 4550 m; outlet from Saraswati Kunda, Gosainkund area, Solukhumbu (Komarek and Watanabe, 1990?).
246. *Fortiea* sp.: Under a cliff with dripping water at Phakdingma, 2700 m, Solukhumbu (Watanabe and Komarek, 1994); Sagarmatha National Park, Solukhumbu (Komarek and Watanabe, 1998).
247. *Microchaete* cf. *aequalis* Frémy ex Desikachary: Epiphytic on mosses and liverworts in dropping water and on wetted rock and free foots of trees at Phakdingma, 2700 m, Sagarmatha National Park, Solukhumbu (Watanabe and Komarek, 1994).
248. *Microchaete tenera* Thuret ex Born. et Flah.: A small pond south of Rara lake, 3030 m, Mugu (Watanabe, 1995).

Family: **Rivulariaceae** Rabenhorst

249. *Calothrix atricha* Frémy: A ditch along by-pass road at Gaidakot, Nawalparasi (Das and Verma, 1996).
250. *Calothrix castelli* Massal. ex Born. et Flah.: A ditch along Jayashree khola at Gaidakot, Nawalparasi (Das and Verma, 1996).

251. *Calothrix castelli* Massal. ex Born. et Flah. var. *somastipurensis* Rao: Epiphytic on decaying leaves of *Euphorbia pulcherrima*, submerged in ditches at Biratnagar, 72 m, Morang (Rai and Misra, 2010).
252. *Calothrix fusca* Kütz. ex Born. et Flah.: On damp cliff by roadside at Chobhar, 1350 m, Kathmandu (Watanabe and Komarek, 1988); a fish pond at Mahendranagar, Kanchanpur (Habib, 1997).
253. *Calothrix fusca* Kütz. ex Born. et Flah. var. *crassa* Rao: In the mucilage of *Anabaena* sp. in moist rock at Sundarijal Mai, Sundarijal, Kathmandu (Joshi, 1979); Siddhapokhari, Bhaktapur (Shrestha and Manandhar, 1983).
254. *Calothrix* cf. *gloeocola* Skuja: On a dead tree in the south shore of Rara lake; on gelatinous mass of *Rivularia* cf. *hansgirgii* on submerged rock in streamlet flowing into Rara lake, 2970 m, Mugu (Watanabe, 1995).
255. *Calothrix parietina* Thuret ex Born. et Flah.: A stream at Pisang, 3100 m, Manang (Hirano, 1955); Kathmandu (Watanabe, 1971); Patan, Lalitpur (Joshi, 1979); on damp cliff by roadside at Chobhar, 1350 m, Kathmandu (Watanabe and Komarek, 1988).
256. *Calothrix scytonemicola* Tilden: On damp cliff by roadside at Chobhar, 1350 m, Kathmandu (Watanabe and Komarek, 1988).
257. *Gloeotrichia echinulata* J.E. Smith ex Rich. var. *berhampurensis* Rao: Mawa river, 230 m, Morang; rice field at Phoksiltar, 400 m, near Sunkoshi river, Udayapur (Rai and Misra, 2010).

258. *Gloeotrichia intermedia* Lemm. ex Geitl.: On moist soil, rice field and sugarcane field at Birganj, Parsa (Prasad, 1996); Haripur, Sunsari (Jha and Kargupta, 2001).
259. *Gloeotrichia intermedia* Lemm. ex Geitl. var. *kanwaensis* Rao: Mawa river, 230 m, Morang (Rai and Misra, 2010).
260. *Gloeotrichia natans* Rabenh. ex Born. et Flah.: Lamaha river (Sahay *et al.*, 1993); a puddle at Mahendranagar Bazaar, Kanchanpur (Habib, 1997).
261. *Gloeotrichia raciborskii* Wolosz. var. *kashiense* Rao: Chimdi lake, 73 m, Sunsari (Rai and Misra, 2010).
262. *Homoeothrix* cf. *janthina* (Born. et Flah.) Starmach: On damp bank by roadside at Godawari, 1400 m, Lalitpur (Watanabe and Komarek, 1988).
263. *Rivularia aquatica* De Wilde.: Haripur, Sunsari (Jha and Kargupta, 2001).
264. *Rivularia hansgirgi* Schmidle: On submerged rock in a streamlet flowing into Rara lake, 2970 m, Mugu (Watanabe, 1995); Haripur, Sunsari (Jha and Kargupta, 2001).
265. *Rivularia minutula* Kütz. ex Born. et Flah.: Nagarjun, 1300 m, Kathmandu (Shrestha and Manandhar, 1983); Mechi pond at Maheshpur, 80 m, Bhadrapur, Jhapa (Rai and Misra, 2010).
- Family: **Nostochopsidaceae** Geitler
266. *Nostochopsis lobatus* Wood em. Geitl.: A streamlet connecting fish pond at Godawari, 1400 m, Lalitpur (Watanabe and Komarek, 1988); a pond at Godawari, Lalitpur (Shrestha and Manandhar, 1983); on wall of outlet canal at Betana wetland, 123 m, Belbari, Morang (Rai and Misra, 2010).
- Family: **Stigonemataceae** Kirchner
267. *Fischerella epiphytica* Ghose: Epiphytic on decaying leaves of *Euphorbia pulcherrima*, submerged in ditches at Biratnagar, 72 m, Morang (Rai and Misra, 2010).
268. *Hapalosiphon fontinalis* Ag. ex Born.: A small pond south of Rara lake, 3030 m, Mugu (Watanabe, 1995); Maipokhari lake, 2150 m, Ilam (Rai and Misra, 2010).
269. *Hapalosiphon* cf. *intricatus* G. West et G.S. West: Gelatinous aggregation with mosses at Nagarkot, 1600 m, Bhaktapur (Watanabe and Komarek, 1988).
270. *Hapalosiphon welwitschii* G. West et G.S. West: Bagmati river at Karmaiya (Sahay *et al.*, 1993).
271. *Stigonema hormoides* Kütz. ex Born. et Flah.: Gelatinous aggregation with mosses at Nagarkot, 1600 m, Bhaktapur (Watanabe and Komarek, 1988).
272. *Stigonema mamillosum* (Lyngb.) Ag. ex Born. et Flah.: A glacier lake at Langtang Himal, 3700 m, Rasuwa (Hirano, 1969); Gokyu lake III, 4770 m, Khumjung, Solukhumbu (Rai and Misra, 2010).
273. *Stigonema ocellatum* (Dillw.) Thuret ex Born. et Flah.: A glacier lake at Langtang Himal, 3700 m, Rasuwa (Hirano, 1969); Khumbu, East Nepal (Kusel-fetzmann, 1969); a small pond south of Rara lake, 3030 m, Mugu (Watanabe, 1995); Sabha Pokhari lake, 4100 m, Sankhuwasabha (Rai and Misra, 2010).

274 *Westiellopsis* sp.: Rice fields at Chandranigahapur, Rautahat; rice field at Khumaltar, 1300 m, Lalitpur; rice fields at Panga, Kirtipur, Kathmandu; rice fields at Thimi, Bhaktapur (Prasad and Prasad, 2001)

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