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PRELIMINARY CHECKLIST OF *OSCILLATORIACEAE* (CYANOPHYTA), GOALPARA DISTRICT, ASSAM, INDIA

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ABSTRACT: The present studies enumerated 68 species of family- *Oscillatoriaceae* isolated from freshwater of different sites of Goalpara district, Assam. From the total number of species eleven numbers of genera like *Katagnymene* 1.47%, *Porphyrosiphon* 1.47%, *Polychlamydum* 1.47%, *Symploca* 1.47%, *Microcoleus* 1.47%, *Hydrocoleum* 1.47%, *Spirulina* 8.82%, *Phormidium* 17.64%, *Lyngbya* 19.12% and *Oscillatoria* 45.58%. These strains were cultured using Algal Broth Culture & Chu-10 media for isolation. Present investigation has been made for identification and taxonomic account.

Key Words: Checklist, *Oscillatoriaceae*, Goalpara District.

INTRODUCTION

Cyanobacteria (Blue-green Algae) are oxygenic photosynthetic prokaryotes widely distributed in the natural ecosystems of land, soil, freshwater, ocen, estuaries, salt lakes, and also in hyper saline salt pans (Fogg *et al*., 1973). *Cyanophyceae* are almost universal in distribution but their fluctuation and abundance depend upon their surrounding environment. A few studies have been made on the fresh water *Cyanophytes* in India (Talukdar, 1997; Tiwari and Chauhan, 2006; Sridhar *et al*., 2006; Tas and Gonulol, 2007; Santhilkumar and Sivakumar, 2008; Laskar and Gupta, 2009). The present study aims to provide a checklist of *Oscillatoriaceae* (Cyanophyta) during the last two years was recorded for the first time from Goalpara district, Assam.

MATERIAL AND METHODS

The algal samples were collected at monthly intervals from Jun 2009 to May 2011 from different spots of Goalpara district, Assam. The samples were identified using photomicroscope and compared with that of (Desikachary, 1959; Desikachary, 1987; Anand, 1998; Kemdirim, 2001; Prescott, 1964). Mostly phytoplankton samples were collected using Planktonic net (mesh size 50µm). The collected algal material were cultured and isolated using Algal Broth Culture media and Chu-10 culture media. All the samples were preserved 4% formalin solution.

RESULTS AND DISCUSSION

From the total sixty eight (68) species of phytoplanktonic blue green algae identified belonged to order *Nostocales*, family *Oscillatoriaceae* among the identified eleven genera *Katagnymene* 1.47%, *Porphyrosiphon* 1.47%, *Polychlamydum* 1.47%, *Symploca* 1.47%, *Microcoleus* 1.47%, *Hydrocoleum* 1.47%, were represented by single species, *Spirulina* 8.82% by six, *Phormidium* 17.64% by twelve and *Lyngbya* 19.12% by thirteen and *Oscillatoria* 45.58% exhibited the largest-diversity with thirty one species. The temperature is considered to an important factor in the periodicity of *Oscillatoriaceae*. *Oscillatoriaceae* were found to be abundant during the last part of summer and winter. In aquatic habitat of the study area *Oscillatoria princeps,* one of the most dominant species was found throughout the study period. The enumerated bluegreen algal species are shown Table no. 1 and microscopic photographs of some of the species are shown in plate no. A.

Plate No. A

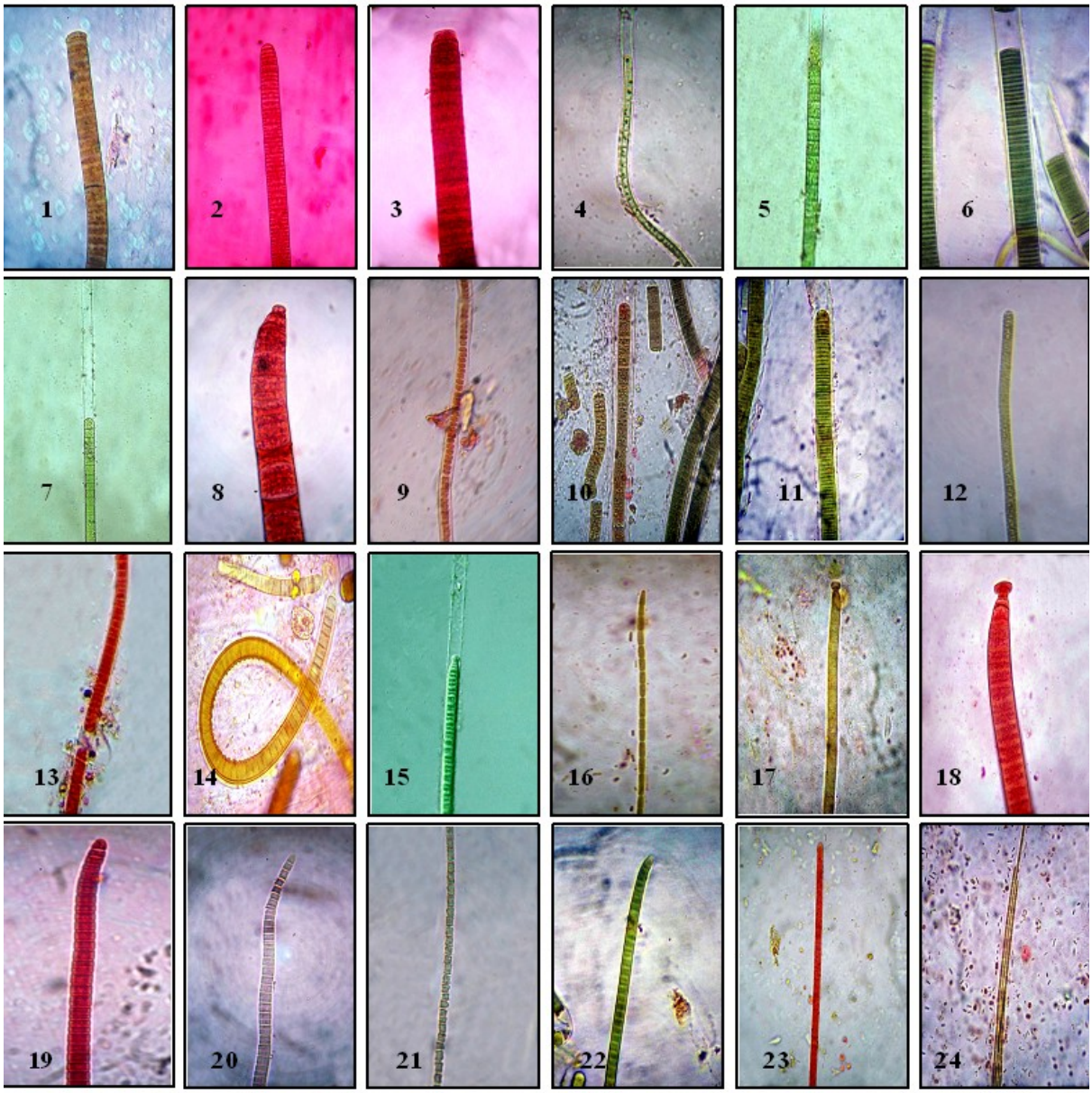

Plate-A: ***Hydrocoleum heterotrichum*** **Kütz. em Gomont., 2.** ***Katagnymene pelagica*** **Lemm., 3.** ***Lyngbya aestuarii*** **Liebm. Ex Gomont., 4.** ***Lyngbya aeugineo-coerulea*** **(Kütz.) Gom., 5.** ***Lyngbya allorgei*** **Frémy., 6.** ***Lyngbya birgei*** **Smith, G. M., 7.** ***Lyngbya ceylanica*** **Wille., 8.** ***Lyngbya connectens*** **Bruhl et Biswas., 9** ***Lyngbya cryptovaginata*** **Schkorbatow., 10.** ***Lyngbya hieronymusii*** **Lemm., 11.** ***Lyngbya major*** **Menegh. ex Gomont., 12.** ***Lyngbya polysiphoniae*** **Frémy., 13.** ***Lyngbya truncicola*** **Ghose., 14.** ***Lyngbya truncicola*** **Var.** ***burmense*** **Ghose., 15.** ***Lyngbya versicolor*** **(Wartm.) Gom., 16.** ***Microcoleus lacustris*** **(Rabenh.) Farlow., 17.** ***Oscillatoria amoena*** **(Kütz.) Gomont., 18.** ***Oscillatoria amoena*** **Var.** ***non-granulata*** **Ghose., 19.** ***Oscillatoria sancta*** **(Kütz) Gomont., 20.** ***Oscillatoria formosa*** **f.** ***loktakensis*** **Biswas., 21.** ***Oscillatoria pseudogeminata*** **var.** ***unigranulata*** **Biswas., 22.** ***Oscillatoria acuta*** **Bruhl et Biswas,Geitler., 23.** ***Oscillatoria amphibia*** **Ag. ex Gomont., 24.** ***Oscillatoria calcuttensis*** **Biswas.**

Table 1: Checklist of *Oscillatoriaceae* (Cyanophyta) of Goalpara District, Assam

Botanical Name	Trichome, Filament and Cells diameter
Hydrocoleum heterotrichum Kütz. em Gomont.	Trichome 16-19 µ broad, cells 1/3-1/5 broad, 3.4-4.5µ long.
Katagnymene pelagica Lemm.	Trichome 16 µ broad, cells 3-4µ long.
Lyngbya aestuarii Liebm. Ex Gomont.	Cells 8-24µ, ordinarily 10-16µ broad, 1/3-1/6 times as long as broad, 2.7-5.6 µ long.
Lyngbya aeugineo-coerulea (Kütz.) Gom.	Trichomes 4-6µ broad, cells 1-½ as long as broad, 2.3-3µ long.
Lyngbya allorgei Frémy	Trichome 3.5-4µ broad, cells nearly quadrate or up to ½ times as long as broad.
Lyngbya birgei Smith, G. M.	Trichome 18-23 µ broad, cells shorter than broad, 2-2.5 µ long.
Lyngbya ceylanica Wille	Trichome 8-12µ broad, cells quadrate to ½ or ? as long as broad.
Lyngbya connectens Bruhl et Biswas.	Tichomes 12-17µ broad, cells about 1-6 µ as long as broad, 2-2.5 µ long.
Lyngbya cryptovaginata Schkorbatow	Filaments 4-9 µ broad, cells up to ½ as long as broad.
Lyngbya hieronymusii Lemm.	Filaments 12-14 µ broad, cells 11-13 µ broad, 2.5-4 µ long.
Lyngbya major Menegh. ex Gomont.	Cells 11-16µ broad, ¼-1/8 as long as broad, 2-3.4µ long.
Lyngbya polysiphoniae Frémy	Filaments up to 200µ long, cells ½-? as long as broad.
Lyngbya truncicola Ghose	Trichome, 12-14µ broad, cells short, 3-4µ long.
Lyngbya truncicola Var. *burmense* Ghose.	Trichome 11-12 µ thick, cells generally quadrate.
Lyngbya versicolor (Wartm.) Gom.	Trichome 2.8-3.2µ broad, cells 2-6.4µ long.
Microcoleus lacustris (Rabenh.) Farlow.	Trichome 4-5µ broad, cells 1-3 times as long as broad, 6-12µ long.
Oscillatoria amoena (Kütz.) Gomont.	Thallus 2.5-5µ broad, cells 2.5-4.2µ long.
Oscillatoria amoena Var. *non-granulata* Ghose.	Cells 3-4.2µ long.
Oscillatoria sancta (Kütz) Gomont.	Trichomes 10-20µ broad, cells 1/3-1/6 times as long as broad, 2.5-6 µ long.
Oscillatoria formosa f. *loktakensis* Biswas.	Trichome 2.6 µ broad, cells 1.5-4µ long.
Oscillatoria pseudogeminata var. *unigranulata* Biswas .	Trichomes 2-3µ in diam., cells 2.5-4µ in length.
Oscillatoria acuta Bruhl et Biswas,Geitler.	Trichomes 4-6µ thick, 70-400 µ long, cells 3-4µ long.
Oscillatoria amphibia Ag. ex Gomont.	Thallus 2-3 (3.5)µ broad, cells 2-3 times longer then broad, 4-8.5µ long.
Oscillatoria anguina (Bory) Gomont.	Trichome 6-8µ broad, cells 1/3-1/6 as long as broad, 1.5-2.5µ long.
Oscillatoria calcuttensis Biswas.	Thallus 2µ broad, cells 2-5 times as long as broad, 6-10 µ long.
Oscillatoria chalyben var. *insularis* Gardner.	Trichome 6.4-7.2µ broad.
Oscillatoria chlorina Kütz. ex Gomont.	Trichome 3.4-4µ broad, cells 3.7-8 µ long.
Oscillatoria curviceps Ag. ex Gomont.	Trichome 10-17 µ broad, cells 1/3-1/6 as long as broad, 2-5 µ long.
Oscillatoria irrigua (Kütz.) Gomont.	Trichome cells quadrate to ½ as long as broad, 4-11 µ long, 6-11 µ broad.
Oscillatoria limosa Ag. ex Gomont.	Trichome 11-20 (-22) µ, commonly 13-16 µ broad, cells ? -1/6 as long as broad, 2-5 µ long.
Oscillatoria margaritifera Kütz. Gomont.	Trichome 17-29 µ broad, cells 1.3-1.7 as long as broad, 3-6µ long.
Oscillatoria okeni Ag. ex Gomont.	Trichome 5.5-9µ broad, cells 1/3 as long as broad, 2.7-4.5µ long, at the ends up to 8µ long.
Oscillatoria ornata Kütz. ex Gomont.	Trichome 9-11 µ broad, cells ½-1/6 as long as broad, 2-5µ long.
Oscillatoria peronata Skuja.	Trichome 13-15 µ broad, cells commonly ½-1/5 as long as broad, 2.5-6.5 µ long.
Oscillatoria princeps Var. *pseudolimosa* Ghose.	Thallus 31-35µ broad.
Oscillatoria princeps Vaucher ex Gomont.	Trichomes 16-60 µ broad, commonly 25-50µ, cells 1/11-1/14 as long as broad, 3.5-7µ long.
Oscillatoria proboscidea Gomont.	Trichome 12-15 µ broad, cells 1/3-1/6 times as long as broad, 2-4µ long.
Oscillatoria quadripunctulata Bruhl et Biswas.	Trichome 1-1.5µ in diam., cells 3.5-5µ long.
Oscillatoria raci De Toni, J.	Trichome 5.2-6µ broad, cells 2.5-6 µ (average 5µ) long.
Oscillatoria rubescens DC ex Gomont.	Trichome 6-8µ broad, cells ½-? as long as broad, 2-4µ long.
Oscillatoria splendida Grev. ex Gomont.	Trichome 2-3µ broad, cells 2-4 times longer than broad rarely quadrate, 3-9 µ long.
Oscillatoria subbrevis Schmidle.	Trichomes 5-6µ broad, cells 1-2 µ long.
Oscillatoria subuliformis Kütz. ex Gomont.	Trichome 4.7-6.5µ broad, cells 4.7-6.5 µ long, at the ends up to 10 µ long.
Oscillatoria tenuis Ag. ex Gomont.	Trichome 4-10µ broad, cells up to ? as long as broad, 2.6-5µ long.
Oscillatoria terebriformis Ag. ex Gomont.	Trichome 4-6.5µ broad, 2.5-6µ long.
Oscillatoria trichoides Szafer.	Trichome 1-1.5µ broad, cells up to 5 µ long with 1-2 small granules.
Oscillatoria vizagapatensis Rao, C. B.	Trichome 8-10µ broad, cells1.6-2µ long.
Phormidium ambiguum Gomont.	Trichome 4-6µ broad, blue-green, cells 1.5-2.7 µ long.
Phormidium anomala Rao, C. B.	Trichome 8-10µ (-10.5)µ broad cells 0.8-1.2 (-2) µ long.
Phormidium autumnale (Ag.) Gomont.	Trichome 4-7µ broad, cells quadrate or ½ as long as broad, 2-5 µ long.
Phormidium favosum (Bory) Gomont.	Trichome (4-) 4.5-9 µ broad, cells quadrate up to ½ as long as broad, 3-7 µ long.
Phormidium purpurascens (Kütz.) Gomont.	Trichome 1.5-2.5µ broad, cells 2-4.5µ long.
Phormidium retzii (Ag.) Gomont.	Trichome 4.5-12 µ broad, cells 4-9 µ long.
Phormidium rotheanum Itzigsohn.	Trichome 8-11 µ broad, cells 2.7-4µ long.
Phormidium rotheanum Var. *capitatum* nom. nov.	Trichome 8-10µ broad, cells 1.5-2.7µ long.
Phormidium stagnina Rao, C. B.	Trichome 8-9.6µ broad, cells1.3-2µ long.
Phormidium subfuscum Kütz. ex Gomont.	Trichome 5.5-11 µ broad, cells ½-¾ as long as broad, rarely subquadrate, 2-4µ long.
Phormidium tenue (Menegh.) Gomont.	Trichome 1-2µ broad, cell up to 3 times longer than broad, 2.5-5µ long.
Phormidium uncinatum (Ag.) Gomont.	Trichome 6-9µ broad, cells ½-1/3 as long as broad, 2-6µ long.
Polychlamydum insigne West ex West.	Trichome 17-22µ broad, cells 1/9-1/11 as long as broad.
Porphyrosiphon notarisii (Menegh.) Kütz. Ex Gomont.	Cells 8-19µ broad, as long or up to ½ as long as broad, 4.5-12µ long.
Spirulina gigantean Schmidle.	Trichome 3-4µ broad, spirals 11-16µ broad.
Spirulina laxissima forma *major* f. n.	Trichome 1.3µ broad, spirals about 6.6µ broad and 5.2-6.2µ distant from each other.
Spirulina major Kütz.	Trichome 1.2-1.7 (-2) µ broad, spirals 2.5-4µ broad and 2.7-5µ distant.
Spirulina meneghiniana Zanard. Ex Gomont.	Trichome 1.2-1.8µ broad, flexible, spirals 3.2-5µ broad and 3-5µ distant from each other.
Spirulina princeps West & West.	Trichome 4.5-5µ broad, spirals 11-12µ broad and 9.5-11µ distant.
Spirulina subtilissima Kütz.	Trichome 0.5-0.9µ broad, spirals 1.5-2.5 (-2.8) µ broad, distance between the spirals.
Symploca hydnoides Kützing ex Gomont.	Trichome 6-11µ broad, cells 5-14µ long.

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