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ORIGINAL ARTICLE

An updated checklist of algae from Himachal Pradesh, India

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Abstract

This checklist of algae has been compiled by critical reviewing all available literature and provides a consolidated, up-to-date account of the diversity of algae in Himachal Pradesh state of India. According to the compiled data the algal flora of the state is represented by a total of 629 algal species of 158 genera belonging to 53 families of 31 orders of the 8 algal classes. The maximum number reported species are belongs to class Cyanophyceae (320 species) followed by Chlorophyceae (139 species), Bacillariophyceae (117 species), Euglenophyceae (25 species), Xanthophyceae (6 species), Dinophyceae (3 species), Coscinodisophyceae (3 species) and Chrysophyceae (2 species) from different habitats of the state. This checklist with taxonomically updated/accepted name of genera/species of algal species reported so far will be helpful for future floristic studies from the region.

Keywords: Algae, Checklist, Diversity, Flora, Himachal Pradesh.

Introduction

Algae represent ubiquitous group of oxygen-evolving photosynthetic autotrophs including both prokaryotic and eukaryotic cell structure and single cell to complex multi-cellular body organizations (Paul *et al.* 2017 , Agarwal 2018). As a primary producer, the members of this group are important components of aquatic based food chains (Parmar *et al.* 2016, Kumar *et al.* 2020). Algae play an important role in maintaining water-column oxygen dynamics through respiration and photosynthesis processes, which is responsible for nutrient cycling to stabilize substrata in aquatic ecosystem (Effendi *et al.* 2016, Lohbeck *et al.* 2016). The community structure of algae is influenced by various factors such as nutrient concentration, type of substratum, water quality and light regime that directly affect the development and growth of algae (Breuer *et al.* 2017, Burrows *et al.* 2021). Algae can act as an indicator of degree of alterations in water quality resulted from anthropogenic stress because of having specific ecological requirements (Omar 2010, Dell *et al.* 2017). Many algal indicators are increasingly been used in bio-monitoring and conservation of water bodies around the world (Wu *et al.* 2017, Komal *et al.* 2021). Therefore, availability of information on the distribution and diversity of algae is very important as they represent an ecologically important group of organisms.

Himachal Pradesh is one of the Northern hilly state of India located between latitude 30˚22′ to 33˚13′ North and longitude 75˚45′ to 79˚04′ East with geographical area of 55,673 km^2 (Figure 1). The state has three distinct regions on the basis of altitudes including the Shivaliks, with altitudes up to 1,500 m, Middle Himalayan regions between 1,500 m to 3,000 m and the Himadris, higher than 3,000 m. The average annual rainfall is about 1,800 mm and the temperature varies from sub zero to 35°C. The state is surrounded by Jammu and Kashmir on the north, Punjab on the west and south-west, Haryana and Uttar Pradesh on the south, Uttarakhand on the south-east and by the Tibet Autonomous Region on the east (Arora *et al.* 2012; Balasubramanian 2017). About one third of the state is permanently under snow, glaciers and cold deserts, where tree growth is minimal due to extreme environmental

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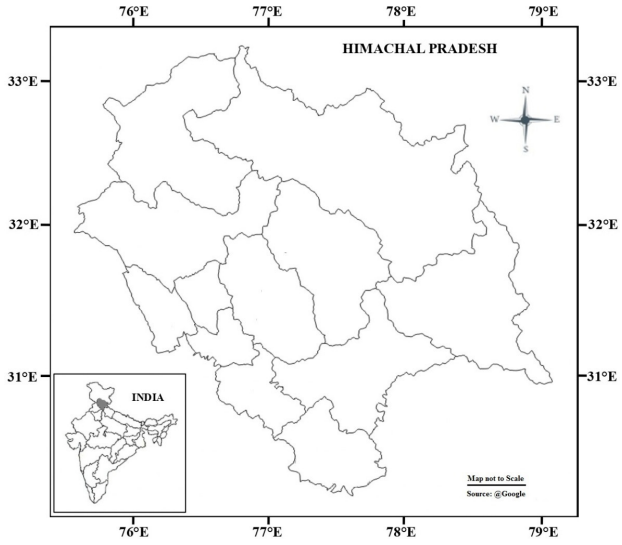

Figure 1: Location map of Himachal Pradesh state of India

conditions (Mahar *et al.* 2011). The major rivers are Sutlej, Beas, Ravi, Chenab and Yamuna (Mahar *et al.* 2011). It has a deeply explored topography, complex geological structure and a rich temperate flora in the sub-tropical latitudes. The diverse habitat of this Western Himalayan state supports rich floral and faunal diversity**,** nearly 18,440 species of plants with 25 to 30 per cent of endemics and 27,298 species of mammals, birds, reptiles, amphibians and fishes are reported from this region (Samant *et al.* 1998; Nowak 1999; Myers *et al.* 2000; Dar & Sundarapandian 2016).

Algal diversity of Himachal Pradesh from various diverse habitats including lakes, freshwater streams, paddy field, cold and hot water springs etc. have been explored by various workers (Vashista 1968, Shukla *et al.* 1970; Misra *et al.* 2006; Bhusan *et al.* 2018; Dwivedi *et al.* 2008; Arora *et al.* 2011; Gupta 2012 a,b; Gupta & Das 2012; Thakur *et al.* 2013; Mongra 2014; Singh *et al.* 2014; Jindal *et al.* 2014; Bhushan & Kumar 2018). Despite these efforts, the knowledge about the algal diversity of the state is still inconsistent. Therefore, there is a need for an updated checklist of algae to provide a consolidated, up-to-date account of the diversity of algae in of Himachal Pradesh. Although, Gupta (2012a,b) published checklists of cyanoprokaryota, chlorophyceae, xanthophyceae, chrysophyceae and xanthophyceae and diatoms from India, which include 371 taxa reported from Himachal Pradesh. The present work with addition of 258 more algal taxa is helpful in increasing the number of known algae from state to 629 taxa. Since, algae represent tremendously diverse group of aquatic organisms, which need to be exploited for their diverse ecological and economical benefits by collecting and culturing at large scale.

The objective of present work was to review all the available information and to prepare a list having currently acceptable name of algal species reported so far from Himachal Pradesh state of India. Checklist preparation is the most basic taxonomic work on a group of organisms arranged in systematic or alphabetical order. The checklist prepared during present work is in a systematic order by reviewing the available literature up to July, 2022. This is the first complete checklist of algae from Himachal Pradesh covering all currently accepted species names and their synonyms.This updated checklist will provide baseline information for future floristic, ecological, biogeographic distributional studies on algae from the region.

Materials and Methods

The current checklist has been prepared by consulting the available literature from 1907 to 2022. The list has been prepared from collected data, which includes, 1) the species name listed as it is appeared in the original publications, 2) the species current, valid and accepted names. The study area includes the whole current geographical area of the Himachal Pradesh. The species have been taxonomically arranged by adopting the classification system proposed by Komárek (2014)**,** Fritsch (1945) and Bellinger & Sigee (2010). The taxonomic identity including the authority and current accepted name has been verified from an online database AlgaeBase (Guiry & Guiry 2020).

Results and Discussion

As per the current literature survey, Algal diversity in Himachal Pradesh state of India is represented by 629 algal species of 158 genera belonging to 53 families of 31 orders of the 8 algal classes (Table 1). From the collected data it is observed that in terms of the number of species, class Cyanophyceae dominate with (329 species, 54 genera) followed by Chlorophyceae (143 species, 50 genera), Bacillariophyceae (118 species, 38 genera), Euglenophyceae (25 species, 5 genera), Xanthophyceae (6 species, 5 genera), Dinopyceae (3 species, 3 genera), Coscinodisophyceae (3 species, 2 genera) and Chrysophyceae (2 species, 1 genera) (Table 2).

Table 1: Number of orders, families, genera and species of algae reported from Himachal Pradesh, India

Class	*Order*	*Family*	*Genera*	*Species*
Cyanophyceae	7	19	54	329
Chlorophyceae	10	17	50	143
Xanthophyceae	3	3	5	6
Chrysophyceae	1	1	1	2
Coscinodisophyceae	1	2	2	3
Bacillariophyceae	7	9	38	118
Dinophyceae	1	1	3	3
Euglenophyceae	1	1	5	25
Total	31	53	158	629

Table 2: List of algal species reported from Himachal Pradesh, India

S. No.	*Currently Accepted Name*	*References*
	Class: Cyanophyceae **Order: Synechococcales** **Family: Synechococcaceae**	
1	*Romeria minima* (Lemmermann) Komárek **Synechococcus minimus* (Lemmermann) Komárek	Mongra 2012 [15], Singh *et al.*2018 [21]
2	*Synechococcus bigranulatus* Skuja **Synechococcus elongatus var. amphigranulatus* J.J.Copeland	Vashista 1968 [27], Thakur *et al.* 2013 [26]
3	*Synechococcus vulcanus* J.J.Copeland	Vashista 1968 [27], Thakur *et al.* 2013 [26]
4	*Synechococcus vulcanus var. bacillarioides* J.J.Copeland	Singh *et al.*2014 [20] ,Misra *et al.* 2006 [14]
5	*Coelosphaerium kutzingianum* Nägeli	Singh *et al.*2014 [20] ,Suseela & Topoo 2009 [25],Singh *et al.*2018 [21]
6	*Limnococcus limneticus* (Lemmermann) Komárková, Jezberová, O.Komárek & Zapomelová **Chroococcus limneticus* Lemmermann	Mongra 2012 [15], Singh *et al.*2018 [21],Novarino 1991 [17]
7	*Chroococcus minor* (Kutzing) Nägeli	Mongra 2012 [15],Singh *et al.* 2014[19], Singh *et al.*2018 [21],Novarino 1991 [17]
8	*Chroococcus minutus* (Kutzing) Nägeli	Suseela & Topoo 2009 [25],Vashista 1968 [27], Thakur *et al.* 2013 [26],Singh *et al.*2018 [21], Gupta 2012a [8]
9	*Synechococcus elongatus* (Nägeli) Nägeli **Synechococcus lividus* J.J.Copeland	Suseela & Topoo 2009 [25],Singh *et al.*2018 [21]
10	*Eucapsis alpine* F.E.Clements & H.L.Schantz	Suseela & Topoo 2009 [25],Singh *et al.*2018 [21]
11	*Synechocystis minuscula* Woronichin	Singh *et al.*2014 [20]
12	*Microcystis smithii* Komárek & Anagnostidis **Aphanocapsa pulchra* (Kutzing)	Singh *et al.*2014 [20]
13	*Microcystis litoralis* (Hansgirg) Aboal, nom. illeg.	Jindal & Thakur 2013 [11], Gupta 2012a [8]
14	*Aphanocapsa biformis* A.Braun	Singh *et al.*2014 [20]
15	*Komvophoron* schmidlei (Jaag) Anagnostidis & Komárek **Pseudanabaena schmidlei* Jaag	Singh *et al.*2014 [20]
16	*Cyanobium parvum* Komárek, J.Kopecký & Cepák	Singh *et al.*2014 [20]
17	*Leptolyngbya Antarctica* Anagnostidis & Komárek	Singh *et al.*2014 [20]
18	*Leptolyngbya benthonica* Anagnostidis	Suseela & Topoo 2009 [25],Singh *et al.*2018 [21]
19	*Planktolyngbya* limnetica (Lemmermann) Komárková-Legnerová & Cronberg	Singh *et al.*2014 [20]
20	*Leptolyngbya foveolarum* Anagnostidis & Komárek	Singh *et al.*2014 [20] , Gupta 2012a [8]
21	*Leptolyngbya frigida* Anagnostidis & Komárek	Singh *et al.*2014 [20] ,Vashista 1968 [27], Thakur *et al.* 2013 [26]
22	*Drouetiella lurida* (Gomont) Mai, J.R.Johansen & Pietrasiak **Leptolyngbya lurida* Anagnostidis & Komárek	Singh *et al.*2014 [20] ,Suseela & Topoo 2009 [25],Mongra 2012 [15], Singh *et al.*2018 [21],Singh *et al.*2018 [22]
23	*Leptolyngbya valderiana* Anagnostidis & Komárek	Singh *et al.*2014 [20]
24	*Limnothrix redekei* (Goor) Meffert	Singh *et al.*2014 [20] , Gupta 2012a [8], Mongra 2014 [16]
25	*Stenomitos frigidus* (F.E.Fritsch) Miscoe & J.R.Johansen **Pseudanabaena frigida* Anagnostidis	Singh *et al.*2014 [20]
26	*Merismopedia tranquilla* (Ehrenberg) Trevisan **Merismopedia punctata* Meyen, nom. illeg.	Singh *et al.*2014 [20]
27	*Merismopedia elegans* A.Braun ex Kutzing	Singh *et al.*2014 [20]
28	*Aphanocapsa incerta* (Lemmermann) G.Cronberg & Komárek **Microcystis incerta* (Lemmermann) Lemmermann	Singh *et al.*2014 [20] ,Novarino 1991 [17]
29	*Aphanocapsa grevillei* (Berkeley) Rabenhorst	Novarino 1991 [17], Gupta 2012a [8]
30	*Aphanocapsa thermalis* Brugger	Singh *et al.*2014 [20]

31	*Synechocystis aquatilis* Sauvageau	Singh *et al.*2014 [20] ,Mongra 2012 [15], Singh *et al.*2018 [21],Novarino 1991 [17]
32	*Coelosphaerium dubium* Grunow	Mongra 2012 [15], Singh *et al.*2018 [21], Novarino 1991 [17]
33	*Coelosphaerium kuetzingianum* Nägeli	Singh *et al.*2014 [20]
34	*Coelosphaerium aerugineum* Grunow	Singh *et al.*2014 [20]
35	*Leptolyngbya carnea* (Kutzing ex Lemmermann) Anagnostidis & Komárek	Singh *et al.*2014 [20]
36	*Leptolyngbya thermarum* (Woronichin) Anagnostidis & Komárek	Singh *et al.*2014 [20] , Singh *et al.*2014 [20]
37	*Leptolyngbya orientalis* (G.S.West) Anagnostidis & Komárek	Singh *et al.*2014 [20] , Suseela & Topoo 2009 [25], Singh *et al.*2018 [21]
38	*Leptolyngbya amphibian* (Gomont ex Gomont) Anagnostidis & Komárek	Singh *et al.*2014 [20]
39	*Pseudanabaena limnetica* (Lemmermann) Komárek	Singh *et al.* 2014 [19], Jindal *et al.* 2014 [12]
40	*Leptolyngbya gelatinosa* (Woronichin) Anagnostidis & Komárek	Singh *et al.* 2014 [19], Jindal *et al.* 2014 [12], Gupta 2012a [8]
41	*Leptolyngbya thermobia* Anagnostidis	Singh *et al.* 2014 [19], Jindal *et al.* 2014 [12], Vashista 1968 [27], Thakur *et al.* 2013 [26], Misra *et al.* 2006 [14], Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21]
42	*Nodosilinea epilithica* Perkerson et Casamatta	Singh *et al.* 2014 [19], Jindal *et al.* 2014 [12] ,Vashista 1968 [27], Thakur *et al.* 2013 [26]
43	*Leptolyngbya cebennensis* (Gomont)	Singh *et al.* 2014 [19], Jindal *et al.* 2014 [12]
44	*Aphanocapsa koordersi* Storm	Singh *et al.* 2014 [19], Jindal *et al.* 2014 [12] , Dwivedi *et al.* 2008 [6], Gupta 2012a [8]
45	*Merismopedia minima* Beck	Vashista 1968 [27], Thakur *et al.* 2013 [26], Singh *et al.* 2014 [19], Jindal *et al.* 2014 [12] ,Misra *et al.* 2006 [14],Dwivedi *et al.* 2008 [6],Singh *et al.* 2018 [21]
46	*Anathece clathrata* (West & G.S.West) Komárek, Kastovsky & Jezberova	Vashista 1968 [27], Thakur *et al.* 2013 [26]
47	*Synechococcus elongates* (Nägeli) Nägeli	Vashista 1968 [27], Thakur *et al.* 2013 [26], Gupta 2012a [8]
	Family: Merismopediaceae	
48	*Stichosiphon sansibaricus* (Hieronymus) F.E.Drouet & W.A.Daily	Mongra 2012 [15], Singh *et al.*2018 [22], Gupta 2012a [8]
49	*Merismopedia glauca* (Ehrenberg) Kutzing	Vashista 1968 [27], Thakur *et al.* 2013 [26], Gupta 2012a [8]
50	*Aphanocapsa* grevillei (Berkeley) Rabenhorst	Mongra 2012 [15], Singh *et al.*2018 [22], Gupta 2012a [8]
51	*Synechocystis thermalis* J.J Copeland	Vashista 1968 [27], Thakur *et al.* 2013 [26]
52	*Aphanocapsa* thermalis Brugger	Vashista 1968 [27], Thakur *et al.* 2013 [26]
53	*Synechocystis pevalekii* Ercegovic	Vashista 1968 [27], Thakur *et al.* 2013 [26]
54	*Eucapsis himalayensis* (Kutzing) Rabenhorst	Vashista 1968 [27], Thakur *et al.* 2013 [26]
55	*Pseudanabaena catenata* Lauterborn	Vashista 1968 [27], Thakur *et al.* 2013 [26], Mongra 2012 [15], Singh *et al.*2018 [22], Gupta 2012a [8]
56	*Dermocarpa olivacea* var. *amphibian* Rao, CB	Vashista 1968 [27], Thakur *et al.* 2013 [26], Mongra 2012 [15], Singh *et al.*2018 [22], Gupta 2012a [8]
	Family:Coelosphaeriaceae	
57	*Spirulina subsalsa* Oerst. Ex Gomont	Suseela & Topoo 2009 [25], Singh *et al.*2018 [22]
	Order: Spirulinales	
58	*Spirulina gomontii* Guwinski	Suseela & Topoo 2009 [25], Vashista 1968 [27], Thakur *et al.* 2013 [26], Singh *et al.* 2018 [22]
59	*Spirulina meneghiniana* Zanardini ex Gomont	Vashista 1968 [27], Thakur *et al.* 2013 [26], Suseela & Topoo 2009 [25], Thakur *et al.* 2013 [26], Singh *et al.* 2018 [22]
60	*Arthrospira* amphibian (Schmidle) Anagnostidis **Spirulina* amphibian Schmidle	Vashista 1968 [27], Thakur *et al.* 2013 [26], Suseela & Topoo 2009 [25], Singh *et al.*2018 [22]
61	*Spirulina* major Kutzing ex Gomont	Vashista 1968 [27], Thakur *et al.* 2013 [26], Gupta 2012a [8]

62	*Spirulina major* (Kutzing ex Gomont)	Suseela & Topoo 2009 [25], Singh *et al.* 2018 [22]
	Order:Chroococcales	
63	*Microcystis aeruginosa* (Meneghini) Elenkin	Suseela & Topoo 2009 [25], Singh *et al.* 2018 [21]
64	*Aphanothece castagnei* (Kutzing) Rabenhorst	Suseela & Topoo 2009 [25], Singh *et al.* 2018 [21]
65	*Microcystis pulverea* (H.C.Wood) Forti	Vashista 1968 [27], Thakur *et al.* 2013 [26], Suseela & Topoo 2009 [25], Vashista 1968 [27], Thakur *et al.* 2013 [26], Novarino 1991 [17], Singh *et al.* 2018 [21]
66	*Chroococcus varius* A.Braun	Vashista 1968 [27], Thakur *et al.* 2013 [26], Gupta 2012a [8]
67	*Gloeocapsa* atrata Kutzing	Suseela & Topoo 2009 [25], Singh *et al.* 2018 [22]
68	*Gloeocapsa coracina* Kutzing	Novarino 1991 [17]
69	*Chroococcus minor* (Kutzing) Nägeli	Vashista 1968 [27], Thakur *et al.* 2013 [26]
70	*Microcystis flos-aquae* (Wittrock) Kirchner	Fritch 1907 [7], Gupta 2012a [8]
71	*Chroococcus minutes* (Kutzing)	Fritch 1907 [7], Gupta 2012a [8]
72	*Chroococcus yellowstonensis* J.J.Copeland	Vashista 1968 [27], Thakur *et al.* 2013 [26], Gupta 2012a [8]
73	*Gleocapsa calcarea* Tilden	Vashista 1968 [27], Thakur *et al.* 2013 [26]
74	*Gloeocapsa rupestris* Kutzing	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
75	*Gloeocapsaconglomerata*Kutzing	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
76	*Gleocapsa punctata* Nägeli	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
77	*Microcystis lamelliformis* Holsinger	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
78	*Chroococcus tenax* (Kirchner) Hieronymus	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11], Suseela & Topoo 2009 [25], Vashista 1968 [27], Thakur *et al.* 2013 [26], Singh *et al.*2014 [20] , Singh *et al.* 2018 [22]
79	*Aphanocapsa pulchra* (Kutzing)	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
80	*Gloeocapsopsis pleurocapsoides* Komárek & Anagnostidis ex Komárek	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11], Vashista 1968 [27], Thakur *et al.* 2013 [26], Mongra 2012 [15], Singh *et al.*2018 [22]
81	*Chroococcus amphibi* (Kutzing) Nägeli	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11], Mongra 2012 [15], Singh *et al.*2018 [22]
82	*Chroococcus turgidus* (Kutzing) Nägeli	Mongra 2012 [15], Singh *et al.*2018 [22], Gupta 2012a [8]
83	*Entophysalis* amphibian Kutzing	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
84	*Chroococcus* yellowstonensis J.J.Copeland	Singh *et al.*2014 [20]
85	*Leptolyngbya* amphibia (Lemmermann) Anagnostidis & Komárek **Phormidium* africanum Lemmermann	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
86	*Leptolyngbya tenuis* (Gomont) Anagnostidis & Komárek **Phormidium tenue* Gomont	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
87	*Aphanothece nageli* W.West & G.S.West	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11], Mongra 2012 [15], Singh *et al.*2018 [22], Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
88	*Aphanothece pallida* (Kutzing) Rabenhorst	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11], Mongra 2012 [15], Singh *et al.*2018 [22]
89	*Gomphosphaeria natans* Komárek & Hindák	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11], Gupta 2012a [8]
90	*Gomphosphaeria aponina* Kutzing	Novarino 1991 [17], Gupta 2012a [8]
91	*Kamptonema* cortianum (Meneghini ex Gomont) Strunecký, Komárek & J.Smarda	Novarino 1991 [17]
92	*Jaaginema* filiforme (J.Copeland) Anagnostidis	Novarino 1991 [17], Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
93	*Microcystis viridis* (A.Braun) Lemmermann	Novarino 1991 [17], Misra *et al.* , 2006,Bhushan & Kumar 2018 [2]
94	*Microcystis pulverea* (H.C.Wood) Forti	Novarino 1991 [17], Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]

95	*Microcystis flosaquae* (Wittrock) Kirchner	Novarino 1991 [17], Misra *et al.* 2006 [14],Bhushan & Kumar 2018 [2]
96	*Microcystis marginata* (Meneghini) Kutzing	Novarino 1991 [17], Misra *et al.* , 2006,Bhushan & Kumar 2018 [2]
97	*Microcystis robusta* (H.W.Clark) Nygaard	Novarino 1991 [17]
98	*Microcystis wesenbergii* (Komárek) Komárek ex Komárek	Novarino 1991 [17], Srivastava & Gupta 2004 [23], Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2], Gupta 2012a [8]
99	*Chlorogloea simplex* M.Watanabe & Komárek	Novarino 1991 [17]
100	*Gloeocapsa gelatinosa* Kutzing	Novarino 1991 [17]
101	*Gloeocapsopsis thermalis* (Novácek) Komárek & Anagnostidis ex Komárek	Novarino 1991 [17], Misra *et al.* 2006 [14], Suseela & Topoo 2009 [25], Bhushan & Kumar 2018 [2], Singh *et al.* 2018 [22]
102	*Gloeocapsa gelatinosa* (Meneghini) Kutzing	Novarino 1991 [17]
103	*Microcystis protocystis* Crow	Novarino 1991 [17], Misra *et al.* , 2006, Bhushan & Kumar 2018 [2]
104	*Microcystis amphiba* Bharadwaja	Suseela & Topoo 2009 [25], Vashista 1968 [27], Thakur *et al.* 2013 [26], Singh *et al.* 2018 [21]
105	*Microcystis orissica* West, W.	Srivastava & Gupta 2004 [23], Dwivedi *et al.* , 2008, Mongra 2014 [16]
106	*Aphanothece elabens* (Brebisson ex Meneghini) Elenkin **Microcystis elabens* (Breb.) Kutz	Srivastava & Gupta 2004 [23], Gupta 2012a [8]
107	*Chroococcus micrococcus* (Kutz) Rabenh.	Srivastava & Gupta 2004 [23]
108	*Chroococcus rufescens* (Kutzing) Nägeli **Chroococcus minimus* (Kutzing)	Srivastava & Gupta 2004 [23]
109	*Gloeocapsa gelatinosa* Kutz	Misra *et al.* 2006 [14], Vashista 1968 [27], Thakur *et al.* 2013 [26], Bhushan & Kumar 2018 [2]
110	*Gloeocapsa livida* (Carm.) Kutz	Shukla *et al.* , 1970, Vashista 1968 [27], Thakur *et al.* 2013 [26]
	Family: Aphanothecaceae	
111	*Aphanothece nidulans* P.Richter	Misra *et al.* 2006 [14], Gupta 2012a [8], Bhushan & Kumar 2018 [2]
112	*Aphanothece stagnina* (Sprengel) A.Braun	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
	Family: Chroococcaceae	
113	*Chroococcus* amphibia (Kutzing) Nägeli	Mongra 2012 [15], Singh *et al.*2018 [21], Mongra 2014 [16]
114	*Chroococcus schizodermatics* West	Misra *et al.* 2006 [14],Bhushan & Kumar 2018 [2]
115	*Chroococcus endophyticus* J.J.Copeland	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2], Mongra 2014 [16]
116	*Oscillatoria* cortiana Meneghini ex Gomont	Misra *et al.* 2006 [14], Singh *et al.*2014 [20] ,Bhushan & Kumar 2018 [2]
117	*Cyanosarcina burmensis* (Skuja) Kovácik	Misra *et al.* 2006 [14],Bhushan & Kumar 2018 [2]
118	*Gloeocapsopsis thermalis* (Novácek) Komárek & Anagnostidis ex Komárek	Misra *et al.* 2006 [14],Bhushan & Kumar 2018 [2], Gupta 2012a [8]
	Family: Entophysalidaceae	
119	*Entophysalis granulosa* Kutzing	Vashista 1968 [27], Thakur *et al.* 2013 [26], Misra *et al.* 2006 [14], Singh *et al.*2014 [20] ,Bhushan & Kumar 2018 [2]
	Family:Coleofasciculaceae	
120	*Anagnostidinema acutissimum* (Kufferath) Strunecký,Bohunická, J.R.Johansen & J.Komárek **Geitlerinema acutissimum* (Kufferath) Anagnostidis	Misra *et al.* 2006 [14],Bhushan & Kumar 2018 [2], Gupta 2012a [8]
121	*Coleofasciculus chthonoplastes* (Thuret ex Gomont) M.Siegesmund, J.R.Johansen & T.Friedl **Microcoleus chthonoplastes* Thuret ex Gomont	Misra *et al.* 2006 [14],Bhushan & Kumar 2018 [2]

122	*Anagnostidinema* acutissimum (Kufferath) Strunecký, Bohunická, J.R.Johansen & J.Komárek **Geitlerinema acutissimum* (Kufferath) Anagnostidis	Misra *et al.* 2006 [14],Bhushan & Kumar 2018 [2], Mongra 2014 [16]
123	*Geitlerinema sulphureum* (Strzeszewski) Anagnostidis	Misra *et al.* 2006 [14],Bhushan & Kumar 2018 [2]
	Family: Microcoleaceae	
124	*Microcoleus autumnalis* (Gomont) Strunecky, Komárek & J.R.Johansen **Phormidium autumnale* Gomont	Misra *et al.* 2006 [14],Bhushan & Kumar 2018 [2] , Singh *et al.*2014 [20]
125	*Microcoleus* lacustris Farlow ex Gomont	Misra *et al.* 2006 [14], Suseela & Topoo 2009 [25], Bhushan & Kumar 2018 [2],Singh *et al.* 2018 [22], Gupta 2012a [8]
126	*Planktothrix agardhii* Anagnostidis & Komárek	Misra *et al.* 2006 [14],Bhushan & Kumar 2018 [2]
127	*Planktothrix clathrata* Anagnostidis & Komárek	Misra *et al.* 2006 [14],Bhushan & Kumar 2018 [2]
128	*Arthrospira* jenneri Stizenberger ex Gomont	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
129	*Arthrospira khannae* Drouet & Strickland	Suseela & Topoo 2009 [25], Singh *et al.* 2018 [22]
130	*Microcoleus amoenus* (Gomont) Strunecky, Komárek & J.R.Johansen **Oscillatoria amoena* Gomont	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11], Mongra 2014 [16]
131	*Arthrospira platensis* Desikachary	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
132	*Spirulina argentina* Frenguelli **Arthrospira argentina* Guarrera & Kuhnemann	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
133	*Limnospira fusiformis* (Voronichin) Nowicka-Krawczyk, Muhlsteinová & Hauer **Arthrospira fusiformis* (Voronichin) Komárek & J.W.G.Lund	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
134	*Planktothrix isothrix* (Skuja) Komárek & Komárková	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
135	*Microcoleus acremanii* Gomont ex Gomont	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
136	*Microcoleus vaginatus* Gomont ex Gomont	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
	Family: Oscillatoriaceae	
137	*Jaaginema* pseudogeminatum (G.Schmid) Anagnostidis & Komárek **Oscillatoria pseudogeminata* G.Schmid	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11], Dwivedi & Misra 2015 [5]
138	*Geitlerinema calcuttense* (Biswas) Anagnostidis **Oscillatoria calcuttensis* Biswas	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11], Mongra 2014 [16]
139	*Phormidium chalybeum* (Mertens ex Gomont) Anagnostidis & Komárek **Oscillatoria* chalybea Mertens ex Gomont	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11], Singh *et al.*2014 [20]
140	*Oscillatoria chilkensis* Biswas	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
141	*Kamptonema chlorinum* (Kutzing ex Gomont) Strunecký, Komárek & J.Smarda **Oscillatoria chlorina* Kutzing ex Gomont	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
142	*Oscillatoria curviceps* C.Agardh ex Gomont	Mongra 2012 [15], Singh *et al.*2018 [21]
143	*Oscillatoria* corallinae Gomont ex Gomont	Singh *et al.*2014 [20]
144	*Kamptonema formosum* (Bory ex Gomont) Strunecký, Komárek & J.Smarda **Oscillatoria formosa* Bory ex Gomont	Mongra 2012 [15], Singh *et al.*2018 [21], Singh *et al.*2018 [22], Mongra 2014 [16]
145	*Kamptonema* laetevirens (H.M.Crouan & P.L.Crouan ex Gomont) Strunecký, Komárek & J.Smarda **Oscillatoria laetevirens* P.Crouan & H.Crouan ex Gomont	Suseela & Topoo 2009 [25], Singh *et al.* 2018 [21]
146	*Oscillatoria limosa* C.Agardh ex Gomont	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
147	*Kamptonema okenii* (C.Agardh ex Gomont) Strunecký, Komárek & J.Smarda **Oscillatoria* okenii C.Agardh ex Gomont	Misra *et al.* 2006 [14],Srivastava PN 1967 [24], Jindal & Thakur 2013 [11], Bhushan & Kumar 2018 [2]
148	*Oscillatoria* princeps Vaucher ex Gomont	Vashista 1968 [27], Thakur *et al.* 2013 [26]

149	*Jaaginema pseudogeminatum* (G.Schmid) Anagnostidis & Komárek **Oscillatoria pseudogeminata* G.Schmid	Misra *et al.* 2006 [14],Srivastava PN 1967 [24], Jindal & Thakur 2013 [11], Bhushan & Kumar 2018 [2], Mongra 2014 [16]
150	*Oscillatoria subbrevis* Schmidle	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
151	*Leptolyngbya* fritschii Anagnostidis **Plectonema notatum var. africanum* F.E.Fritsch & M.F.Rich	Vashista 1968 [27], Thakur *et al.* 2013 [26]
152	*Lyngbya truncicola* Ghose	Vashista 1968 [27], Thakur *et al.* 2013 [26], Mongra 2012 [15], Singh *et al.*2018 [22]
153	*Potamolinea aerugineocaerulea* (Gomont) M.D.Martins & L.H.Z.Branco **Lyngbya aerugineocaerulea* Gomont	Vashista 1968 [27], Thakur *et al.* 2013 [26]
154	*Leptolyngbya* fragilis (Gomont) Anagnostidis & Komárek **Phormidium fragile* Gomont	Misra *et al.* 2006 [14],Bhushan & Kumar 2018 [2]
155	*Oscillatoria sancta* Gomont	Vashista 1968 [27], Thakur *et al.* 2013 [26], Singh *et al.* 2014 [19]
156	*Lyngbya martensiana* (Meneghini ex Gomont	Misra *et al.* 2006 [14], Srivastava PN 1967 [24], Jindal & Thakur 2013 [11], Bhushan & Kumar 2018 [2]
157	*Phormidium* allorgei (Fremy) Anagnostidis & Komárek **Lyngbya allorgei* Fremy	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2], Mongra 2014 [16]
158	*Limnoraphis birgei* (G.M.Smith) J.Komárek, E.Zapomelová, J.Smarda, J.Kopecký, E.Rejmánková, J.Woodhouse, B.A.Neilan & J.Komárková ** Lyngbya birgei* G.M.Smith	Misra *et al.* 2006 [14], Suseela & Topoo 2009 [25], Bhushan & Kumar 2018 [2], Singh *et al.* 2018 [21]
159	*Lyngbya martensiana Menegh* Meneghini ex Gomont	Misra *et al.* 2006 [14], Suseela & Topoo 2009 [25], Vashista 1968 [27], Thakur *et al.* 2013 [26], Bhushan & Kumar 2018 [2], Singh *et al.* 2018 [22]
160	*Leibleinia epiphytica* (Hieronymus) Compère	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
161	*Phormidium kuetzingianum* (Kirchner ex Hansgirg) Anagnostidis & Komárek	Misra *et al.* 2006 [14], Suseela & Topoo 2009 [25], Bhushan & Kumar 2018 [2], Singh *et al.* 2018 [21], Mongra 2014 [16]
162	*Heteroleibleinia kuetzingii* (Schmidle) Compère **Lyngbya kuetzigii* Schmidle	Vashista 1968 [27], Thakur *et al.* 2013 [26], Dwivedi & Misra 2015 [5]
163	*Lyngbya major Menengh* Meneghini ex Gomont	Misra *et al.* 2006 [14], Srivastava PN 1967 [24], Jindal & Thakur 2013 [11],Singh *et al.*2014 [20] , Bhushan & Kumar 2018 [2]
164	*Phormidium nigrum* (Vaucher ex Gomont) Anagnostidis & Komárek **Lyngbya nigra* Hangirg	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
165	*Phormidium puteale*(Montagne ex Gomont) Anagnostidis & Komárek **Lyngbya putealis Mont* Montagne ex Gomont	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
166	*Oscillatoria perornata* Skuja	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
167	*Oscillatoria princeps* Vaucher ex Gomont	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
168	*Phormidium terebriforme* (C.Agardh ex Gomont) Anagnostidis & Komárek **Oscillatoria terebriformis* C.Agardh ex Gomont	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
169	*Phormidium chalybeum* Gomont	Misra *et al.* 2006 [14], Mongra 2012 [15], Singh *et al.*2018 [22], Novarino 1991 [17], Bhushan & Kumar 2018 [2]
170	*Oscillatoria limosa* C.Agardh ex Gomont	Mongra 2012 [15], Singh *et al.*2018 [22]
171	*Phormidium* willei (N.L.Gardner) Anagnostidis & Komárek	Misra *et al.* 2006 [14], Mongra 2012 [15], Singh *et al.*2018 [22], Novarino 1991 [17], Bhushan & Kumar 2018 [2]
172	*Oscillatoria tenuis* Gomont	Misra *et al.* 2006 [14], Mongra 2012 [15], Singh *et al.*2018 [21], Bhushan & Kumar 2018 [2]
173	*Oscillatoria amphibia* Lauterborn	Misra *et al.* 2006 [14], Mongra 2012 [15], Singh *et al.*2018[21], Bhushan & Kumar 2018 [2]

174	*Phormidium subfuscum* Kutzing ex Gomont	Misra *et al.* 2006 [14], Vashista 1968 [27], Thakur *et al.* 2013 [26], Bhushan & Kumar 2018 [2]
175	*Lyngbya lutea* Gomont ex Gomont	Mongra 2012 [15], Singh *et al.*2018 [21]
176	*Oscillatoria stigonema* Gomont	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
177	*Potamolinea aerugineocaerulea* Gomont **Lyngbya aerugineocaerulea* Gomont	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
178	*Lynqbya diqueti* Gomont	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
179	*Lyngbya calcicola* (C.Agardh) Hansgirg	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
180	*Lynqbya niqra* Gomont	Misra *et al.* 2006 [14],Bhushan & Kumar 2018 [2]
181	*Oscillatoria brevis* Schröter	Misra *et al.* 2006 [14], Vashista 1968 [27], Thakur *et al.* 2013 [26], Bhushan & Kumar 2018 [2]
182	*Oscillatoria laetevirens* Hofman-Bang ex Forti	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
183	*Oscillatoria proboscidea* Gomont	Vashista 1968 [27], Thakur *et al.* 2013 [26]
184	*Oscillatoria proboscidea* var. westii Forti	Vashista 1968 [27], Thakur *et al.* 2013 [26]
185	*Oscillatoria tenuis* Gomont	Vashista 1968 [27], Thakur *et al.* 2013 [26]
186	*Limnoraphis hieronymusii* (Lemmermann) J.Komárek, E.Zapomelová, J.Smarda, J.Kopecký, E.Rejmánková, J.Woodhouse, B.A.Neilan & J.Komárková **Lyngbya hieronymusi* Lemmermann	Vashista 1968 [27], Thakur *et al.* 2013 [26]
187	*Phormidium limnetica* (Vaucher ex Gomont) Anagnostidis & Komárek	Vashista 1968 [27], Thakur *et al.* 2013 [26]
188	*Kamptonema chlorinum* (Kutzing ex Gomont) Strunecký, Komárek & J.Smarda **Phormidium chlorinum* (Kutzing ex Gomont) Umezaki & Watanabe	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
189	*Kamptonema animale* (C.Agardh ex Gomont) Strunecký, Komárek & J.Smarda **Phormidium animale* (Vaucher ex Gomont) Anagnostidis &Komárek	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
190	*Phormidium ambigum* Thuret ex Gomont	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
191	*Phormidium nigrum* (Vaucher ex Gomont) Anagnostidis & Komárek	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
192	*Phormidium desikacharyiense* Vasishta	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
193	*Phormidium jenkelianum* G.Schmid	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
194	*Phormidesmis molle* (Gomont) Turicchia, Ventura, Komárková & Komárek **Phormidium molle* Gomont	Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
195	*Phormidium molle* f. *tenuior* West & West	Dwivedi *et al.* 2008 [6]
196	*Leptolyngbya* valderiana (Gomont) Anagnostidis & Komárek **Phormidium valderianum* Gomont	Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21]
197	*Phormidium chalybeum* (Mertens ex Gomont)	Vashista 1968 [27], Thakur *et al.* 2013 [26]
198	*Oscillatoria obscura* Bruhl et Biswas	Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21]
199	*Oscillatoria chilkensis* Biswas	Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21]
200	*Phormidium irriguum* (Kutzing ex Gomont) Anagnostidis & Komárek **Oscillatoria irrigua* (Kutz) Gomont	Dwivedi *et al.* 2008 [6], Suseela & Topoo 2009 [25], Mongra 2012 [15], Singh *et al.*2018 [22], Singh *et al.* 2018[21]
201	*Oscillatoria agardhii* Gomont	Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21]
202	*Phormidium corium* Gomont	Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21]
203	*Phormidium baculum* (Gomont ex Gomont) Anagnostidis **Lyngbya baculum* Gomont	Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21]
	Family:Stigonemataceae	
204	*Stigonema ocellatum* Fremy	Suseela & Topoo 2009 [25],Singh *et al.* 2018 [22]
	Family: Hapalosiphonaceae	

205	*Hapalosiphon pumilus* Kirchner ex Bornet & Flahault **Hapalosiphon fontinalis* Kirchner ex Bornet & Flahault	Suseela & Topoo 2009 [25], Singh *et al.*2018[22]
206	*Halosiphon intricatus* West & G.S.West	Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21]
207	*Fischerella epiphytica* S.L.Ghose	Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21]
208	*Fischerella thermalis* Gomont	Vashista 1968 [27], Thakur *et al.* 2013 [26]
209	*Mastigocladus laminosus* Cohn ex Kirchner	Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21]
	Family: Gloeotrichiaceae	
210	*Gloeotrichia echinulata* Gonzalves & Kamat	Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21]
211	*Gloeotrichia intermedia* (Lemmermann) Geitler	Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21]
	Family: Pseudanabaenaceae	
212	*Pseudanabaena thermalis* Anagnostidis	Vashista 1968 [27], Thakur *et al.* 2013 [26]
213	*Leptolyngbya copelandii* Anagnostidis	Vashista 1968 [27], Thakur *et al.* 2013 [26]
	Family: Leptolyngbyaceae	
214	*Planktolyngbya* contorta (Lemmermann) Anagnostidis & Komárek	Vashista 1968 [27], Thakur *et al.* 2013 [26]
215	*Leptolyngbya margaretheana* (G.Schmid) Anagnostidis & Komárek	Suseela & Topoo 2009 [25], Vashista 1968 [27], Thakur *et al.* 2013 [26], Singh *et al.* 2018 [22]
216	*Leptolyngbya boryana* (Gomont) Anagnostidis & Komárek	Vashista 1968 [27], Thakur *et al.* 2013 [26]
	Family: Entophysalidaceae	
217	*Chlorogloea simplex* M.Watanabe & Komárek	Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21]
218	*Entophysalis amphibian* Kutzing	Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21]
	Order: Pleurocapsales	
219	*Cyanosarcina spectabilis* (Geitler) Kovácik **Myxosarcina spectabilis* Geitler	Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21]
	Family: Hydrococcaceae	Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21]
220	*Hydrococcus rivularis* Kutzing	Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21]
	Order: Chroococcidiopsidales	
221	*Chroococcidiopsis cubana* Komárek et Hindák	Dwivedi *et al.* 2008 [6]
	Order: Oscillatoriales	
222	*Oscillatoria tenuis* Vaucher ex Gomont	Dwivedi *et al.* 2008 [6]
223	*Geitlerinema splendidum* (Greville ex Gomont) Anagnostidis	Dwivedi *et al.* 2008 [6]
224	*Oscillatoria curviceps* C.Agardh ex Gomont	Dwivedi *et al.* 2008 [6]
225	*Kamptonema* jasorvense (Vouk) Strunecký, Komárek & J.Smarda **Oscillatoria jasorvensis* Vouk	Dwivedi *et al.* 2008 [6]
226	*Kamptonema* laetevirens (H.M.Crouan & P.L.Crouan ex Gomont) Strunecký, Komárek & J.Smarda **Oscillatoria* laetevirens P.Crouan & H.Crouan ex Gomont	Dwivedi *et al.* 2008 [6]
227	*Jaaginema* angustissimum (West & G.S.West) Anagnostidis & Komárek **Oscillatoria* angustissima West & G.S.West	Vashista 1968 [27], Thakur *et al.* 2013 [26]
228	*Anagnostidinema* amphibium (C.Agardh ex Gomont) Strunecký, Bohunická, J.R.Johansen & J.Komárek **Oscillatoria amphibian* C.Agardh ex Gomont	Mongra 2012 [15], Singh *et al.*2018 [22], Novarino 1991 [17]
229	*Phormidium minnesotense* (Tilden) Drouet **Oscillatoria* minnesotensis Tilden	Dwivedi *et al.* 2008 [6], Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
230	*Anagnostidinema* exile (Skuja) Strunecky *et al.* **Geitlerinema exile* (Skuja) Anagnostidis	Dwivedi *et al.* 2008 [6]
231	*Oscillatoria curviceps* C.Agardh ex Gomont	Dwivedi *et al.* 2008 [6]
232	*Lyngbya semiplena* Hansgirg	Dwivedi *et al.* 2008 [6]
233	*Phormidium minima* Thuret ex Gomont	Dwivedi *et al.* 2008 [6]

234	*Kamptonema animale* (C.Agardh ex Gomont) Strunecký, Komárek & J.Smarda **Phormidium animale* (Vaucher ex Gomont) Anagnostidis & Komárek	Dwivedi *et al.* 2008 [6]
235	*Phormidium ambigum* Thuret ex Gomont	Arora *et al.* 2012 [1],
236	*Phormidium nigrum* (Vaucher ex Gomont) Anagnostidis & Komárek	Arora *et al.* 2012 [1],
237	*Oscillatoria obscura* Bruhl et Biswas	Arora *et al.* 2012 [1], , Singh *et al.*2014 [20]
238	*Oscillatoria sancta* (Kutz). Gomont.	Arora *et al.* 2012 [1],
239	*Oscillatoria chilkensis* Biswas	Arora *et al.* 2012 [1],
240	*Phormidium irriguum* (Kutzing ex Gomont) Anagnostidis & Komárek **Oscillatoria irrigua* (Kutz) Gomont	Arora *et al.* 2012 [1],
241	*Oscillatoria agardhii* Gomont	Arora *et al.* 2012 [1],
242	*Phormidium corium* Gomont	Arora *et al.* 2012 [1],
243	*Phormidium baculum* (Gomont ex Gomont) Anagnostidis **Lyngbya baculum* Gomont	Arora *et al.* 2012 [1], , Mongra 2012 [15], Singh *et al.*2018 [22], Novarino 1991 [17]
	Order: Nostocales	
244	*Nostoc carneum* C.Agardh ex Bornet & Flahault **Nostoc spongiaforme* C.Agardh ex Bornet & Flahault	Arora *et al.* 2012 [1], Singh *et al.* 2014 [19]
245	*Calothrix marchica* Lemmermann	Arora *et al.* 2012 [1],
246	*Calothrix parietina* Thuret ex Bornet & Flahault	Arora *et al.* 2012 [1],
247	*Anabaenopsis circularis* (G.S.West) Woloszynska & V.V.Miller	Arora *et al.* 2012 [1],
248	*Dolichospermum macrosporum* (Klebhan) Wacklin, L.Hoffmann & Komárek **Anabaena* macrospora Klebahn	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
249	*Trichormus fertilissimus*(C.B.Rao) Komárek & Anagnostidis **Anabaena fertilissima* C.B.Rao	Arora *et al.* 2012 [1],
250	*Anabaena laxa* A.Braun	Arora *et al.* 2012 [1],
251	*Dolichospermum helicoideum* (C.Bernard) Wacklin, L.Hoffmann & Komárek **Anabaena helicoidea* C.Bernard	Arora *et al.* 2012 [1],
252	*Anabaena torulosa*Lagerheim ex Bornet & Flahault	Arora *et al.* 2012 [1],
253	*Cylindrospermum* stagnale Bornet & Flahault	Arora *et al.* 2012 [1],
254	*Nostoc carneum* C.Agardh ex Bornet & Flahault	Arora *et al.* 2012 [1],
255	*Desmonostoc* muscorum C.Agardh ex Bornet & Flahault **Nostoc muscorum* C.Agardh ex Bornet & Flahault	Arora *et al.* 2012 [1],
256	*Nostoc passerifiianum* C.Agardh ex Bornet & Flahault	Arora *et al.* 2012 [1],
257	*Dolichospermum* circinale (Rabenhorst ex Bornet & Flahault) P.Wacklin, L.Hoffmann & J.Komárek **Anabaena circinalis* Rabenhorst ex Bornet & Flahault	Arora *et al.* 2012 [1],
258	*Nodularia spumigena* Mertens ex Bornet & Flahault	Arora *et al.* 2012 [1],
259	*Fortiea bossei* (Fremy) Desikachary	Arora *et al.* 2012 [1],
260	*Calothrix braunii* Bornet & Flahault	Arora *et al.* 2012 [1],
261	*Calothrix brevissima* G.S.West	Arora *et al.* 2012 [1],
262	*Nostoc linckia* Bornet & Flahault	Arora *et al.* 2012 [1],
263	*Nostoc punctiforme* (Hariot) Elenkin	Arora *et al.* 2012 [1],
264	*Nostoc carneum* C.Agardh ex Bornet & Flahault **Nostoc spongiaeforme* C.Agardh ex Bornet & Flahault	Arora *et al.* 2012 [1],
265	*Nodularia sphaerocarpa* Bornet & Flahault	Arora *et al.* 2012 [1],
266	*Aulosira prolific* Bharadwaja	Arora *et al.* 2012 [1],

267	*Aulosira fertilissima* S.L.Ghose	Arora *et al.* 2012 [1],
268	*Calothrix castelli* Bornet & Flahault	Singh *et al.*2014 [20]
269	*Cylindrospermum majus* A.M.Bendre & M.S.Agarkar	Fritch 1907 [7], Misra *et al.* 2006 [14]
270	*Cylindrospermum musicola* A.M.Bendre & M.S.Agarkar	Singh *et al.*2014 [20]
271	*Anabaena iyengarii* Bharadwaja	Singh *et al.*2014 [20]
272	*Anabaenopsis arnoldii* Aptekar	Singh *et al.*2014 [20]
273	*Nostoc commune* Elenkin	Singh *et al.*2014 [20]
274	*Desmonostoc muscorum* (C.Agardh ex Bornet & Flahault) Hrouzek & Ventura **Nostoc muscorum* C.Agardh ex Bornet & Flahault	Singh *et al.*2014 [20]
275	*Trichormus variabilis* Komárek & Anagnostidis	Singh *et al.*2014 [20]
276	*Scytonema leptobasis* S.L.Ghose	Singh *et al.*2014 [20]
277	*Scytonema ocellatum* Ghose	Singh *et al.*2014 [20]
278	*Scytonema simplex* Vasishta	Singh *et al.*2014 [20]
279	*Tolypothrix distorta* C.-C.Jao	Singh *et al.*2014 [20]
280	*Calothrix castellii* Bornet & Flahault	Singh *et al.*2014 [20]
281	*Rivularia minuta* C.B.Rao	Singh *et al.*2014 [20]
282	*Gloeotrichia echinulata* Gonzalves & Kamat	Singh *et al.*2014 [20]
283	*Gloeotrichia intermedia* (Lemmermann) Geitler	Singh *et al.*2014 [20]
284	*Hapalosiphon pumilus* Kirchner ex Bornet & Flahault	Singh *et al.*2014 [20]
285	*Fischerella epiphytica* S.L.Ghose	Singh *et al.*2014 [20]
286	*Stigonema ocellatum* Fremy	Singh *et al.*2014 [20]
287	*Nostochopsis lobatus* Hansgirg	Singh *et al.*2014 [20]
288	*Chlorogloeopsis fritschii* (A.K.Mitra) A.K.Mitra & D.C.Pandey	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
289	*Fischerella thermalis* Gomont	Vashista 1968 [27], Thakur *et al.* 2013 [26]
290	*Mastigocladus laminosus* Cohn ex Kirchner	Singh *et al.*2014 [20] , Suseela & Topoo 2009 [25], Singh *et al.* 2018 [22]
291	*Tolypothrix fragilis* (Gardner) Geitler	Singh *et al.*2014 [20]
292	*Nostoc edaphicum* (Roth) Bornet ex Bornet et Flahault	Suseela & Topoo 2009 [25], Singh *et al.* 2018 [22]
293	*Nostoc linckia* (Roth) Bornet ex Bornet et Flahault	Suseela & Topoo 2009 [25], Singh *et al.* 2018 [22]
	Family: Tolypothrichaceae	
294	*Tolypothrix distorta* C.-C.Jao	Suseela & Topoo 2009 [25], Singh *et al.* 2018 [22]
295	*Tolypothrix fragilis* (Gardner) Geitler	Singh *et al.* 2014 [19], Jindal *et al.* 2014 [12],
	Family: Chlorogloeopsidaceae	
296	*Chlorogloeopsis fritschii* (A.K.Mitra) A.K.Mitra & D.C.Pandey	Singh *et al.* 2014 [19], Jindal *et al.* 2014 [12] , Misra *et al.* 2006 [14], Bhushan & Kumar 2018 [2]
	Family: Aphanizomenonaceae	
297	*Anabaenopsis circularis* (G.S.West) Woloszynska & V.V.Miller	Singh *et al.* 2014 [19], Jindal *et al.* 2014 [12], Vashista 1968 [27], Thakur *et al.* 2013 [26]
298	*Dolichospermum macrosporum* (Klebhan) Wacklin, L.Hoffmann & Komárek **Anabaena* macrospora Klebahn	Singh *et al.* 2014 [19], Jindal *et al.* 2014 [12]
299	*Trichormus fertilissimus* (C.B.Rao) Komárek & Anagnostidis **Anabaena fertilissima* C.B.Rao	Singh *et al.* 2014 [19], Jindal *et al.* 2014 [12], Dwivedi *et al.* 2008 [6]
300	*Anabaena laxa* A.Braun	Carter 1926 [3], Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21]
301	*Dolichospermum helicoideum* (C.Bernard) Wacklin, L.Hoffmann & Komárek **Anabaena helicoidea* C.Bernard	Singh *et al.* 2014 [19], Jindal *et al.* 2014 [12], Dwivedi *et al.* 2008 [6]

302	*Anabaena torulosa*Lagerheim ex Bornet & Flahault	Vashista 1968 [27], Thakur *et al.* 2013 [26]
303	*Nodularia spumigena* Mertens ex Bornet & Flahault	Vashista 1968 [27], Thakur *et al.* 2013 [26], Singh *et al.* 2014 [19], Jindal *et al.* 2014 [12], Misra *et al.* 2006 [14],Dwivedi *et al.* 2008 [6], Singh *et al.* 2018 [21], Bhushan & Kumar 2018 [2]
304	*Nodularia sphaerocarpa* Bornet & Flahault	Vashista 1968 [27], Thakur *et al.* 2013 [26]
305	*Anabaenopsis arnoldii* Aptekar	Vashista 1968 [27], Thakur *et al.* 2013 [26]
	Family: Nostocaceae	
306	*Nostoc carneum* C.Agardh ex Bornet & Flahault **Nostoc spongiaforme* C.Agardh ex Bornet & Flahault	Vashista 1968 [27], Thakur *et al.* 2013 [26]
307	*Johanseninema constrictum* (Szafer) Hasler, Dvorák & Poulícková **Anabaena constricta* (Szafer) Geitler	Vashista 1968 [27], Thakur *et al.* 2013 [26]
308	*Nostoc* paludosum Kutzing ex Bornet & Flahault	Arora *et al.* 2012 [1],
309	*Cylindrospermum* stagnale Bornet & Flahault	Vashista 1968 [27], Thakur *et al.* 2013 [26], Arora *et al.* 2012 [1], , Arora *et al.* 2012 [1],
310	*Desmonostoc* muscorum C.Agardh ex Bornet & Flahault **Nostoc muscorum* C.Agardh ex Bornet & Flahault	Arora *et al.* 2012 [1],
311	*Nostoc* oryzae (F.E.Fritsch) J.Komárek & K.Anagnostidis **Anabaena oryzae* F.E.Fritsch	Arora *et al.* 2012 [1],
312	*Anabaena perturbata* H.Hill	Vashista 1968 [27], Thakur *et al.* 2013 [26]
313	*Anabaena sphaerica* Bornet & Flahault	Vashista 1968 [27], Thakur *et al.* 2013 [26]
314	*Anabaena echinospora* Skuja	Vashista 1968 [27], Thakur *et al.* 2013 [26]
315	*Nostoc passerifiianum* Bornet & Flahault **Nostoc passerifiianum* Bornet & Flahault	Arora *et al.* 2012 [1],
316	*Dolichospermum* circinale (Rabenhorst ex Bornet & Flahault) P.Wacklin, L.Hoffmann & J.Komárek **Anabaena circinalis* Rabenhorst ex Bornet & Flahault	Arora *et al.* 2012 [1],
317	*Nostoc linckia* Bornet & Flahault	Arora *et al.* 2012 [1],
318	*Nostoc punctiforme* (Hariot) Elenkin	Arora *et al.* 2012 [1],
319	*Nostoc carneum* C.Agardh ex Bornet & Flahault **Nostoc spongiaeforme* C.Agardh ex Bornet & Flahault	Vashista 1968 [27], Thakur *et al.* 2013 [26], Arora *et al.* 2012 [1],
320	*Aulosira prolific* Bharadwaja	Arora *et al.* 2012 [1],
321	*Cylindrospermum majus* A.M.Bendre & M.S.Agarkar	Vashista 1968 [27], Thakur *et al.* 2013 [26]
322	*Cylindrospermum musicola* A.M.Bendre & M.S.Agarkar	Vashista 1968 [27], Thakur *et al.* 2013 [26], Arora *et al.* 2012 [1], , Arora *et al.* 2012 [1],
323	*Anabaena iyengarii* Bharadwaja	Arora *et al.* 2012 [1],
324	*Nostoc commune* Elenkin	Vashista 1968 [27], Thakur *et al.* 2013 [26]
325	*Desmonostoc muscorum* (C.Agardh ex Bornet & Flahault) Hrouzek & Ventura **Nostoc muscorum* C.Agardh ex Bornet & Flahault	Vashista 1968 [27], Thakur *et al.* 2013 [26], Dwivedi *et al.* 2008 [6]
326	*Trichormus variabilis* Komárek & Anagnostidis	Vashista 1968 [27], Thakur *et al.* 2013 [26], Dwivedi *et al.* 2008 [6] [6], Singh *et al.* 2018 [21]
327	*Rivularia minuta* C.B.Rao	Vashista 1968 [27], Thakur *et al.* 2013 [26], Arora *et al.* 2012 [1], , Arora *et al.* 2012 [1],
328	*Nostoc edaphicum* (Roth) Bornet ex Bornet et Flahault	Arora *et al.* 2012 [1],
	Class: Chlorophyceae **Order:Volvocales** **Sub Order:Chlamydomonadineae** **Famliy:Chlamydomonadaceae**	
329	*Chlamydomonas reinhardi* P.A.Dangeard	Vashista 1968 [27], Thakur *et al.* 2013 [26], Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]

330	*Carteria pseudoglobosa* Korshikov	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
331	*Chlamydomonas globosa* J.W.Snow	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
	Order:Chlorococcales **Family:Chlorococcaceae**	
332	*Chlorella vulgaris* Clemençon & Fott	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
333	*Cystococcus humicola* Nägeli **Chlorococcum humicola* (Nägeli) Rabenhorst	Vashista 1968 [27], Thakur *et al.* 2013 [26], Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
334	*Auxenochlorella pyrenoidosa* (H.Chick) Molinari & Calvo-Perez **Chlorella pyrenoidosa* H.Chick	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
335	*Lepocyclis fusiformis* (H.J.Carter) Lemmermann	Vashista 1968 [27], Thakur *et al.* 2013 [26], Thakur *et al.* 2013 [26]
336	*Micractinium pusillum* Fresenius	Vashista 1968 [27], Thakur *et al.* 2013 [26]
	Family: Oocystaceae	
337	*Neglectella solitaria* (Wittrock) Stenclová & Kastovsky **Oocystis solitaria* Wittrock	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
338	*Oocystis elliptica* West	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
339	*Trochiscia zachariasii* Lemmermann **Trochiscia zachariasii* Lemmermann	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
340	*Oocystis noval-semliae* Wille	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
	Family: Chlorellaceae	
341	*Dictyosphaerium ehrenbergianum* Nägeli	Novarino 1991 [17]
	Family: Selenastraceae	
342	*Ankistrodesmus falcatus* (Corda) Ralfs	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
343	*Selenastrum bibraianum* Reinsch **Ankistrodesmus bibrainus* (Reinsch) Korshikov	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
344	*Pandorina morum* (O.F.Muller) Bory	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
345	*Ankistrodesmus spiralis* (W.B.Turner) Lemmermann	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
346	*Messastrum gracile* (Reinsch) T.S.Garcia **Ankistrodesmus gracilis* (Reinsch) Korshikov	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
347	*Kirchneriella lunaris* (Kirchner) Möbius	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
348	*Messastrum gracile* (Reinsch) T.S.Garcia **Selenastrum gracile* Reinsch	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
349	*Pyrobotyrs gracilis* Reinsch	Novarino 1991 [17]
	Family: Hydrodictyaceae	
350	*Conferva reticulate* Linnaeus **Hydrodictyon reticulatum* (Linnaeus) Bory	Arora *et al.* 2012 [1], Singh *et al.* 2014 [19]
351	*Tetraëdron gracile* (Reinsch) Hansgirg	Arora *et al.* 2012 [1],
352	*Stauridium tetras* var. *tetraodon* (Corda) J.D.Hall & Karol **Pediastrum tetras* var. tetraodon (Corda) Hansgirg	Arora *et al.* 2012 [1],
353	*Monactinus simplex* (Meyen) Corda **Pediastrum simplex* (Meyen) Corda	Arora *et al.* 2012 [1], Singh *et al.* 2014 [19]
354	*Pediastrum tetras* (Ehrenberg) Ralfs **Pediastrum tetras var. excisum* (A.Braun) Hansgirg	Arora *et al.* 2012 [1],
355	*Stauridium tetras var. tetraodon* (Corda) J.D.Hall & Karol **Pediastrum tetras var. tetraodon* (Corda) Hansgirg	Arora *et al.* 2012 [1],
356	*Pediastrum tetras* (Ehrenberg) Ralfs	Arora *et al.* 2012 [1],
357	*Parapediastrum biradiatum* (Meyen) E.Hegewald	Arora *et al.* 2012 [1],
358	*Pediastrum duplex* Meyen	Arora *et al.* 2012 [1],
359	*Pediastrum ovatum* (Ehrenberg) A.Braun	Arora *et al.* 2012 [1],
360	*Sorastrum spinulosum* Nägeli	Arora *et al.* 2012 [1],

361	*Tetraedron minimum* (A.Braun) Hansgirg	Arora *et al.* 2012 [1],
362	*Volvox glabator* Linnaeus	Arora *et al.* 2012 [1],
	Order:Ulotrichales **Family: Ulotrichaceae**	
363	*Klebsormidium subtile* (Kutzing) Mikhailyuk, Glaser, Holzinger & Karsten **Ulothrix* subtilissima Rabenhorst	Arora *et al.* 2012 [1],
364	*Ulothrix tenerrima* (Kutzing) Kutzing **Ulothrix variabilis* Kutzing	Arora *et al.* 2012 [1],
365	*Ulothrix zonata* (F.Weber & Mohr) Kutzing	Arora *et al.* 2012 [1],
	Family: Microsporaceae	
366	*Microspora floccose* (Vaucher) Thuret	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
367	*Microspora willeana* Lagerheim	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
368	*Microspora indica* Randhawa	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
	Family: Sphaeropleaceae	
369	*Sphaeroplea annulina* (Roth) C.Agardh	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
	Order: Cladophorales **Family: Cladophoraceae**	
370	*Cladophora glomerata* (Linnaeus) Kutzing	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
371	*Cladophora glomerata* (Linnaeus) Kutzing	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
372	*Pithophora roettleri* (Roth) Wittrock **Pithophora mooreana* Collins	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
373	*Pseudorhizoclonium africanum* (Kutzing) Boedeker **Rhizoclonium hookeri* Kutzing	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
	Order: Chaetophorales **Family: Chaetophoraceae**	
374	*Stigeoclonium tenue* Kutzing	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
375	*Chaetophora flagellifera* Kutzing	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
	Order: Oedogoniales **Family: Oedogoniaceae**	
376	*Oedogonium crispum* Wittrock ex Hirn	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
377	*Oedogonium terrestre* Randhawa	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
378	*Oedogonium figuratum* Tiffany	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
379	*Oedogonium tapeinosporum* Wittrock ex Hirn	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
380	*Oedogonium nanum* Wittrock ex Hirn	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
	Order: Conjugales **Sub Order: Euconjugatae** **Family: Mesotoniaceae**	
381	*Cylindrocystis brebissonii* (Ralfs) De Bary	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
	Family: Zygnemataceae	
382	*Spirogyra cylindrical* Czurda	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
383	*Spirogyra weberi* var. grevilleana (Hassal) O.Kirchner **Spirogyra grevilleana* (Hassall) Kutzing	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
384	*Zygnema mirabile* Hassall **Spirogyra mirabilis* (Hassall) Kutzing	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
385	*Spirogyra schmidtii* West & G.S.West	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
386	*Spirogyra sinensis* L.-C.Li	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
387	*Spirogyra tumida* C.-C.Jao	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
388	*Zygnema cruciatum* (Vaucher) C.Agardh **Zygnema insigne* (Hassall) Kutzing	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]

389	*Zygnemopsis mysorensis* M.O.P.Iyengar	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
390	*Mougeotia thylespora* Skuja	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
391	*Zygogonium ericetorum* Kutzing	Srivastava PN 1967 [24], Jindal & Thakur 2013 [11]
	Order: Desmiodioideae **Family: Desmidiaceae**	
392	*Cosmarium subtumidium* Nordstedt	Shukla *et al.* 2008 [18]
393	*Micrasterias zeylanica* F.E.Fritsch	Shukla *et al.* 2008 [18]
394	*Cosmarium awadhense* B.N.Prasad & R.K.Mehrotra	Shukla *et al.* 2008 [18]
395	*Cosmarium botrytis* Meneghini ex Ralfs	Shukla *et al.* 2008 [18]
396	*Cosmarium granatum* Brebisson ex Ralfs	Shukla *et al.* 2008 [18]
397	*Cosmarium lundelli* var. *corruptum* (W.B.Turner) West & G.S.West	Shukla *et al.* 2008 [18]
398	*Cosmarium moniliforme* var. *lamneticum* West & G.S.West	Shukla *et al.* 2008 [18]
399	*Cosmarium norimbergense* var. *depressum* (West & G.S.West) Willi Krieger & Gerloff	Shukla *et al.* 2008 [18]
400	*Cosmarium pyramidatum* Brebisson ex Ralfs	Shukla *et al.* 2008 [18]
401	*Cosmarium radiosum* Wolle	Shukla *et al.* 2008 [18]
402	*Cosmarium subcrenatum* Hantzsch	Shukla *et al.* 2008 [18]
403	*Cosmarium supraspeciosum* Wolle	Shukla *et al.* 2008 [18]
404	*Cosmarium turpinii* Brebisson	Shukla *et al.* 2008 [18]
405	*Cosmarium abbreviatum* var. germanicum (Raciborski) Willi Krieger & Gerloff	Shukla *et al.* 2008 [18]
406	*Cosmarium punctulatum* var. *rotundatum* Klebs	Shukla *et al.* 2008 [18]
407	*Cosmarium quadrum* P.Lundell	Shukla *et al.* 2008 [18]
408	*Cosmarium regnellii* Wille	Shukla *et al.* 2008 [18]
409	*Cosmarium regnesii* Reinsch	Shukla *et al.* 2008 [18]
410	*Cosmarium succisum* var. *hyalinum* Skvortsov	Shukla *et al.* 2008 [18]
411	*Euastrum crassangulatum* Borgesen	Shukla *et al.* 2008 [18]
412	*Euastrum subvalidum* Ehrenberg ex Ralfs	Shukla *et al.* 2008 [18]
413	*Euastrum platycerum* Reinsch	Shukla *et al.* 2008 [18]
414	*Euastrum spinulosum* Delponte	Shukla *et al.* 2008 [18]
415	*Euastrum verrucossum* Ehrenberg ex Ralfs	Shukla *et al.* 2008 [18]
416	*Pleurotaenium ehrenbergii* (Ralfs) De Bary	Shukla *et al.* 2008 [18]
417	*Teilingia granulata* (J.Roy & Bisset) Bourrelly **Sphaerozosma granulatum* J.Roy & Bisset	Shukla *et al.* 2008 [18]
418	*Staurastrum coarctatum* var. *subcurtum* Nordstedt	Shukla *et al.* 2008 [18]
419	*Staurodesmus* dickiei (Ralfs) S.Lillieroth	Shukla *et al.* 2008 [18]
420	*Staurastrum* avicula var. *lunatum* (Ralfs) Coesel & Meesters **Staurastrum lunatum* Ralfs	Shukla *et al.* 2008 [18]
421	*Pseudostaurastrum* enorme (Ralfs) Chodat **Staurastrum muticum* (A.Braun) Bourrelly	Shukla *et al.* 2008 [18]
422	*Staurastrum pachyrhynchum* Nordstedt	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
423	*Stauratrum perundulatum* West & West	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13], Gupta 2012b [9]
424	*Staurastum pseudotetracerum* (Nordstedt) West & G.S.West	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
425	*Staurastrum punctulatum* Brebisson	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
426	*Pleurotaenium ehrenbergi* (Ralfs) De Bary	Jindal & Thakur 2013 [11]
427	*Staurastrum unguiferum* W.B.Turner	Jindal & Thakur 2013 [11]
428	*Lepocynclis fusiformis* (H.J.Carter) Lemmermann	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
429	*Closterium acerosum* De Notaris	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]

430	*Closterium acerosum* var. *elongatum* West	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
431	*Cosmarium calcareum* Wittrock	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
432	*Cosmarium contractum* var. *pachydermum* A.M.Scott & Prescott	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
433	*Cosmarium cucumis* Corda ex Ralfs	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
434	*Cosmarium depressum* var. *apertum* (W.B.Turner) M.Hirano	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
435	*Cosmarium circulare* var. *messikommeri* Krieger & Gerloff	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
436	*Cosmarium dubium* O.Borge	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
437	*Cosmarium furcatospermum* var. *maius* Prescott	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
438	*Closterium acerosum* var. *angolense* West & G.S.West	Novarino 1991 [17]
439	*Cosmarium granatum* Brebisson ex Ralfs **Cosmarium granatum* Brebisson ex Ralfs	Novarino 1991 [17]
440	*Cosmarium lundellii* var. *subellipticum* B.N.Prasad & R.K.Mehrotra	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
441	*Cosmarium* quadrum var. *sublatum* (Nordstedt) Krieger **Cosmarium margaritatum* var. *sublatum* (Nordstedt) Krieger	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
442	*Cosmarium nitidulum* De Notaris	Gupta 2012b [9], Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
443	*Cosmarium nymannianum* Grunow	Gupta 2012b [9]
444	*Closterium acerosum* f. *rectum* A.M.Scott & Prescott	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
445	*Closterium acutum* var. linea (Perty) West & G.S.West	Kumar *et al.* 2012 [13]
446	*Cosmarium obsoletum* (Hantzsch) Reinsch	Kumar *et al.* 2012 [13]
447	*Cosmarium pachydermum* P.Lundell	Jindal & Thakur 2013 [11]
448	*Cosmarium granatum* var. *rotundatum* Willi Krieger	Jindal & Thakur 2013 [11], Gupta 2012b [9], Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13], Misra *et al.* 2006 [14]
449	*Cosmarium pseudopyramidatum* var. *oculatum* Willi Krieger	Jindal & Thakur 2013 [11]
450	*Cosmarium* pyramidatum Brebisson ex Ralfs	Jindal & Thakur 2013 [11]
451	*Cosmarium quadrum* P.Lundell	Jindal & Thakur 2013 [11]
452	*Cosmarium* radiosum Wolle	Misra *et al.* 2006 [14]
453	*Cosmarium reniforme* var. *elevatum* West & G.S.West	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
454	*Cosmarium subalatum* West & G.S.West	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
455	*Cosmarium scabrum* W.B.Turner	Misra *et al.* 2006 [14]
456	*Cosmarium sexnotatum* Gutwinski	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13], Misra *et al.* 2006 [14]
457	*Cosmarium speciosum* P.Lundell	Jindal & Thakur 2013 [11], Misra *et al.* 2006 [14]
458	*Cosmarium subprotumidum* var. *gregoryi* West & G.S.West	Jindal & Thakur 2013 [11]
459	*Pleurotaenium* trabecula Nägeli	Srivastava & Gupta 2004 [23], Misra *et al.* 2006 [14], Gupta 2012b [9]
460	*Closterium dianae* Ehrenberg ex Ralfs	Srivastava & Gupta 2004 [23]
461	*Closterium leibleinii* Kutzing ex Ralfs	Srivastava & Gupta 2004 [23]
462	*Closterium rectimarginatum* var. *majus* N.D.Kamat	Srivastava & Gupta 2004 [23], Misra *et al.* 2006 [14], Misra *et al.* 2006 [14]
463	*Clostrium venus* Kutzing ex Ralfs	Misra *et al.* 2006 [14]
464	*Closterium dianae* var. *pseudodianae* (J.Roy) Willi Krieger	Misra *et al.* 2006 [14]
465	*Closterium tumidium* L.N.Johnson	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
	Order: Siphonales **Family: Protosiphonaceae**	
466	*Ditchotomisiphon tuberosus* (A.Braun ex Kutzing) A.Ernst	Misra *et al.* 2006 [14], Gupta 2012b [9]
	Family: Vaucheriaceae	
467	*Vaucheria bursata* (O.F.Muller) C.Agardh	Misra *et al.* 2006 [14]

	Order: Charales **Family: Characeae**	
468	*Chara corallina* Klein ex C.L.Willdenow	Misra *et al.* 2006 [14]
469	*Chara braunii* C.C.Gmelin	Misra *et al.* 2006 [14], Gupta 2012b [9]
470	*Chara wallichi* A.Braun	Misra *et al.* 2006 [14]
471	*Nitella acuminata* A.Braun ex Wallman	Srivastava & Gupta 2004 [23]
	Class: Xanthophyceae **Order: Heterochloridales** **Family: Heterochloridaceae**	
472	*Stipitococcus urceolatus* West & G.S.West	Misra *et al.* 2006 [14]
	Order: Heterotrichales **Family: Tribonemaceae**	
473	*Xanthonema* exile (Klebs) P.C.Silva **Bumilleria exilis* Klebs	Misra *et al.* 2006 [14]
474	*Tribonema bombycinum* (C.Agardh) Derbes & Solier	Singh *et al.* 2014 [19], Jindal *et al.* 2014 [12]
475	*Heterodendron squarrosum* Pascher	Srivastava & Gupta 2004 [23]
	Order: Heterosiphonales **Family: Botrydiaceae**	
476	*Botrydium tuberosum* M.O.P.Iyengar	Gupta 2012b [9]
477	*Botrydium divisum* M.O.P.Iyengar	Kumar *et al.* 2012 [13]
	Class: Chrysophyceae **Order:Chrysomonadales** **Family:Chromulinaceae**	
478	*Chrysophaerella coronacircumspina* Wujek & Kristiansen	Misra *et al.* 2006 [14], Srivastava & Gupta 2004 [23], Gupta 2012b [9]
479	*Chrysophaerella septisina* (K.H.Nicholls) J.Kristiansen & D.Tong	Misra *et al.* 2006 [14], Gupta 2012b [9], Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
	Class: Coscinodisophyceae **Order:Melosirales** **Family:Melosiraceae**	
480	*Melosira Varians* C.Agardh	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
481	*Melosira granulata* (Ehrenberg) Ralfs **Aulacoseira granulate* (Ehrenberg) Simonsen	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
	Family: Stephanodiscaceae	
482	*Cyclotella meneghiniana* Kutzing	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
	Class: Bacillariophyceae **Order:Eunotiales** **Family:Eunotiaceae**	
483	*Eunotia diadema* Ehrenberg **Eunotia serra* var. *diadema* (Ehrenberg) R.M.Patrick	Misra *et al.* 2006 [14]
484	*Eunotia valida* Hustedt	Misra *et al.* 2006 [14]
485	*Leplochlamys ampullaceal* (Ehrenberg) Rabenhorst	Misra *et al.* 2006 [14]
486	*Cymbella affinis* (Krammer) W.Silva	Misra *et al.* 2006 [14], Dwivedi and Misra 2015
487	*Cymbella cymbiformis* Longa Cleve	Gupta & Das 2012c [10], Dwivedi and Misra 2015
488	*Cymbella reinhardti* Grunow	Arora *et al.* 2011, Dwivedi and Misra 2015
489	*Cymbella rupicola* Grunow	Arora *et al.* 2012 [1], Dwivedi and Misra 2015
490	*Cymbella tumidula* Grunow	Arora *et al.* 2012 [1]
491	*Cymbella cistula* (Ehrenberg) O.Kirchner	Arora *et al.* 2012 [1]
492	*Cymbella curvata* Rabenhorst	Gupta 2012b [9]
493	*Cymbella* tumescens A.Cleve	Novarino 1991 [17], Arora *et al.* 2012 [1]

494	*Epithemia turgida* (Ehrenberg) Kutzin **Cymbella turgid* (Ehrenberg) Hassall	Novarino 1991 [17], Misra *et al.* 2006 [14], Gupta 2012b [9], Gupta & Das 2012c [10]
495	*Cymbella tumida* (Brebisson) Van Heurck	Jindal & Thakur 2013 [11]
496	*Encyonema subalpinum* D.G.Mann	Jindal & Thakur 2013 [11], Gupta & Das 2012c [10], Dwivedi and Misra 2015
497	*Gyrosigma acuminatum* (Kutzing) Rabenhorst	Jindal & Thakur 2013 [11]
498	*Gyrosigma scalproides* (Rabenhorst) Cleve	Jindal & Thakur 2013 [11]
499	*Cocconeis placentula* Ehrenberg	Jindal & Thakur 2013 [11]
500	*Cymbella ventricosa* Kutzing	Jindal & Thakur 2013 [11]
501	*Cymbopleura amphicephala* (Nageli ex Kutzing) Krammer	Novarino 1991 [17]
502	*Cymbopleura cuspidate* (Kutzing) Krammer	Novarino 1991 [17]
503	*Cymbopleura inaequalis* (Ehrenberg) Krammer	Srivastava & Gupta 2004 [23], Gupta & Das 2012c [10]
504	*Cymbopleura reinhardtii* (Grunow) Krammer	Novarino 1991 [17], Misra *et al.* 2006 [14]
505	*Diatoma vulgare* Grunow	Novarino 1991 [17], Misra *et al.* 2006 [14]
506	*Fragilaria capucina* Desmazières	Novarino 1991 [17]
507	*Gomphonema gracile* Ehrenberg	Novarino 1991 [17]
508	*Gyrosigma acuminatum* (Kutzing) Rabenhorst	Novarino 1991 [17], Misra *et al.* 2006 [14], Gupta & Das 2012c [10]
509	*Aulacoseira granulata* (Ehrenberg) Simonsen **Melosira granulate* (Ehrenberg) Grunow	Novarino 1991 [17], Misra *et al.* 2006 [14], Dwivedi *et al.* 2008 [6]
510	*Craticula cuspidata* (Kutzing) D.G.Mann **Navicula cuspidate* (Kutzing) Hustedt	Novarino 1991 [17], Gupta & Das 2012c [10]
511	*Navicula laterostrata* Hustedt	Novarino 1991 [17], Srivastava & Gupta 2004 [23], Misra *et al.* 2006 [14]
512	*Navicula cryptocephala* Kutzing	Novarino 1991 [17], Misra *et al.* 2006 [14]
513	*Navicula* laterostrata Hustedt	Singh *et al.* 2014 [19], Jindal *et al.* 2014 [12]
514	*Navicula phyllepta* Kutzing	Novarino 1991 [17], Misra *et al.* 2006 [14], Gupta 2012b [9], Arora *et al.* 2012 [1], Carter 1926 [3], Srivastava & Gupta 2004 [23]
515	*Navicula radiosa* Kutzing	Novarino 1991 [17]
516	*Navicula veneta* Kutzing **Navicula cryptocephala* var. *veneta* (Kutzing) Rabenhorst	Novarino 1991 [17], Gupta & Das 2012c [10]
517	*Diadesmis confervacea* Kutzing **Navicula confervacea* (Kutzing) Grunow	Novarino 1991 [17]
518	*Sellaphora bacillum* (Ehrenberg) D.G.Mann **Navicula bacillum* Ehrenberg	Novarino 1991 [17]
519	*Pinnularia brebissonii* (Kutzing) Rabenhorst **Navicula brebissonii* Kutzing	Novarino 1991 [17], Misra *et al.* 2006 [14]
520	*Pinnularia interrupta* W.Smith	Srivastava & Gupta 2004 [23], Dwivedi *et al.* 2008 [6]
521	*Pinnularia* tabellaria Ehrenberg **Pinnularia luculenta* (A.W.F.Schmidt) Cleve	Srivastava & Gupta 2004 [23], Gupta 2012b [9]
522	*Navicula radiosa* Kutzing	Srivastava & Gupta 2004 [23], Misra *et al.* 2006 [14], Arora *et al.* 2012 [1]
523	*Navicula viridula* Grunow	Srivastava & Gupta 2004 [23], Gupta & Das 2012c [10],Singh et al 2014 [19]
524	*Pinnularia gibba* (Ehrenberg) Ehrenberg	Srivastava & Gupta 2004 [23]
525	*Pinnularia burkei* R.M.Patrick	Srivastava & Gupta 2004 [23], Misra *et al.* 2006 [14]
526	*Pinnularia viridis* (Nitzsch) Ehrenberg	Dwivedi & Misra 2014, Gupta & Das 2012c [10]
527	*Caloneis alpestris* (Grunow) Cleve	Dwivedi & Misra 2014 [4]
528	*Cocconema affine* (Kutzing) West & G.S.West	Dwivedi & Misra 2014 [4]

529	*Navicula andium* Frenguelli	Dwivedi & Misra 2014 [4]
530	*Pinnularia interrupta* W.Smith	Dwivedi & Misra 2014 [4]
531	*Pinnularia interrupta* (Ehrenberg) O.Muller	Dwivedi & Misra 2014 [4]
532	*Surirella robusta* Ehrenberg	Dwivedi & Misra 2014 [4]
533	*Synedra affinis* Kutzing	Gupta 2012b [9]
534	*Actinastrum hantzchii* Lagerheim	Misra *et al.* 2006 [14], Gupta 2012b [9]
	Family: Gomphonemataceae	
535	*Gomphoneis elegans* (Grunow) Cleve	Gupta 2012b [9], Gupta & Das 2012c [10]
536	*Gomphonema acuminatum* Ehrenberg	Arora *et al.* 2012 [1]
537	*Gomphonema angustatum* (Kutzing) Rabenhorst	Suseela & Topoo 2009 [25]
538	*Gomphonema* ghosei Abdul-Majeed	Arora *et al.* 2012 [1]
539	*Gomphonema gracile* Ehrenberg	Dwivedi & Misra 2014 [4]
540	*Gomphonella olivacea* (Hornemann) Rabenhorst **Gomphonema olivaceum* (Kutzing) Grunow	Gupta 2012b [9], Arora *et al.* 2012 [1], Dwivedi & Misra 2014, Dwivedi & Misra 2015 [5]
541	*Gomphonema parvulum* A.Mayer	Dwivedi & Misra 2014 [4]
542	*Gomphoneis clevei* (Fricke) Gil	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13], Dwivedi & Misra 2015 [5]
543	*Gomphonema constrictum (Ehr.)* var. *capitatum (Ehr.) Grunow* f. *turgidum* H.P.Gandhi	Arora *et al.* 2012 [1], Dwivedi & Misra 2015 [5]
544	*Gomphonema coronatum* Ehrenberg **Gomphonema acuminatum* var. *coronatum* (Ehrenberg) Rabenhorst	Dwivedi & Misra 2014, Dwivedi & Misra 2015 [5]
545	*Gomphonema constrictum (Ehr.)* var. *capitatum (Ehr.)* H.P.Gandhi	Dwivedi & Misra 2014, Dwivedi & Misra 2015 [5]
546	*Gomphonema gracile Ehr.* var. *dichotomum* H.P.Gandhi	Dwivedi & Misra 2014, Singh *et al.* 2014 [19], Jindal *et al.* 2014 [12], Dwivedi & Misra 2015 [5]
547	*Gomphonema lacus-rankala* H.P.Gandhi	Dwivedi & Misra 2014 [4], Dwivedi & Misra 2015 [5]
548	*Brebissonia lanceolata* (C.Agardh) R.K.Mahoney & Reimer **Gomphonema lanceolatum* (Grunow) A.Cleve	Dwivedi & Misra 2014, Dwivedi & Misra 2015 [5]
549	*Gomphonema acuminatum* var. *montanum* Schumann **Gomphonema montanum* (J.Schumann) Grunow	Arora *et al.* 2012 [1], Gupta & Das 2012c [10], Dwivedi & Misra 2015 [5]
550	*Gomphonema* constrictum Ehrenberg	Dwivedi & Misra 2014 [4]
551	*Gomphonema sphaeroporum* Ehrenberg	Gupta 2012b [9], Dwivedi & Misra 2015 [5]
552	*Gomphonema subcapitatum* (Grunow) E.Reichardt & Levkov	Dwivedi & Misra 2014 [4]
553	*Gomphonema subtile* Ehrenberg	Misra *et al.* 2006 [14]
554	*Gomphonema tenellum* W.Smith	Misra *et al.* 2006 [14], Dwivedi & Misra 2015 [5]
555	*Gomphonema towutense* Hustedt	Misra *et al.* 2006 [14], Dwivedi & Misra 2015 [5]
556	*Didymosphenia geminate* Skvortzow & K.I.Meyer	Novarino 1991 [17]
557	*Pleurosigma chandolensis* H.P.Gandhi	Arora *et al.* 2012 [1], Gupta & Das 2012c [10]
558	*Gyrosigma scalproides* (Thwaites) Cleve	Srivastava & Gupta 2004 [23]
559	*Navicula viridula* Grunow	Misra *et al.* 2006 [14]
560	*Pinnularia acrosphaeria* var. parva Krammer **Navicula acrosphaeria* A.W.F.Schmidt	Misra *et al.* 2006 [14]
561	*Ulnaria danica* (Kutzing) Compère & Bukhtiyarova **Synedra ulna* (Kutzing) Hustedt	Misra *et al.* 2006 [14]
562	*Gyrosigma kuetzingii* (Grunow) Cleve	Misra *et al.* 2006 [14]
563	*Navicula accomodata* Hustedt	Misra *et al.* 2006 [14], Dwivedi & Misra 2015 [5]
564	*Navicula exigua* W.Gregory, nom. illeg.	Arora *et al.* 2012 [1], Dwivedi & Misra 2015 [5]
565	*Nitzschia palea* Grunow	Arora *et al.* 2012 [1]
566	*Nitzschia acicularis* W.Smith	Arora *et al.* 2012 [1]

567	*Navicula cryptocephala* (Kutzing) Hustedt	Arora *et al.* 2012 [1]
568	*Gomphonema parvulum* A.Mayer	Arora *et al.* 2012 [1], Gupta & Das 2012c [10]
569	*Craticula cuspidata* (Kutzing) D.G.Mann **Navicula cuspidate* Foged	Arora *et al.* 2012 [1]
570	*Cocconeis placentula* Ehrenberg	Arora *et al.* 2012 [1]
571	*Fragilaria capucina* Desmazières	Arora *et al.* 2012 [1]
572	*Gomphonema gracile* Ehrenberg	Arora *et al.* 2012 [1]
	Order:Acanthales **Family:Achnanthaceae**	
573	*Achnanthes crenulata* Grunow	Arora *et al.* 2012 [1]
574	*Achnanthes inflate* (Kutzing) Grunow	Arora *et al.* 2012 [1]
575	*Planothidium* lanceolatum (Brebisson ex Kutzing) Lange-Bertalot **Achnanthes lanceolata* (Brebisson ex Kutzing) Grunow	Arora *et al.* 2012 [1]
576	*Achnanthidium exile* (Kutzing) Heiberg	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13], Gupta & Das 2012c [10]
577	*Planothidium* hauckianum (Grunow) Bukhtiyarova	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
578	*Achnanthidium nodosum* (Cleve) Tseplik & Chudaev **Rossithidium* nodosum (Cleve) Aboal	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
	Order: Bacillariales **Family:Bacillariaceae**	
579	*Fragilariopsis doliolus* (Wallich) Medlin & P.A.Sims	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
580	*Nitzschia acicularis* (Kutzing) W.Smith	Gupta 2012b [9]
581	*Nitzschia frustulum* Hustedt	Misra *et al.* 2006 [14], Gupta 2012b [9]
582	*Nitzschia irresoluta* Hustedt	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
583	*Nitzschia palea* (Kutzing) W.Smith	Gupta 2012b [9], Gupta & Das 2012c [10]
	Order:Rhopalodiales **Family: Rhopalodiaceae**	
584	*Epithemia gibba* (Ehrenberg) Kutzing **Rhopalodia gibba* (Ehrenberg) O.Muller	Suseela & Topoo 2009 [25]
585	*Rhopalodia gibba* var. *ventricosa* (Kutzing) H.Peragallo & M.Peragallo	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
586	*Epithemia sorex* Kutzing	Dwivedi & Misra 2014 [4]
	Order: Rhabdonematales **Family: Cocconeidaceae**	
587	*Cocconeis pediculus* Ehrenberg	Dwivedi & Misra 2014 [4]
588	*Cocconeis placentula* Ehrenberg	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
589	*Cocconeis lineata* Ehrenberg **Cocconeis placentula* var. *lineata* (Ehrenberg) Van Heurck	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
	Order: Naviculales **Family:Amphipleuraceae**	
590	*Halamphora veneta* (Kutzing) Levkov	Dwivedi & Misra 2014 [4]
	Family:Stauroneidaceae	Dwivedi & Misra 2014 [4]
591	*Stauroneis anceps* Ehrenberg	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13], Gupta & Das 2012c [10]
	Order: Surirellales **Family:Surirellaceae**	
592	*Cymatopleura elliptica* (Brebisson) W.Smith	Dwivedi & Misra 2014 [4]
593	*Surirella* librile (Ehrenberg) Ehrenberg **Cymatopleura* solea (Brebisson) W.Smith	Gupta 2012b [9]
594	*Surirella* apiculata W.Smith	Dwivedi & Misra 2014 [4]

595	*Iconella biseriata* (Brebisson) Ruck & Nakov	Misra *et al.* 2006 [14]
596	*Iconella celebesiana* (Hustedt) D.Kapustin & Kulikovskiy	Misra *et al.* 2006 [14]
597	*Surirella ovalis* Brebisson	Misra *et al.* 2006 [14]
598	*Surirella patella* Kutzing	Novarino 1991 [17]
599	*Surirella robusta* Ehrenberg	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
600	*Surirella robusta* Ehrenberg **Surirella saxonica* Auerswald ex Rabenhorst	Misra *et al.* 2006 [14]
	Class: Dinophyceae **Order: Dinophysiales** **Family: Ceratiaceae**	
601	*Ceratium hirundinella* (O.F.Muller) Dujardin	Misra *et al.* 2006 [14], Gupta & Das 2012c [10]
602	*Lepocynclis ovum* (Ehrenberg) Lemmermann **Euglena ovum* Ehrenberg	Misra *et al.* 2006 [14], Gupta & Das 2012c [10]
	Family:Peridiniaceae	
603	*Peridinium inconspicuum* Lemmermann	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
	Class:Euglenophyceae **Order:Euglenida** **Family:Euglenidae**	
604	*Euglena gracilis* G.A.Klebs	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
605	*Euglena proxima* P.A.Dangeard	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
606	*Euglena acus* (O.F.Muller) Ehrenberg	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13], Gupta & Das 2012c [10]
607	*Euglena tuba* H.J.Carter	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13], Gupta & Das 2012c [10]
608	*Phacus pleuronectes* (Ehrenberg) Dujardin	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
609	*Strombomonas verrucosa* (E.Daday) Deflandre	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
610	*Trachelomonas armata* (Ehrenberg) F.Stein	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13], Gupta & Das 2012c [10]
611	*Trachelomonas hispida* (Perty) F.Stein	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13], Gupta & Das 2012c [10]
612	*Phacus caudatus* Hubner	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
613	*Phacus curvicauda* Svirenko	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
614	*Phacus orbicularis* Hubner	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13], Gupta & Das 2012c [10]
615	*Phacus orbicularis* var. *caudate* Skvortsov	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
616	*Phacus pleuronectes* (O.F.Muller) Nitzsch ex Dujardin	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
617	*Phacus polytrophos* Pochmann	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13], Gupta & Das 2012c [10]
618	*Monomorphina pyrum* (Ehrenberg) Mereschkowsky	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
619	*Phacus quinquemarginatus* T.L.Jahn & Shawhan	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
620	*Phacus triqueter* (Ehrenberg) Dujardin	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13], Gupta & Das 2012c [10]
621	*Phacus unguis* Pochmann	Gupta 2012b [9]
622	*Trachelomonas armata* (Ehrenberg) F.Stein	Misra *et al.* 2006 [14], Gupta 2012b [9]
623	*Trachelomonas bulla* F.Stein	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
624	*Trachelomonas dybowski* Drezepolski	Gupta 2012b [9]
625	*Trachelomonas hispida* (Perty) F.Stein	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13], Gupta & Das 2012c [10]
626	*Trachelomonas oblonga* var. *pulcherrima* (Playfair) T.G.Popova **Trachelomonas pulcherrima* Playfair	Suseela & Topoo 2009 [25]

627	*Strombomonas* scabra (Playfair) Tell & Conforti **Trachelomonas scabra* Playfair	Arora *et al.* 2012 [1], Kumar *et al.* 2012 [13]
628	*Trachelomonas subverrucosa* Deflandre	Dwivedi & Misra 2014 [4]
629	*Trachelomonas volvocina* (Ehrenberg) Ehrenberg	Dwivedi & Misra 2014 [4]

*Previously accepted name

1. Arora *et al.* 2012; 2. Bhushan & Kumar 2018; 3. Carter 1926; 4. Dwivedi & Misra 2014; 5. Dwivedi & Misra 2015; 6. Dwivedi *et al.* 2008; 7. Fritch 1907; 8. Gupta 2012a; 9. Gupta 2012b; 10. Gupta & Das 2012; 11. Jindal and Thakur 2013; 12. Jindal *et al.* 2014; 13. Kumar *et al.* 2012; 14. Misra *et al.* 2006; 15. Mongra 2012; 16. Mongra 2014; 17. Novarino 1991; 18. Shukla *et al.* 2008; 19. Singh *et al.* 2014; 20. Singh *et al.* 2014; 21. Singh *et al* 2018: 22. Singh et al 2018: 23. Srivastava & Gupta 2004; 24. Srivastava PN 1967; 25. Suseela & Topoo 2009; 26. Thakur *et al.* 2013; 27. Vashista 1968

The present checklist is helpful in adding 258 algal taxa to the list of 371 previously known taxa of algae from Himachal Pradesh. The large area including extreme varied habitats of the state is still remained unexplored for algal diversity. Thus, there is need to explore every possible habitat which further leads to increase our knowledge in algal diversity and document all the algal species. In future, checklist prepared during this work will play an important role as a base line data for floristic studies from the state.

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