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TAXONOMIC ALGAL DIVERSITY OF FAMILIES NOSTOCACEAE, SCYTONEMATACEAE & RIVULARIACEAE OF DIVISION CYANOPHYTA CLASS CYANOPHYCEAE IN DIMBHE DAM FROM AMBEGAON TEHSIL OF PUNE DISTRICT (MAHARASHTRA-INDIA)

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ABSTRACT:
The Ambegaon tehsil in Pune District situated in between 19°7'0" Northern 73°44'0" Eastern latitude on the northern part of Deccan Plateau and composed of undulating hills. Ambegaon tehsil covers the area from Bhimashankar to Lakhanpur. This tehsil has survived with the blessings of Kulguru Shree Khanderaiya of Bhimashankar. Agriculture is the main occupation of this region. Adivasi Tribes found in large number in this region. All Investigations are done during October 2015 to October 2017 and found 42 species and 04 varieties belonging to 12 genera of 03familes from class Cyanophyceae from division Cyanophyta. Family Nostacaceae includes 05 genera, 17 species and 02 varieties, But Rivulariaceae includes 04 genera, 15species and 01varieties while family Scytonemataceae include only 03 genera, and 11 species; Anabaena, Scytonema & Calothrix are more densely occured while Nodularia, Aulosira, Plectonema and Homoeothrix are observed in less number in Ambegaon tehsil.

Keywords: Pune, Rivulariaceae, Anabaena, Scytonema , Calothrix, Dimbhe-dam, Ambegaon.

INTRODUCTION:

Collections of freshwater algae were done from streams, rivers, ponds, puddles, and impoundments during and after monsoon season from Ambegaon tehsils of Pune District. Algae of different habitats were collected from these localities such as - planktonic, benthic, epiphytic, terrestrial, epiphyllous and from tree-trunk. Quantitative Analysis of phytoplanktons was done of the Dimbhe Dam impoundment

Filamentous algae were collected from mass growths by hand. Sub-aerial algae growing attached to tree barks, on damp walls or other such substrata were collected by scraping with a scalpel and then picked up with the help of a forceps. The present investigation is undertaken with keep in mind that to study the algal population from selected stations of study area.

MATERIALS AND METHODS:

The samples were preserved in a mixture of 50 ml of 95% ethyl alcohol, 5 ml of glacial acetic acid, 10 ml of 40% commercial formalin and 35 ml of water. The specimens are observed under microscope for 10X, 40X, 100X and Photographs were taken with the help digital camera under appropriate magnifications. Identification of specimens was mostly based on the keys given in standard monographs and literatures. The Vaucher specimens have been deposited at Dept. of Botany, Hon. Baladaheb Jadhav College, Ale, Tal. Junnar, Dist. Pune.

Periodical collections of algae from the study area were done from the Dam as well as Rivers, Lake's, Puddles, Pulls etc. from Ambegaon Tehsil. Sampling stations were carried away. The samples were bringing to laboratory for identification; Identification were done with the help of Indian monographs and other standard literature like Desikachari (1959), Randhawa (1959), Venkatraman (1961), Prescott (1951), Bourrlly (1970), Philipose (1967), Gonzalvies (1981), Iyengar and Desikachari (1981), Desikachari*et al* (1990) and Anand (1998). The collected algal forms had been preserved in 4% formalin.

SUMMARY:

Since the dawn of civilization, water has been the most important raw material for civilization. It is one of the vital sources of all kinds of life on the earth. Economically, culturally and biologically water is most useful natural resource on the earth. We use water for drinking, bathing, cooking, cooling, irrigation, transportation, energy power and recreation. Thus, water is nature's gift to the living world including human race. Our biosphere consists of 71 % of water out of which fresh water environment occupied only 2.6 %. For the usable purpose only 0.62 % water from lakes, streams, rivers and other resources are available for the living organisms.

In India most of the cities, towns, villages and industries are situated at the bank of rivers and lakes. Due to uncontrolled population, the huge quantity of untreated sewage is being added everyday in these different water reservoirs.

Besides these, industrial wastes, residues of insecticides, pesticides, excess agricultural fertilizers also added in these fresh water eco-systems causing pollution and creates health hazards. Present study is on the taxonomic data of algal species were collected from Dimbhe Dam, It is located on Ghod River at Dimbhe 11 kms away from Ghodegaon in Ambegaon Tehsil. Water samples were collected periodically from Dimbhe Dam. I have collected 46 algal specimens. These are from Families: 03 - Nostocaceae , Scytonemataceae & Rivulariaceae 01 order of 01 class and 01 division.

CONCLUSION:

- ❖ This research work helps us to know type of algal flora of the study area.
- ❖ The data gathered serves as base line data for planning utilization and conservation strategies of algae.
- ❖ Phytoplankton studies helps us to know primary producers (Qualitatively and quantitatively) of the study area.
- ❖ This research work may help all the phycological students to study the algal vegetation in Ambegaon.

List of Algal Specimen

S. N.	Algal Specimen
Family: Nostocaceae	
Genus – *Cylindrospermum*	
1	*Cylindrospermum muscicola* Kutzing ex Born.et Flah. v. *kashmiriensis* Bharadwaja
2	*Cylindrospermum stagnale* (Kutz.) Born. et Flah.
Genus –*Anabaena*	
3	*Anabaena ambigua* Rao C. B.
4	*Anabaena ballyganglii* Banerji
5	*Anabaena iyengarii* Bharadwaja v. *tenuis* Rao, C. B.
6	*Anabaena khannae*Skuja
7	*Anabaena laxa* (Rabehn.)
8	*Anabaena naviculoides* Fritsch
9	*Anabaena oscillarioides* Bory ex Bron. etFlah.
10	*Anabaena variabilis* Kuetz. ex. Born. et Flah.
Genus – *Nostoc*	
11	*Nostoc calcicola* Brebisson ex Born. et Flah.
12	*Nostoc carnaeum* Ag. ex. Born. etFlah.
13	*Nostoc entophytum* Born. etFlah.
14	*Nostoc humifusum* Carmichael ex Born. et Flah.
15	*Nostoc paludosum* Kutzing ex Born. Et Flah.
16	*Nostocunctiforme* (Kuetz.) Hariot
17	*Nostocpongiae formi* Agardh ex. Born. et Flah.
Genus – *Nodularia*	
18	*Nodularia spumigena* Mertens ex Born. et Flah.
Genus – *Aulosira*	
19	*Aulosira bombayensis* Gozalves
Family: Scytonemataceae	
Genus – *Plectonema*	
20	*Plectonematoma sinianum* (Kutz.) Born. ex. Gomont
Genus –*Scytonema*	
21	*Scytonema chiastum*Geitler
22	*Scytonema cincinnatum*Thuret ex Born.et Flah
23	*Scytonema crustaceum* Ag. ex Born. et Flah.
24	*Scytonema geitleri* Bharadwaja
25	*Scytonema mirabile* (Dillw.) Born
26	*Scytonema pseudohofmanni* Bharadwaja
27	*Scytonema pseudopunctatum*S kuja
28	*Scytonema schmidlei* J. De Toni
Genus– *Tolypothrix*	
29	*Tolypothrix byssoidea* (Berk.) Kirchner
30	*Tolypothrix distorta* Kuetzing ex Born. et Flah.
Family: Rivulariaceae	
Genus – *Calothrix*	
31	*Calothrix atricha*Fremy
32	*Calothrix bharadwajae* De Toni, J.
33	*Calothrix clavata* West, G. S.
34	*Calothrix elenkinii* Kossinskaja
35	*Calothrix epiphytica* W. et G. S. West
36	*Calothrix fusca* (Kutz.) Bornet et Flahault
37	*Calothrix marchica* Lemmermann
38	*Calothrix thermalis* (Schwabe) Hansg.
Genus – *Rivularia*	
39	*Rivularia beccariana* (De Not.) Born.et Flah.
40	*Rivularia manginii* Fremy
Genus – *Gloeotrichia*	
41	*Gloeotrichia indica* Schmidle
42	*Gleotrichia intermedia* (Lemm.) Geitler
43	*Gloeotrichia intermedia* (Lemm.) Geitler v. *kanwaensis* Rao, C. B
44	*Gloeotrichia kurziana* Zeller orth. Mut.
45	*Gloeotrichia raciborskii* Woloszynska v. *conica* Dixit.
Genus – *Homoeothrix*	
46	*Homoeothrix hansgirgi* (Schmidle) Lemmermann

REFERENCES:

Anand, N.; Handbook of Blue-Green Algae (of Rice Fields of South India)'; Publ. Bishen Singh Mahendra Pal Singh, Dehradun:1989

Anand, N.; Handbook of Blue-Green Algae'; Publ. Bishen Singh Mahendra Pal Singh, Dehradun:1-79:1990

Auti, B. K. and S. D. Pingle; 'The Myxophyceae of the Arable Lands from Ahmednagar District (M.S.)'; Advances in Plant Sciences 20(II):387–389:2007

Deshmukh, B. S. and S. D. Pingle; 'Freshwater blue-green algae from Pravara river, Maharashtra, India'; Ecol. Envi.and Cons. 12(1):93-95:2006

Desikachary, T. V.; 'Cyanophyta'; Indian Council of Agricultural Research, New Delhi: 1-686:1959

Nandan S. N., D. S. Jain, M. R. Kumavat and N. **H. Aher;** 'Biodiversity of Blue Algae in Sonvad Dam and Devbhane Dam of Dhule District of Maharashtra'; Biology and Biodiversity of Microalgae, Centre of Advanced Studies in Botany, Chennai, Madras:2009

Pingle S. D.; 'Chlorophycean and Cyanophycean algae of Pune and Ahmednagar districts (M.S.)'; Proc. Nat. symp. Recent trends in algal Biodiversity:2007

Ramkrishnan, N. and L. Kannan; Blue-green algal flora of Muthupet, Tamilnadu'; *Phykos*31(1-2):169-171:1992

Rao, C. B. 1940. The Myxophyceae of the Delhi Province, India - I. Proc. Ind. Acad. Sci.,11(1): 125-131:1940

Shailendra Kumar Singh, Jitendra Mohan, Hemant Kumar & Narendra Mohan; 'Diversity of Blue Green Algae in Kushmanda Devi Temple Tank (Kachcha) in Ghatanpur, Kanpur, U.P.'; Nat. Symp. Recent Trends in Algal Biodiversity; 40–43:2007

Shridevi G. Bandgar and P. B. Papadiwal; 'Some Filamentous Cyanophycean Algae from

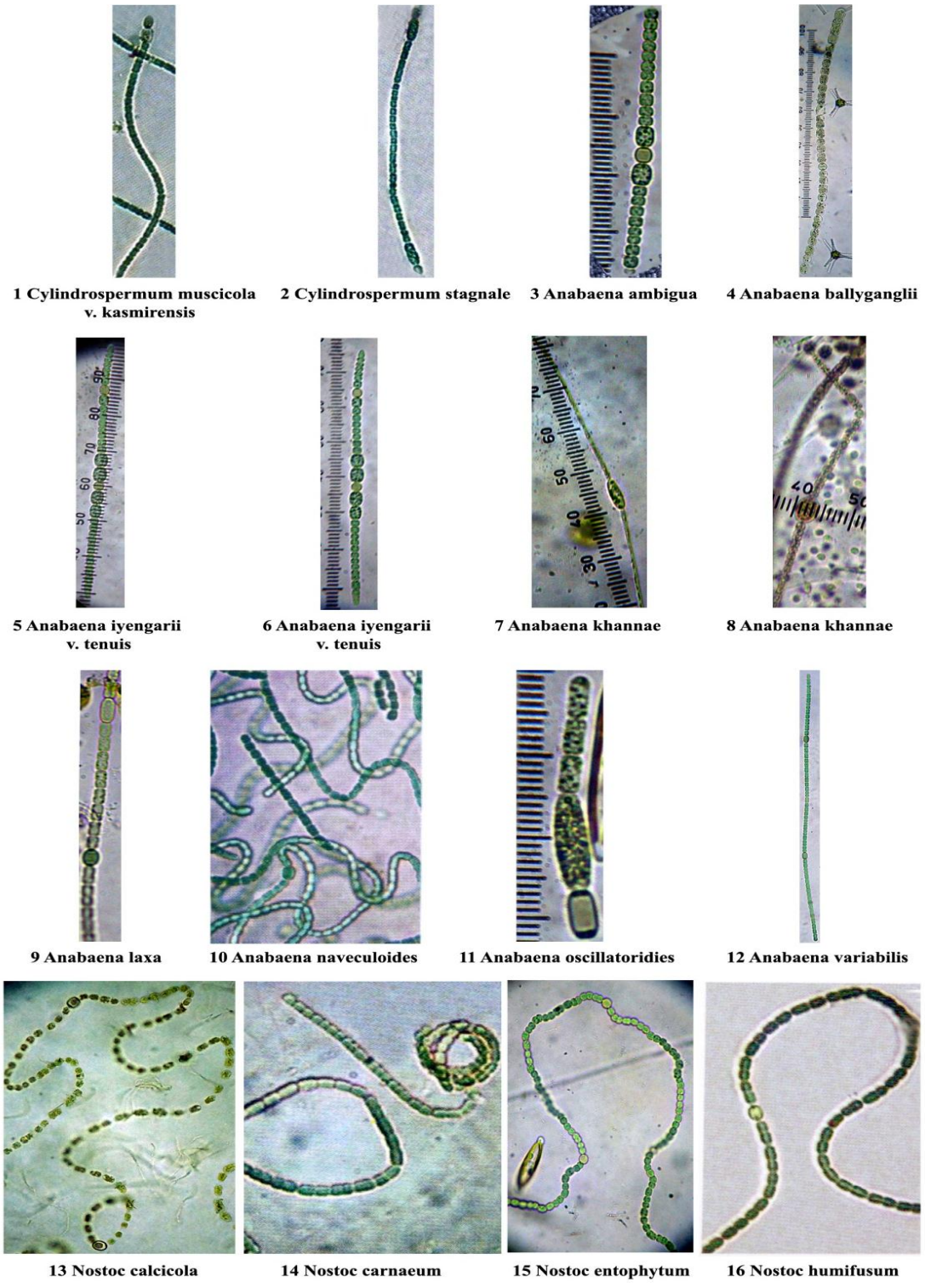
Water Reservior, Paithan, Mahashtra'; JSI Vol. 3(1) Aug. 2012

Singh, K. P.; 'The Myxophyceae of the Kumaon hills, U. P. India-I'; Proc. Ind. Acad. Sci.49 (3):161-166:1959b

Singh, K. P. & U. K. Chaturvedi; 'Myxophyceae of the Rohilkh and Division, U. P., India–II'; *Phykos* 9 (2): 36–40:1970

Singh, R. N.; 'Role of blue-green algae in nitrogen economy of Indian agriculture'; I.C.A.R., New Delhi:1-175:1961

Tiwari, G. L.; 'A study of the blue-green algae from paddy field soils of India'; Hydrobiologia39(3):335–350:1972



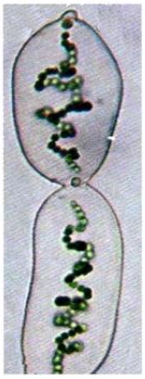
1 Cylindrospermum muscicola v. kasmirensis | 2 Cylindrospermum stagnale | 3 Anabaena ambigua | 4 Anabaena ballyganglii

5 Anabaena iyengarii v. tenuis | 6 Anabaena iyengarii v. tenuis | 7 Anabaena khannae | 8 Anabaena khannae

9 Anabaena laxa | 10 Anabaena naveculoides | 11 Anabaena oscillatoridies | 12 Anabaena variabilis

13 Nostoc calcicola | 14 Nostoc carnaeum | 15 Nostoc entophytum | 16 Nostoc humifusum

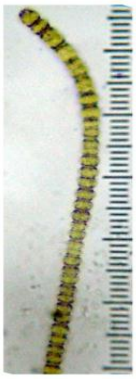
PLATE-1



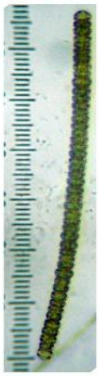
1 Nostoc paludosum

2 Nostoc punctiforme

3 Nostoc spongiaeforme

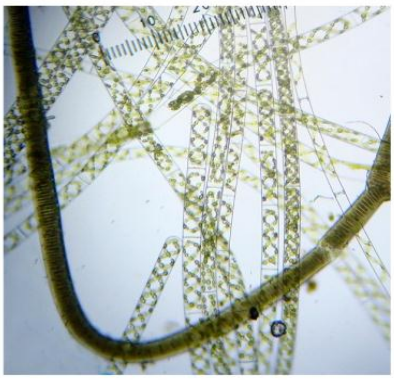


4 Nodularia spumigena



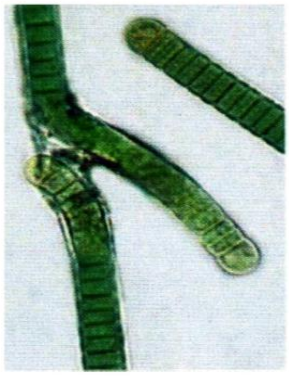
5 Nodularia spumigena

6 Aulosira bombayensis



7 Plectonema tonasinianum

8 Plectonema tonasinianum

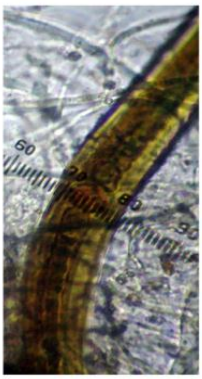


9 Scytonema chiastum

10 Scytonema cincinnatum

11 Scytonema crustaceum

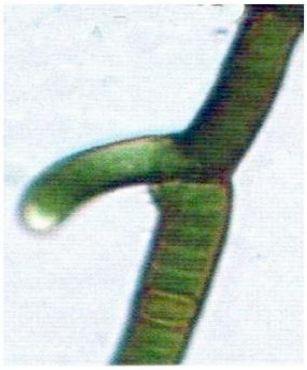
12 Scytonema geitleri



13 Scytonema geitleri

14 Scytonema mirabile

PLATE-2



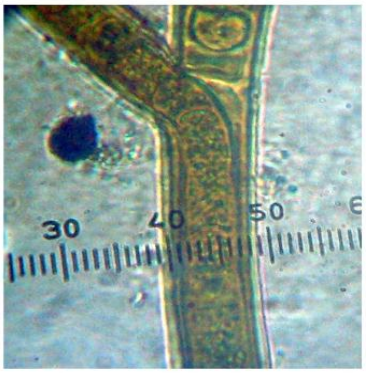
1 Scytonema psedohofmanni

2 Scytonema pseudopunctatum

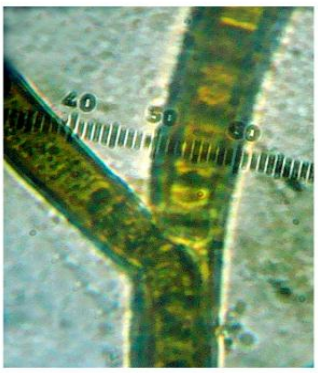
3 Scytonema pseudopunctatum

4 Scytonema schimiditii

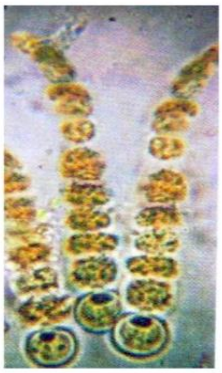
5 Tolypothrix byssoidea



6 Tolypothrix distorta



7 Tolypothrix distorta

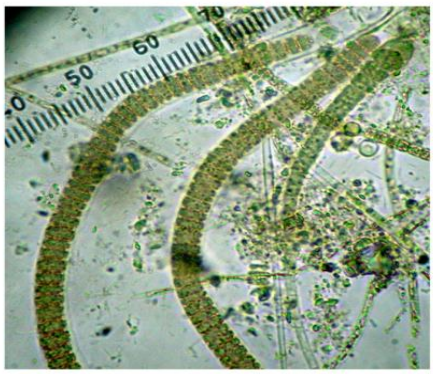


8 Calothrix atricha

9 Calothrix bharadwajae

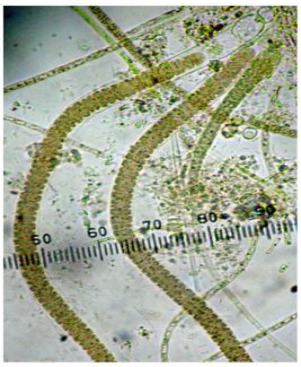
10 Calothrix bharadwajae

11 Calothrix calvata



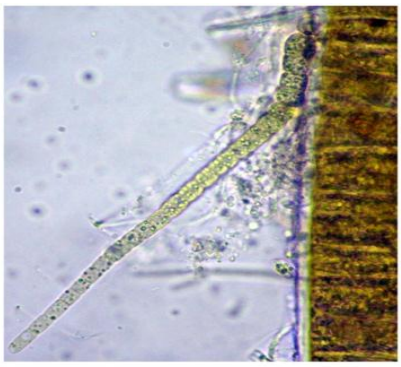
12 Calothrix elenkinii

PLATE-3



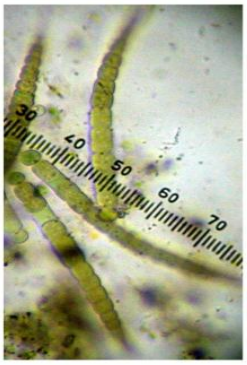
1 Calothrix elenkinii

2 Calothrix epiphytica

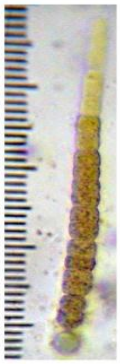


3 Calothrix epiphytica

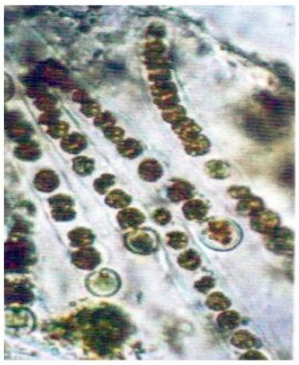
4 Calothrix fusca



5 Calothrix fusca

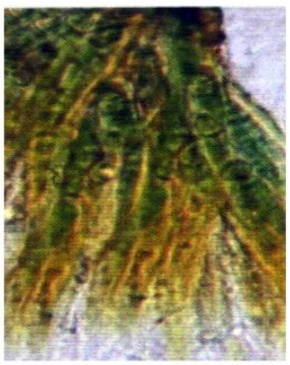


6 Calothrix fusca

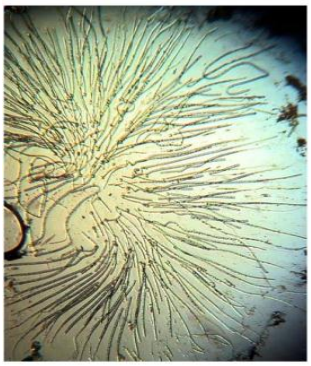


7 Calothrix marchica

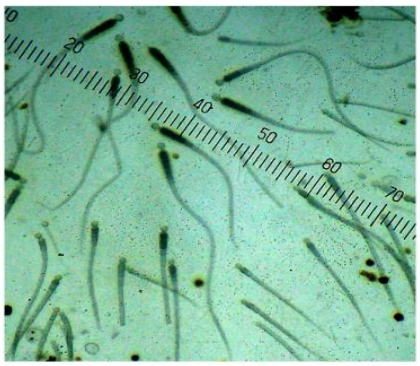
8 Calothrix thermalis



9 Rivularia beccariana



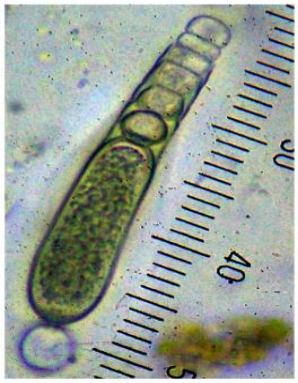
10 Rivularia manginii



11 Gloeotrichia indica

12 Gloeotrichia indica

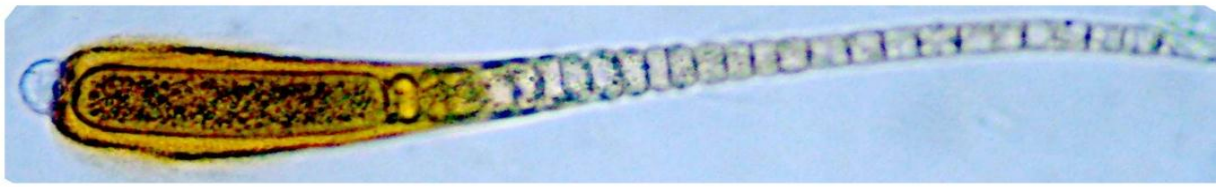
PLATE-4



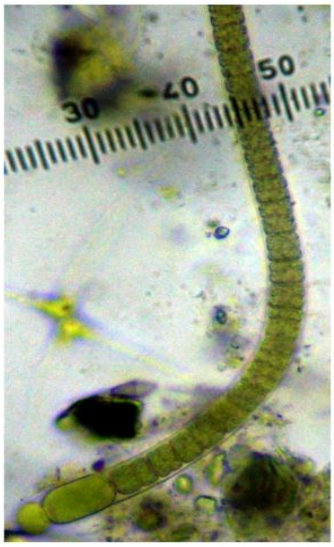
1 Calothrix elenkinii

2 Calothrix epiphytica

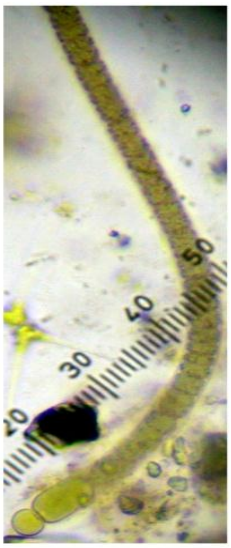
3 Calothrix epiphytica



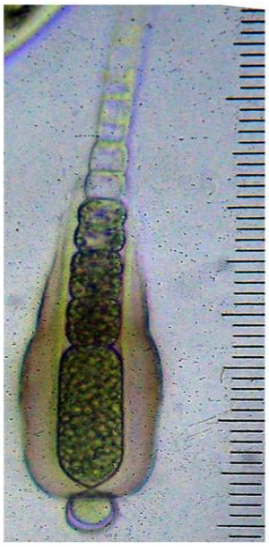
4 Gloeotrichia intermedia v. kanwaensis



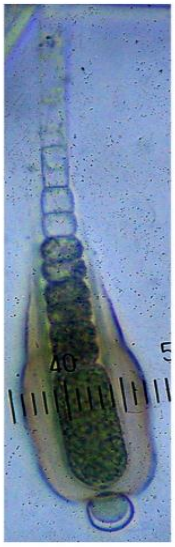
5 Gloeotrichia kurziana



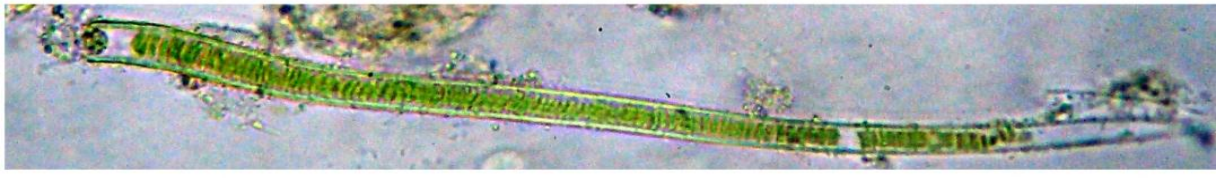
6 Gloeotrichia kurziana



7 Gloeotrichia raciborskii v. conica



8 Gloeotrichia raciborskii v. conica



9 Homoeothrix hansgirgi

PLATE-5