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PRELIMINARY STUDY ON EPIPHYTIC MICROALGAE ON AQUATIC PLANTS AT SOHAG DISTRICT.

Zeinab A. Ahmed

Botany Department, Faculty of Science, Sohag University.

Abstract

This Study investigates epiphytic algal flora on aquatic plants collected from different sites in the River Nile and irrigation canals at Sohag district, Egypt during June 2007. At the same time, the physico – chemical properties of water samples were determined. A total of 105 species related to forty eight genera of micro-algae were identified as epiphytic communities on different aquatic plant (*Eichhornia crassipes, ceratophyllum demersum, Myriophyllum spicatum, phragmites australis*). Of which sixty one species related to twenty five genera belonging to Bacillariophyta, thirty species of twelve genera belonging to Chlorophyta. Ten species related to eight genera belonging to Cyanophyta, one species belonging to Xanthophyta and three species of three genera belonging to Euglenophyta.

Key words: Epiphytes-Microalgae-Aquatic plants.

Introduction

Epiphytic micro-algae are important common constituents of the autotrophic community of a macrophyte-oriented aquatic ecosystem. Epiphyton are primary producers that fix carbon and uptake essential nutrients from the water column, thereby making these nutrients accessible at higher trophic levels. These autotrophs are often overlooked due to their minute size; however, recent work has demonstrated their importance in terms of productivity (**Burkholder and Wetzel**, **1990**), biomass (**Zimba**, **1995**) and as a food source for higher trophic levels (**Kitting *et al***., **1984**; **Sullivan and Moncreiff**, **1990**). Efficient removal of epiphyton from host tissues must be accomplished to assess the importance of macrophytes and epiphytes in ecological studies (**Wetzel**, **1983**; **Sand-Jensen *et al***., **1989**; **Goldsboroy and Hickman**, **1991**). Epiphytic communities on *Thalassia testudinum* from Grand Cayman, British West Indies: Their composition, structure, and contribution to lagoonal sediment have been studied

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by **Corlett and Jones** (**2007**). **El-Shahed and Fathy** (**2000**) studied the diatom assemblages associating *Cladophora glomerata* Kutz in Egyptian fluvial environment. **Burkholder *et al*.** (**1990**) and **Cattaneo and Kalff** (**1978**) identified two distinct components of the epiphytic flora: the loosely attached and tightly attached or admate component, these two components exhibit different physiological activities.

Preliminary investigations were carried out on the epiphytic algae, revealed list of the species and frequency of some dominant taxa in Turkish fresh waters (**Yildiz**, **1987**; **Şen and Aksakal**, **1988**; **Obali *et al*.**, **1989**; **Dere *et al*.**, **2002**; **Saunders *et al*.**, **2003**).

The present paper presents the characteristics of epiphytic micro algae accompanying aquatic plants in the river Nile, the drainage canal and waste water canal.

Methods and Materials

Sampling locations:

Aquatic plants were collected during June 2007 from four sites.

Site I: represents industrial pollution site. It is located at the main stream of the River Nile east bank (Fig. 1) near the outlet of Pepsi Cola factory. (N: 26° 33' 29"; E: 31° 42' 33", depth is 1-2m approximately).

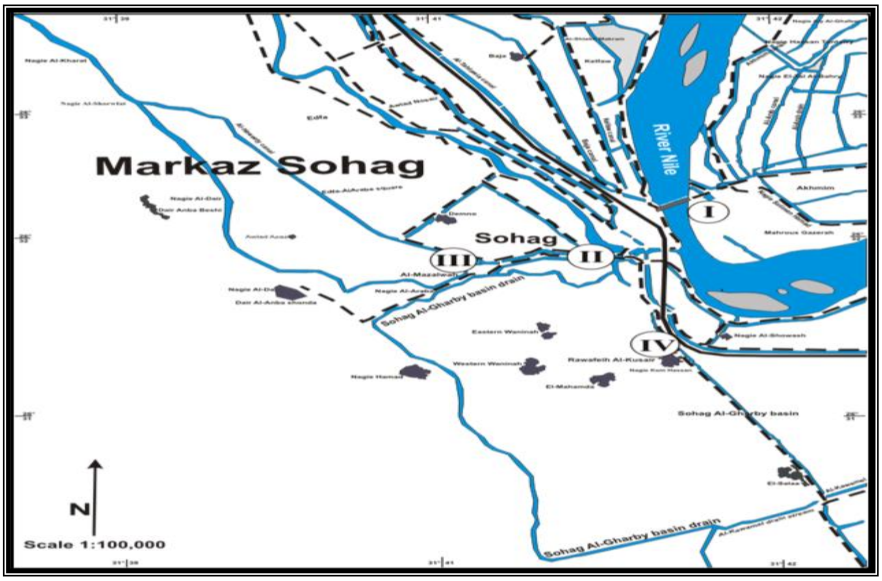


Figure (1): Map of the study area.

Site II: represents agricultural waste water drainage site, (Fig. 1) located at Sohag Al-Gharby drainage canal (N: 26° 32' 18"; E: 31° 41' 79", depth is 1- 1.5m approximately).

Site III: was located opposite to the major outfall of domestic wastewater station of Al-Mazalwah village, (Fig. 1), (N: 26° 31' 65"; E: 31° 39' 41"; depth is 0.5-1m approximately).

Site IV: represents a mixture of domestic and agricultural wastewater site (Fig. 1). It is located near Rawafeih Al-Kusair village (N 26° 31' 16"; E 31° 42' 39"; depth is 0.5-1.25m approximately). *Echhornia crassippes* were collected from site (I, II, IV); *Ceratophyllum demersum* were collected from site (I and III). *Myriophyllum spicatum* from site (I) and *Phragmites* from site (III).

Sampling processing:

Algal identification and photography.

Macrophytic plants were harvested by carefully removing individuals from substrate and putted in plastic bags in a darkened cooler. Processing of plant samples never exceeded 4 hrs from collection time. In the laboratory a definite weights of *Eichhornia*, *Ceratophyllum*, *Myriophyllum* and *Phragmites* were placed in plastic bottles. Deionized water (100 ml) was used to rinse each plant, and then the bottle was capped and manually shaken for 10 second. Host plant materials was removed from the epiphytic slurry and placed in second bottles. Deionized water (100 ml) was again added and the bottle shaken for an additional 10 seconds. Host plant was removed and the first and the second epiphyte slurry were collected. Lugl′s iodine solution was added for preservation and then the volume (200 ml) was concentrated to (20 ml) for taxonomic enumeration. For taxonomic identification, microscope Olympus Model BX51+R F, with digital camera Olympus D P12-2 was used.

Identification of the algal species was carried out according to **Bourrelly** (**1968**, **1970**; **Prescott** (**1978**) and **Cox** (**1996**).

Physical parameters:

Temperature and pH were measured in situ using thermometer and pH meter (HANNA model 211).

Chemical analysis:

Different methods of chemical analysis were performed for water samples. Dissolved oxygen using oxygen meter (GLX. PASCO. PS-2002); conductivity using conductivity meter (MARTINI. Mi 170 Bench Meter) ; total organic matter, total soluble salt, chloride according to (**American Public Health Association**, **1981**), Bicarbonate according to (**Jackson**, **1977**), soluble phosphorus according to (**Woods and Mellon**, **1941**), nitrite described by (**Strickland and Parasons**, **1965**), nitrate according to (**Deutsche Einheitsverfahren Zur Wasser-Abwasser and Schlammuntersuchung**, **1960**) and ammonia described by (**Dewis and Freitas**, **1970**) were measured. Cations like Ca^{+2} and Mg^{+2} according to (**Schwarzenback**, **1948**) were also measured.

Results and Discussion

At the sampling stations during June, 2007, the average physical and chemical parameters were measured: water temperature (range 27-29 °C), pH (range 7.7-8.4), conductivity (range 520-900), and the highest value were found in site IV and site III. Dissolved oxygen (range 6-12.3), the highest values were in site IV and site I.

The values of total soluble salts, (range170-450 ppm) the highest values were in site III, IV, the highest values of total organic matters; nitrate, nitrite and the soluble phosphorus were found in site III, IV. In addition, the highest value of Ca^{+2} and Mg^{+2} were found in site I, IV (Table 1).

Table (1): physical and chemical analysis of water samples from 4 sites.

Physical and chemical analysis	Water sites			
	Site (I)	Site (II)	Site (III)	Site (IV)
Water temperature	27 °C	27 °C	29 °C	27 °C
pH value	7 .65	8.20	7.9	8.38
Dissolved Oxygen (mg/L)	12.30	8.00	6.00	10.80
Conductivity) µ mohs cm^{-1}	520	340	900	885
Total soluble salts (mg/L)	259	170	450	442
% Na Cl	1.0	0.7	1.8	1.7
Total organic matters (mg/L)	0.501	0.931	0.960	1.000
Cl^{-} (mg/L)	0.006	0.0035	0.014	0.007
HCO_3 (mg/L)	0.61	0.61	0.61	0.915
$N0_3^{-}$ (µ g/L)	47.6 0	38.36	49.84	75.60
$N0_2^{-}$ (mg/L)	0.12	0.12	0.24	1.08
Soluble phosphorus ($P0_4^{--}$) (µg/L)	6.59	1.24	12.90	8.33
Ca^{++} (mg/L)	30.00	14.00	19.00	26.00
Mg^{++} (mg/L)	42.00	19.20	40.20	44.40

Micro-algae identified in the epiphytic slurry included a total of 105 species related to 48 genera as epiphytic communities on different aquatic plants (*Eichhornia crassipes*, *Ceratophyllum demersum*, *Myriophyllum spicatum*, *Phragmites australis*) Plate (1). The major taxonomic groups during the summer month (June, 2007) are shown in Table (2).

Plate (1)

Figures (1 and 2): Photographs of *Spirulina* and diatom *on Echhornia crassipes* leaves.
Figures (3, 4 and 5): *Protoderma viride*.
Figure (6): *Cocconies placentula* on *Myrophyllum spicatum* stem.
Figures (7 and 8): Epiphytes on *Ceratophyllum demersum* stem.

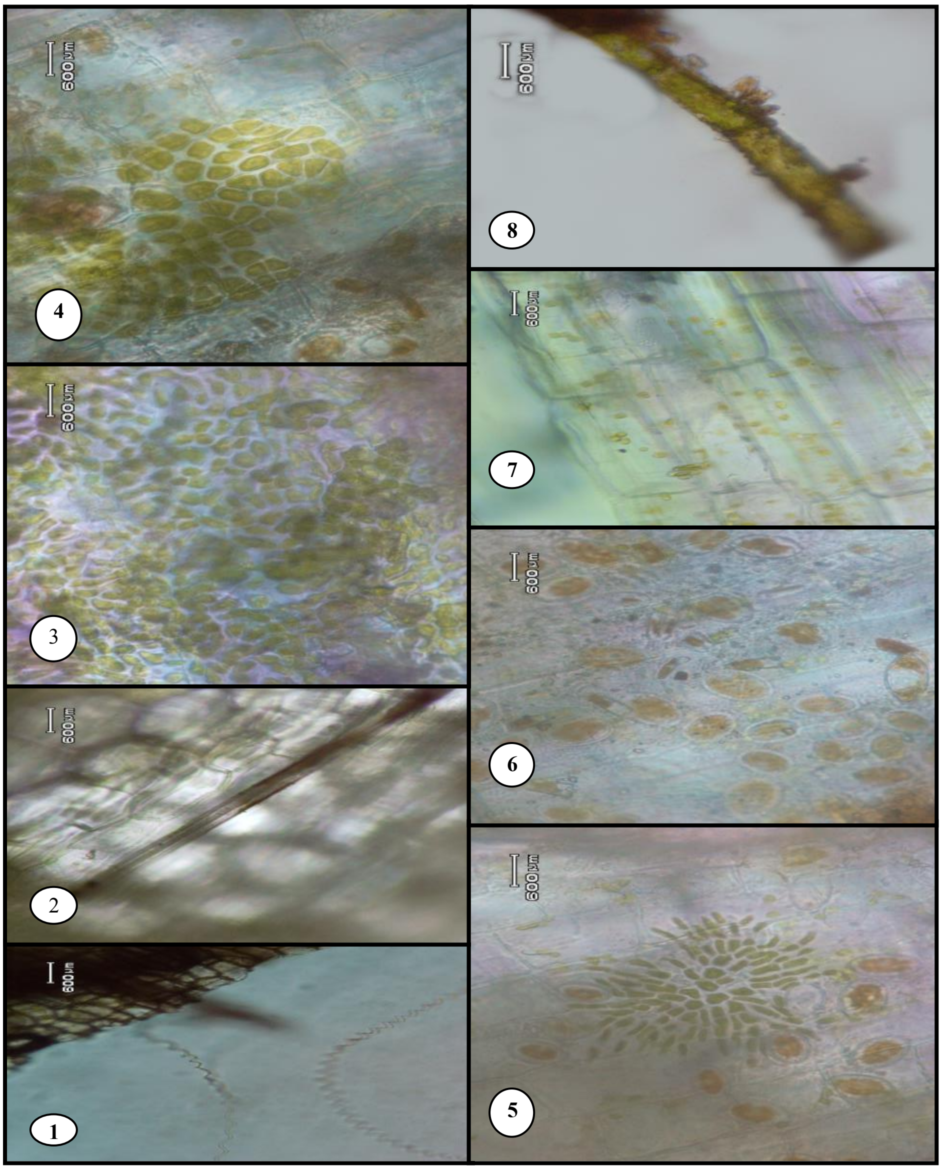


Table (2): Occurrence of algal taxa in the studied sites.

Algal species	Site I				Site II	Site III	Site IV
	Eichhornia criassipes	*Myriophyllum spicatum*	*Ceratophyllum demersum*	*Phragmites australis*	*Eichhornia crassipes*	*Ceratophylum demersum*	*Eichhornia crassipes*
Chlorophyta							
1- *Chlamydocapsa planctonica* fott	-	-	-	-	-	+	-
2- *Closterium parvulum*	-	-	-	-	-	+	-
3- *Crucigenia rectangularis* (A. Braun*)*	-	-	-	+	-	+	-
4- *Cosmarium granatum* Brebisson.	-	+	+	+	-	+	-
5- *Coelastrum cambricum Archer var. intermedium* Bohlin	-	-	+	+	-	+	-
6- *Coelastrum microporum Naegli.*	-	+	-	+	-	+	-
7- *Coelastrum cambricum Archer.*	-	+	-	+	-	+	-
8- *Coelastrum reticulatum (Dang.)* senn.	-	-	-	-	-	+	-
9- *Pediastrum biradiatum var. emarginatum* Prescott.	-	-	-	-	-	+	-
10- *Pediastrum tetras* Ralf.	-	+	+	+	-	+	-
11- *Pediastrum sculptatum* G. M. Smith.	-	-	-	-	-	+	-
12- *Pediastrum simplex* Meyen.	-	-	-	+	-	+	-
13- *Pediastrum boryanum* Meneghini.	-	-	+	-	-	+	-
14- *Coleochaete orbicularis* Pringsheim.	-	-	+	-	-	-	-
15- *Scenedesmus bijuga (*Turp.) Largerheim*.*	-	+	+	+	-	+	-
16- *Acutodesmus acuminatus.*	-	+	+	-	-	+	-
17- *Scenedesmus opoliensi* P. Richer.	-	+	-	-	-	+	-
18- *Scenedesmus armatus chodat var. Bicaudatus* (Chodat).	-	-	-	-	-	+	-
19- *Scenedesmus arcuatus* Lemmermann	-	-	+	-	-	-	-
20- *Scenedesmus quadricauda* (Turp.).	-	+	+	+	-	+	-
21- *Scenedesmus denticulatus (*Lagerheim.)	-	-	-	-	-	+	-
22- *Spirogyra subsalsa*	-	-	+	-	-	+	-
23- *Ulothrix zonata*	-	-	-	-	-	+	-
24- *Oedogonium spirostriatum* Tiffany.	-	-	+	-	-	+	-
25- *O. pyriforme* Wittrock	-	-	+	-	-	+	-
26- *O. pringsheimii* Cramer	-	-	+	-	-	+	-
27- *Oedogonium inclusum* Hirn.	-	-	+	-	-	+	-
28- *Oedogonium.boheanicum* (Hirn).	-	-	+	-	-	+	-
29- *Oedogonium pisanum* Wittrock.	-	-	+	-	-	+	-
Cyanophyta							
30- *Aphanizomenon.flosaqua.*Ralf	-	-	-	-	-	+	-
31- *Anabaena aequalis Borge.*	-	-	-	-	-	+	-
32- *Calothrix stigmalis.*	-	-	+	-	-	-	-
33- *Lyngbya limnetica.*	-	-	+	-	-	+	-
34- *Nostoc.sp.*	-	-	-	-	-	+	-
35- *Nodularia spumigena* Mertens. -	-	-	+	-	-	-	-
36- *Oscillatoria brevis var. neapolitiana.*	-	-	+	-	-	+	-
37- *O. articulata* Gardner.	-	-	+	-	-	-	-
38- *O. sp*	-	-	+	-	-	+	-

39- *Spirolina laxissima.*	+	-	+	-	-	-	-
Bacillariophyta							
40- *Amphora Montana* krasske	-	-	+	-	-	+	-
41- *Amphora ovalis* Kutz	+	+	+	+	-	+	-
42- *Amphora commutata* Grunow	-	-	-	+	-	+	-
43- *Amphora veneta* kutz	-	-	+	+	-	+	-
44- *Cocconies placentula* Her.	+	+	+	+	+	+	+
45- *Cyclotella meneghiniana* Kutz	+	+	+	+	+	+	+
46- *Cyclotella comta* .Ehr.	-	+	+	-	-	+	-
47- *Cyclotella kutzingiana* Thwattes.	-	+	+	+	-	+	+
48- *Cyclotella striata* kutz.	-	+	+	-	-	+	-
49- *Cyclotella operoulata* Kutz.	-	+	+	+	-	+	+
50- *Stephanodicus hantzschii* Kutz.	-	-	+	-	-	+	-
51- *Diplonies finnica* (Ehr.) kirchener.	-	-	+	-	-	+	-
52- *Cymbella affinis* Kutz .	-	+	-	+	-	+	-
53- *Encyonema caespitosa* (kutz).	-	+	+	+	-	+	-
54- *Cymbella cistula* (Ehren)Kichner.	-	+	-	+	-	+	-
55- *Cymbella tumida* (Brebison.) van Heurch.	-	+	-	-	-	+	-
56- *Cymbella proxima* Remier.	-	-	-	-	-	+	-
57- *Gomphonema gracile* Ehrenberg.	-	-	+	-	-	+	-
58- *Gomphonema augur* Ehren. *var turis* Ehren.	-	-	-	-	-	+	-
59- *Gomphonema augur* Ehren. *var. sphaerophorum.*	-	-	-	+	-	+	-
60- *Gomphonema augur* Ehren. *var. augur*	-	-	+	+	-	+	-
61- *Gomphonema olivaceum (*Hornemann.) *var. olivaceum.*	-	+	+	+	-	+	-
62- *Melosira granulate*.Ralfs.	+	+	+	+	+	+	+
63- *Fragillaria .construnes* Grunow *var.venter* Grunow.	-	-	+	-	-	+	-
64- *F. producta var. acuta*.(E.e.p.) A.Ca	-	-	-	-	-	+	-
65- *F. capucina* (Desmazieres).	+	+	+	+	+	+	+
66- *F. crotunensis var.oregona.*	-	-	+	+	-	+	-
67- *Nitzschia frustuluns var perpusila* (rabh.).	-	-	+	-	-	+	-
68- *N. amphiboides* Hust.	-	-	-	-	-	+	-
69- *N .elegans.*	-	-	+	-	-	+	-
70- *N. fonticola var. genuina* A.Cl.	-	-	-	-	-	+	-
71- *N. sigmoidea.*	-	+	+	+	+	+	-
72-*N. amphibia var.acutiuscula* Grun.	-	-	-	-	-	+	-
73-N. *palae.*	-	-	-	-	-	+	-
74-*Navicula capitatoradiosa* Gernain.	-	-	+	-	-	+	-
75- N .viridula*.Kutz.Ehren.*var.viridul	-	-	+	-	-	+	-
76- *N .menisculus* Schumnn.	-	-	-	-	-	+	-
77- *N. exigua* .Husdt.	-	-	-	-	-	+	-
78- *N.gastrum* (Ehren.) Kutz.*var.gastrum.*	-	-	-	-	-	+	-
79- *N. peregrine* (Ehrin.) Kutz.	-	-	-	-	-	+	-
80- *N. sp*	-	-	-	-	-	+	-
81- *Achnanthes minutissima* Kutz.Grun.	-	-	+	-	-	+	-
82-*Plerusigma angulatum* (Quekett) W.Smith	-	-	-	-	-	+	-
83- *Pinnularia brandelii* Cleve.	-	-	-	-	-	+	-
***84-P. acrosphaeria* Rabenhorst.**	-	-	+	-	-	+	-
85- *P. nobilis* (Ehren.)	-	-	+	-	-	+	-
86 - *P. macilenta var. opulanta* A.Ca.	-	-	-	-	-	+	-
87- *Calonies silicula* (Ehren) Cleve.	-	-	+	-	-	+	-
89 - *Synedra ulna* Ehr.	+	+	+	+	+	+	+
90- *S.acus* (kutz.) Hust.	+	+	+	+	+	+	+
91 - *S. acus.var.angustissima* Grunow.	+	-	-	-	-	-	-
92- *S.crystallina* (lyng.)Kutz.	-	-	-	+	-	+	-

93- *Surirella gessneri*	-	-	-	-	-	+	-
94- *Stauronies anceps* Ehren.	-	+	+	+	-	+	-
95- *Tabbellaria venticosa*	-	-	-	-	-	+	-
96- *Bacillaria paradoxa* Gmelin	+	-	+	-	-	-	+
97- *G.truncatum* Ehren	-	+	+	+	-	+	-
98-*Gomphonema acuminatum*.Ehr.	-	-	+	+	-	+	-
99- *Melosira granulata* Ralf *var. angustissima*	+	-	+	-	+	+	-
100- *Synedra Capitata* Ehr.	+	+	+	+	+	+	+
101- *Calonies amphisbaena var. genuina*. A. Ct.	-	+	-	-	-	-	-
Xanthophyta							
102-*Tribonema bombycinum* (Ag.)Derbes and Solier.	-	-	+	+	-	+	-
Euglenophyta							
103-*Phacus sp.*	-	-	-	-	-	+	-
104-*Trachelomonas sp.*	-	-	-	-	-	+	-
105- *Euglena sp.*	-	-	-	-	-	+	-
Number of taxa/ site	**12**	**29**	**60**	**34**	**9**	**96**	**9**

Diatoms were the dominant group with 61 taxa related to 20 genera in the epiphytic community (Plates 2-5). Chlorophyta and Cyanophyta were the other main groups in the epiphytic flora 29 species of 9 genera belonging to Chlorophyta (Plate 6). Whereas, 10 species of 8 genera belonging to Cyanophyta (plate 7). Euglenophytes and Chrysophytes were the small group, 3 species of 3 genera belonging to Euglenophyta and one species belonging to Xanthophyta. This is in accordance with (**Dere *et al*.**, **2002**; **Albay and Aykulu**, **2002**).

It was observed that loosely attached species of diatoms (primarily *Cocconies placentula*, *Cyclotela meneghniana*, *Fragillaria capucina*, *Melosira granulata* and *Synedra ulna*) were widespread in the flora of epiphytic diatoms found on all types of examined aquatic plants in all habitats. It has been recorded that high amount of filamentous and Chlorococcales Chlorophytes (*Oedogonium* spp., *Spirogyra* spp., *Ulothrix* sp., *Scenedesmus* spp., *Pediastrum* spp. and *Coelastrum spp*.) were found on *Ceratophyllum demersum* in site (I and III) and at site I M*yriophyllum spicatum* and *phragmites* have the same species except the filamentous types. This is in accordance with **Albay and Aykulu** (**2002**). Similar results were found by **Muller** (**1996**) who recorded high numbers of filamentous chlorophytes (*Oedogonium* spp., *Spirogyra* spp. and *Mougeotia* spp.) in shallow German lake. Cyanophyta represented by (*Aphanizomenon flosaqua, Calothrix stagmalis*, *Nostoc* sp., *Anabaena aequalis*, *Lyngbya limnetica*, *Nodularia spumigena*, *Oscillatoria articulate* and *Oscillatoria brevis*) were found on *Ceratophyllum* at site (I and III). Euglenophyta (*Euglena* sp., *Phacus* sp. and *Trachelomonas* sp.), in addition to Xanthophyta (*Tribonema bombycinum*) were found on *Ceratophyllum demersum* in site (III) (Table 2) where received nutriet rich water from sewage waters (Table1). At site (I and III) diatoms species (*Gomphonema gracile*, *Gomphonema olivacium*, *Gomphonema augur*, *Gomphonema truncatum*, *Diplonies finnica***,** *Cymbella affinis*, *Cyclotella striata*, *Navicula viridula* , *Nitzschia sigmoidea*, *Nitzschia amphibia*, *Pinnularia nobilis*

Plate (2): Bacillariophyta (I)

Figures: 1-*Amphora Montana*; 2-*Amphora sp.*; 3-*A. commutate*; 4-*A. veneta*; 5,6- *Cocconies placentula*; 7- *Cyclotella meneghiniana*; 8-*C .comta*; 9-*C. kutzingiana*; 10- *C. striata*; 11- *C. operoulata*; 12-*Stephanodicus hantzschianus*; 13,14-*Diplonies finnica*; 15-*Cymbella affinis*; 16-*Encyonema caespitosum*.

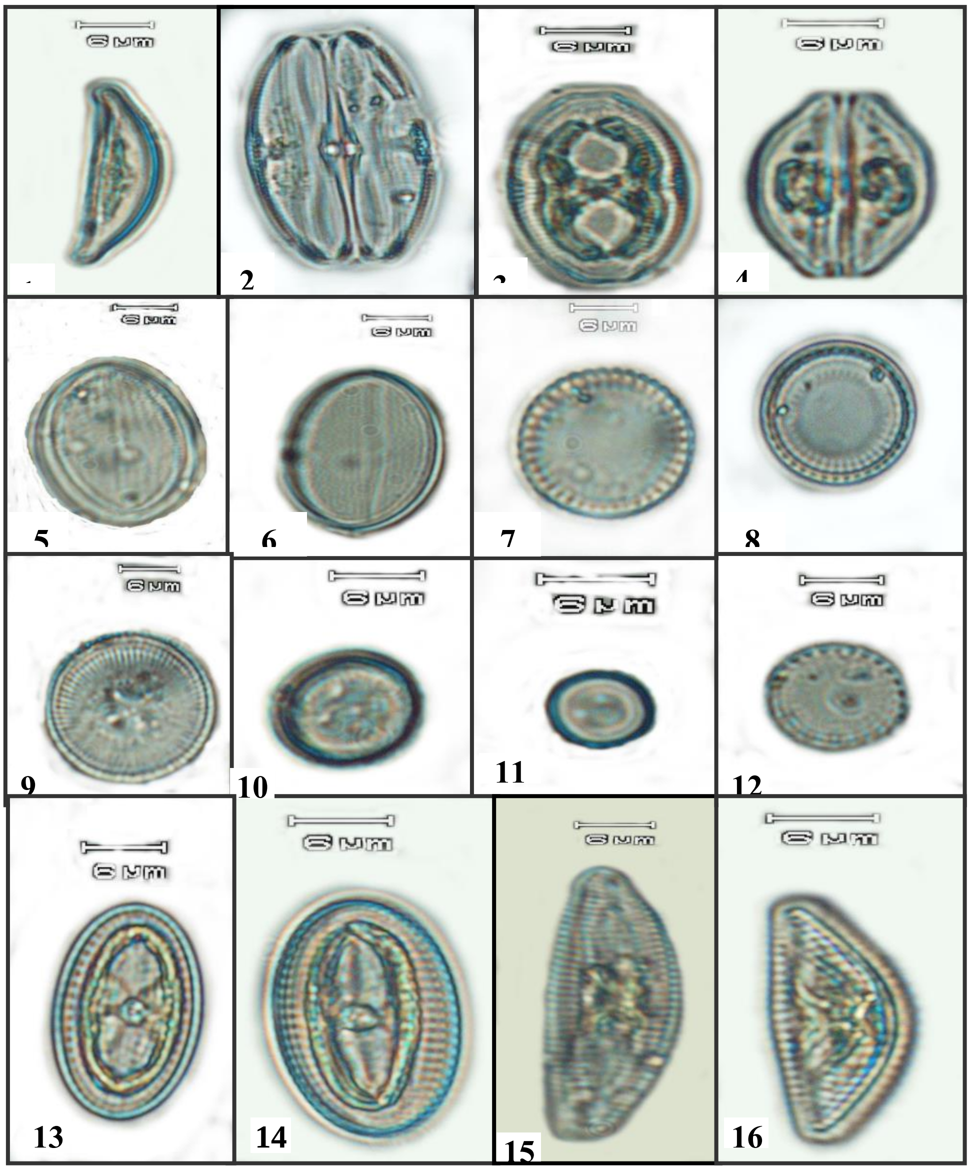


Plate (3): Bacillariophyta (II)

Figures:17,18,19,20-*Cymbella cistula*; 21-*C. tumida*; 22-*C. proxima*; 23-*Gomphonema gracile*; 24,25-*G. augur Ehren. var turris*; 26-*G. augur var. Sphaerophorum*; 27-*G. augur var. Augur*; 28-*G.truncatum*; 29-*G.ventricosum*; 30-*G. olivaceum var olivaceum. olivaceuma*

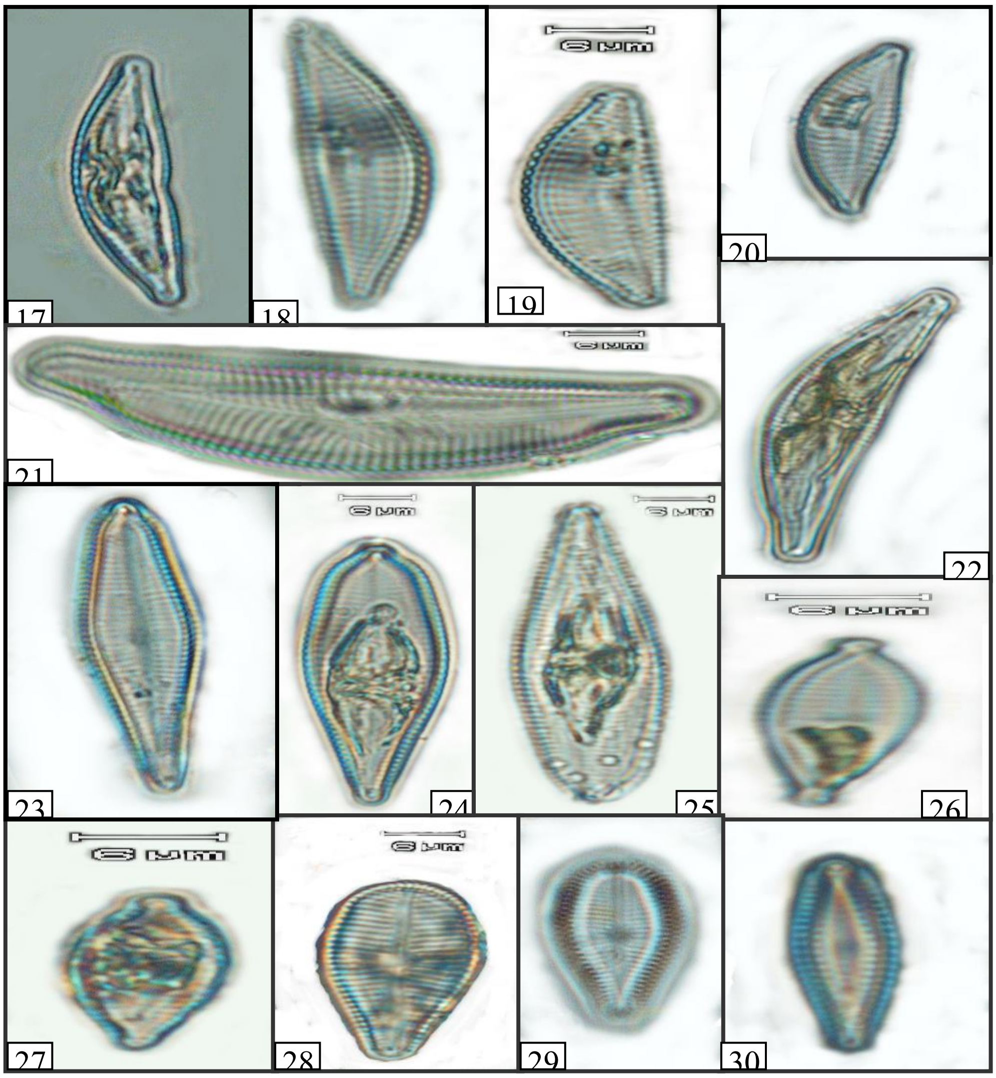


Plate (4): Bacillariophyta (III)

Figures: 31-*Melosira granulate*; 32-*Fragillaria construnes var. venter*; 33-*F. producta var. acuta*; 34-*F. capunica*; 35-*F. crotunensis var. oregona*; 36-*Nitzschia frustuluns var perpusila*; 37-*N. amphiboides*; 38 -*N. elegans*; 39-*N. fonticola*; 40-*N. sigmoidea*; 41-*N. amphibia var. acutiuscula*; 42-*N. palae*; 43- *Navicula capitatoradiosa*; 44-*N. viridula var.viridula*; 45-*N. Menisculus*; 46-*N. Exigua*, 47-*N. gastrum var.gastrum*; 48-*N . peregrina*; 49-*N. sp.*; 50, 51-*Achnanthes minutissima*.

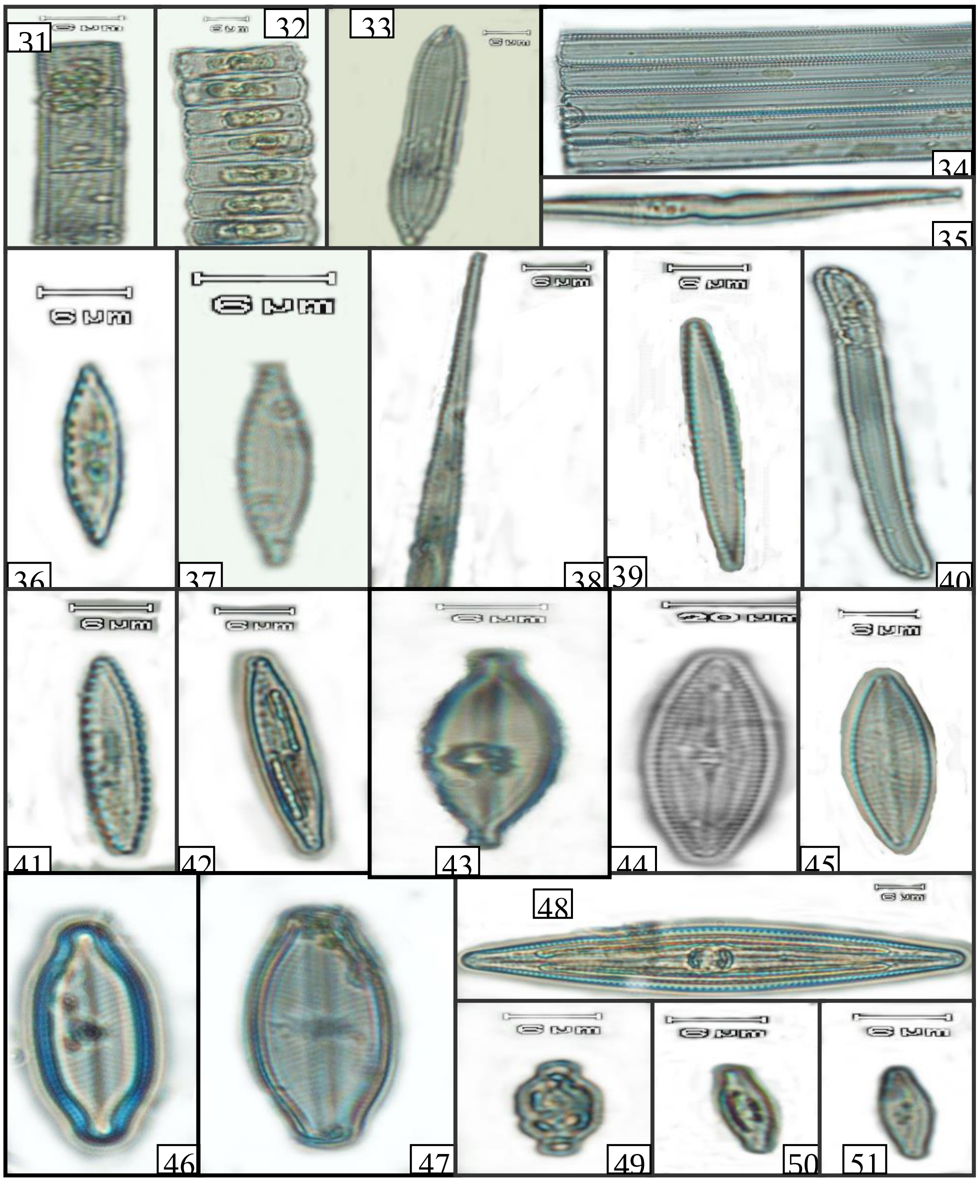


Plate (5): Bacillariophyta (IV)

Figures: 52-*Plerusigma angulatum*; 53-*Pinnularia brandelii*; 54-*P. acrosphaeria*; 55-*P. nobilis*; 56 -*P. macilenta var. opulanta*; 57-*Calonies silicula*; 58-*Synedra ulna*; 59-*S. acus var. Radians*; 60-*S. acus var. angustissima*; 61-*S. crystallina*; 62-*Surirella gessneri;* 63- *Stauronies anceps*; 64- *Tabbellaria venticosa*.

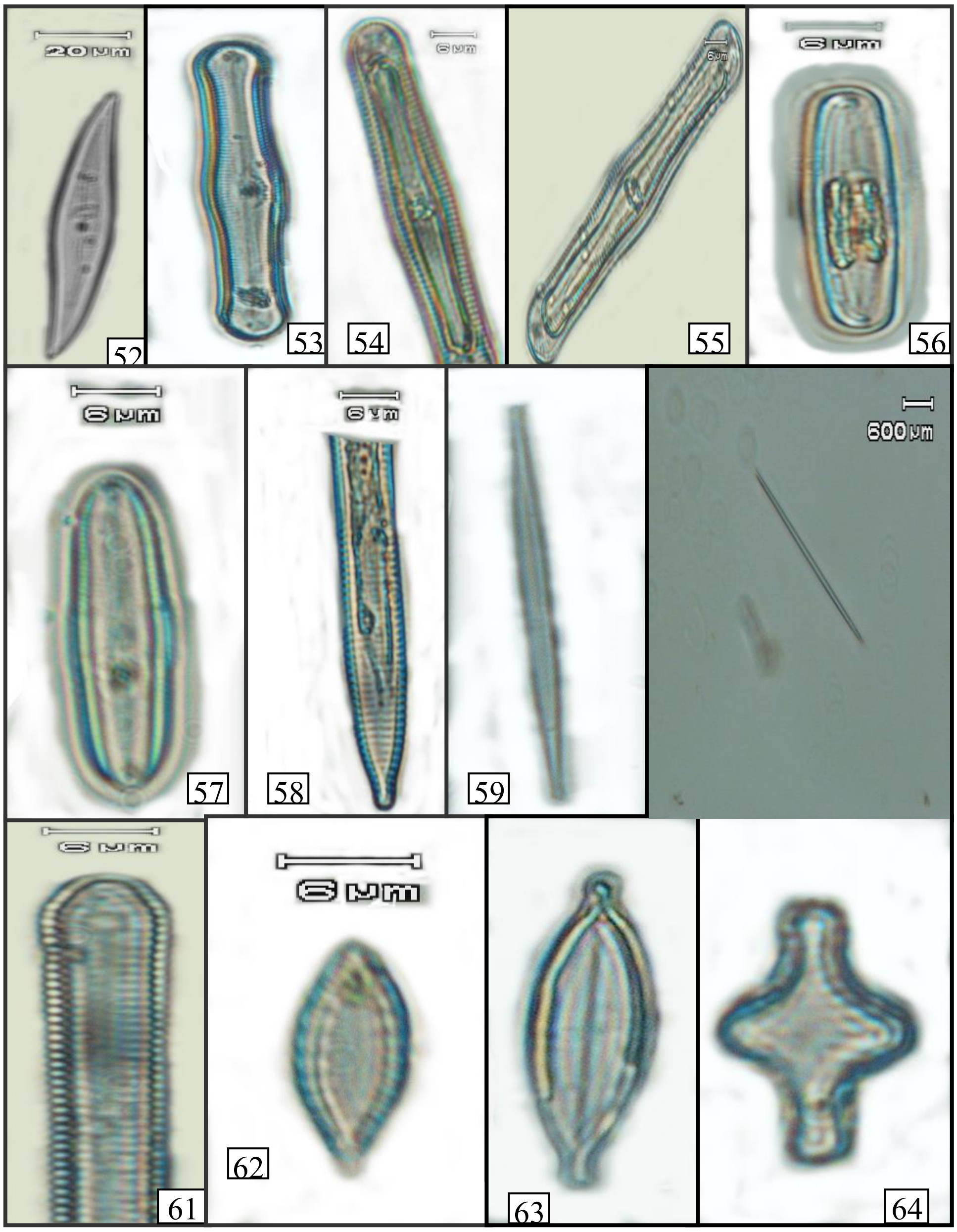


Plate (6): Chlorophyta

Figures: 1-*Chlamydocapsa planctonica*; 2-*Closterium parvulum*; 3-*Crucigenia rectangularis*; 4-*Cosmarium granatum*; 5-*Coelastrum cambricum Archer var. Intermedium*; 6-*C. Microporum*; 7-*C. Microporum*; 8-*C. Retleulatum*; 9-*Pediastrum biradiatum var. emarginatum*; 10-*P. tetras*; 11-*P. sculptatum*; 12-*P. simplex*; 13-*P. boryanum*; 14-*Coleochaete orbicularis*; 15-*Acutodesmus acuminatus*; 16-*Scenedesmus bijuga*; 17-*S . opoliensis*; 18-*S. armatus chodat var. bicaudatus*; 19-*S. arcuatus*; 20-*S. quadricauda*; 21-*S. denticulatus*; 22-*Spirogyra sp.*; 23-*Ulothrix zonzta*; 24-*Oedogonium spirostriatum*; 25-*O. pyriforme*; 26-*O. pringsheimii*; 27-*O. inclusum*; 28-*O.boheanicum*; 29-*O. Pisanum*.

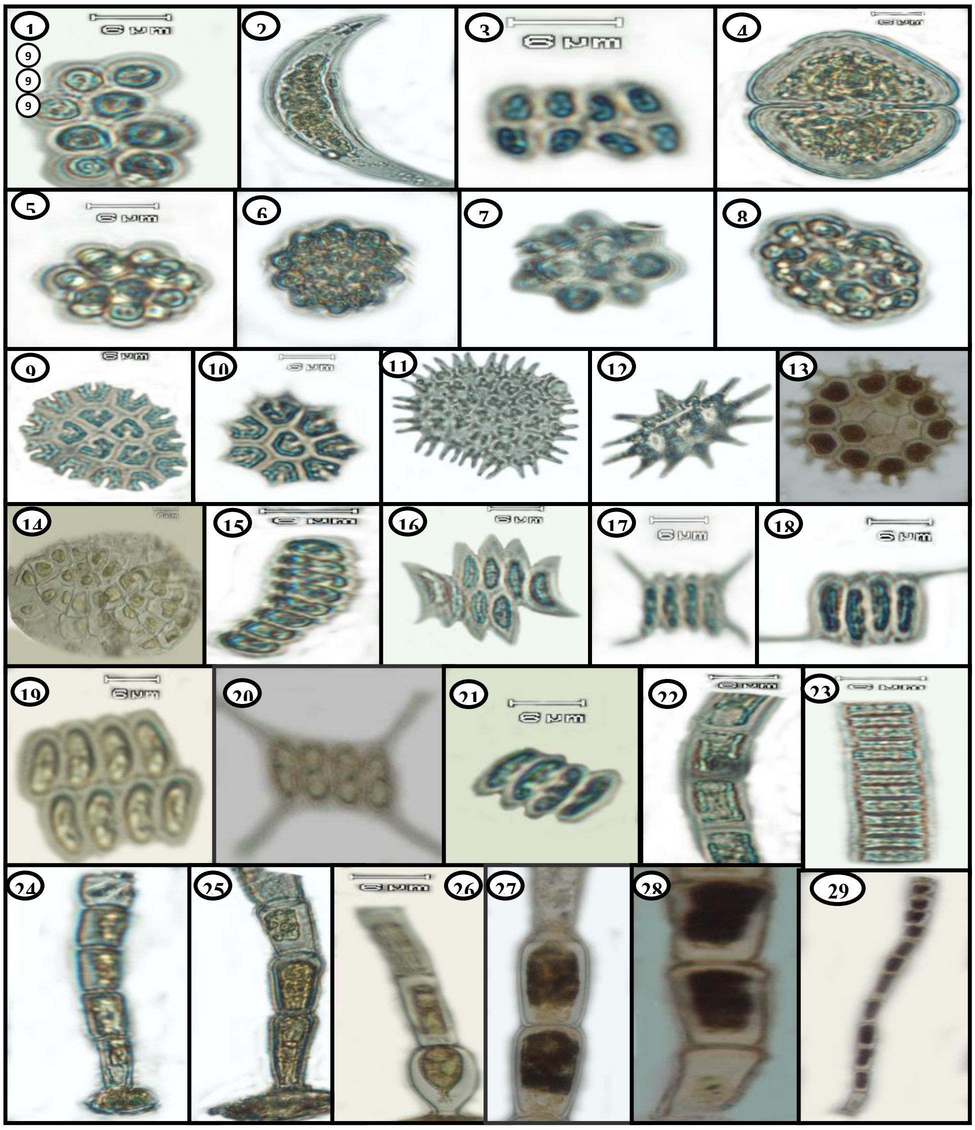
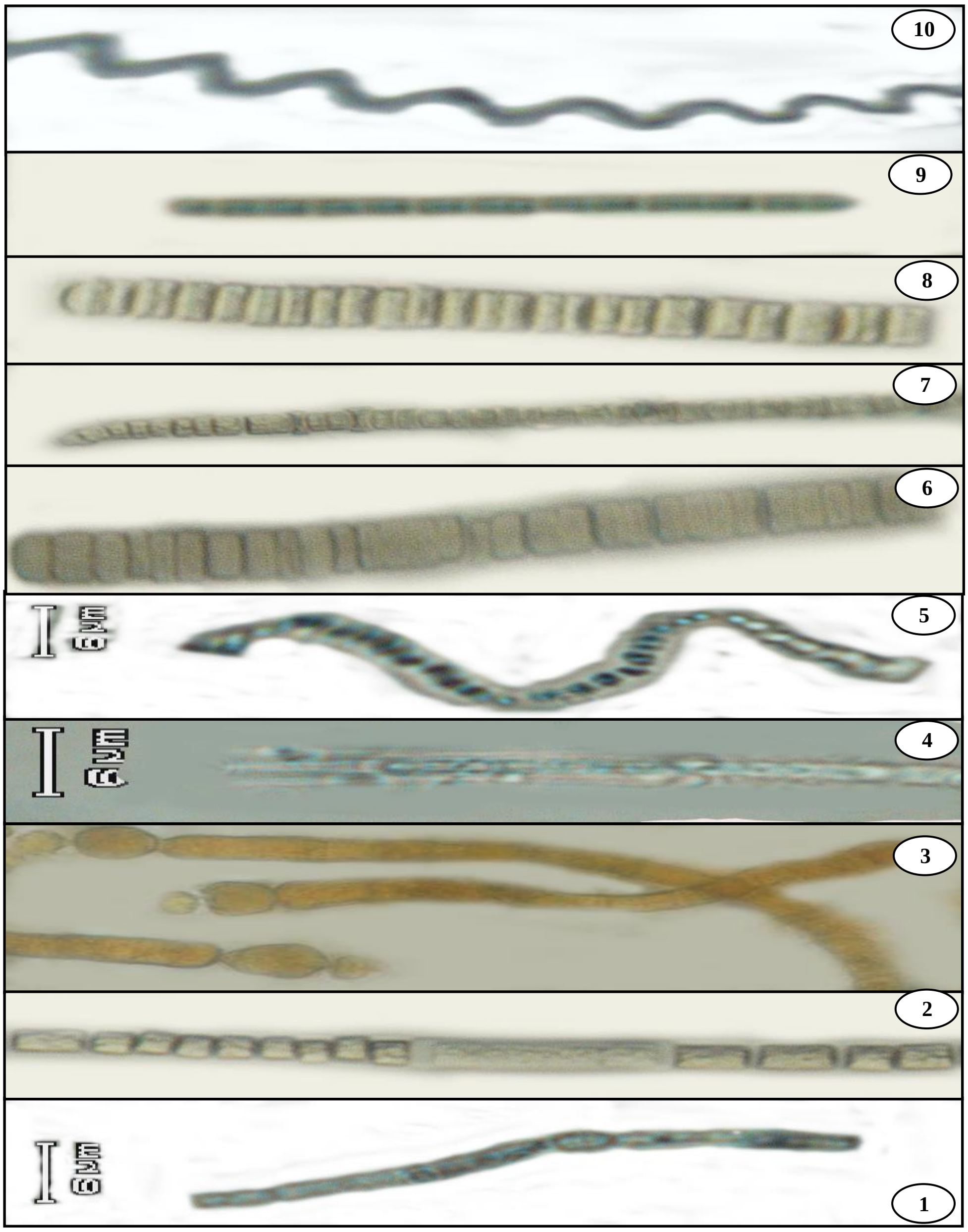


Plate (7): Cyanobacteria

Figures: 1- ***Aphanizomenon flosaqua*****;   2-** ***Anabaena aequalis*****; 3-** ***Calothrix stagmalis*****; 4-*****Lyngbia limnetica*****; 5-** ***Nostoc sp.*****; 6-** ***Nodularia spumigena*****; 7-** ***Oscillatoria brevis var. neapolitana*****;** ***8- O. articulata*****; 9- O. sp.;** ***10-Spirulina laxissima.***



and *Calonies silicula*) were found on *Ceratophyllum demersum*. At site (I) on *Myriophyllum spicatum*, diatom species (*Nitzschia sigmoidea*, *Gomphonema olivaceum*, *Synedra capitata*, *Calonies amphisbaena*, *Gomphonema truncatum*, *Stauronies anceps*, *Amphora ovalis*, *Cymbella affinies*, *Cymbella tumida* and *Cyclotella operoulata*) were found.

The lowest numbers of diatom species were found on E*chhornia* crassipes in site (I and II) and (IV). *Synedra acus* var. *angustissima* and *Amphora ovalis* were found in site (I) but *Cymbell cistula* was found in site (IV). Four species of *Oedogonium* were found only in site (II) and one species of Cyanophyta (*Spirulina laxissima*) was found in site (I).

Elsewhere, plant species and their architecture and of plant density have strong effects on the development of epiphytic organisms (**Cattaneo and Kalf**, **1980; Cattaneo *et al*.**, **1988**). **Rychkova** (**1989**) stated that, epiphytic algal biomass is largely eliminated by changes in the water action, which mainly detach the loosely attached species. In summer Chlorococcales and filamentous Chlorophytes, including some planktonic and periphytic species, such as (*Scenedesmus* spp., *Pediastrum* spp., *Oedogonium* spp. and *Spirogyra* spp.) and some Cyanophytes such as *Oscillatoria* spp., *Anabaena* spp. and *Spriulina* spp. reached considerable numbers. As **Bouvy *et al***. (**1997**) pointed out that periphyton and phytoplankton may exchange organisms and compete for nutrient.

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دراسة تمهيدية على الطحالب الميكروسكوبية الملتصقة على النباتات المائية فى محافظة سوهاج

زينب عبد الفتاح احمد

قسم النبات، كلية العلوم، جامعة سوهاج

تم فى هذا البحث دراسة الطحالب الملتصقة على النباتات المائية التى تم تجميعها من عده مناطق مختلفة فى نهر النيل و قنوات الرى فى سوهاج – مصر فى شهر يونيو 2007. فى نفس التوقيت تم دراسة الخواص الفيزيائية والكيميائية لمياه النيل فى مناطق التجميع. تم تعريف 105 نوع من الطحالب تنتمى لثمانية وأربعين جنس و ملتصقة على الانواع *Eichhornia crassipes, ceratophyllum demersum, Myriophyllum spicatum, phragmites australis*) من التباتات المائية. من هذه الطحالب 61 نوع من 25 جنس تتبع مجموعة الدياتومات و30 نوع من 12جنس تتبع الطحالب الخضراء و 10 أنواع تتبع 8 أجناس من الطحالب\الخضراء المزرقة و نوع واحد من الطحالب الخضراء المصفرة وثلاث أنواع من ثلاث اجناس تتبع الطحالب اليوجلينية.