

Some Algae Species found in Shwe Kyar Lake, Minn San Quarter, Saging Region

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Abstract

In this study, algae specimens were collected from upper surface of four sampling sites, Shwe Kyar Lake, Minn San Quarter, Saging Region during September 2019 and May 2020. All the collected specimens had been listed by the classification system of [5]. The total 18 algal species were found in this study area. Among them 1 species, 1 genus, 1 family belong to 1 order of Cyanophyceae; 1 species, 1 genus, 1 family belong to 1 order of Euglenophyceae; 2 species, 2 genera, 1 family belong to 1 order of Bacillariophyceae; 14 species, 7 genera, 5 families belong to 3 orders of Chlorophyceae had been identified, described and recorded. The present study is to investigate of some algae and to reveal managing and monitoring the aquatic ecosystems and in application of algae as a food supply.

Keywords: identified, some algal species

1. Introduction

Algae are primarily oxygen-releasing photosynthetic organisms with simple body plants-no roots, stems, or leaves. Algae are usually aquatic organisms. They do not form a single monophyletic group and consequently cannot be easily defined. Although algae as a group are ubiquitous, individual species occupy specific habitats. Some algae are attached to a substrate like plants, some are motile like animals, some are simply suspended in water, some grow loosely on soil, tree and animals and some form symbiotic relationships with other organisms. The internal cell structure of algae varies greatly. Microalgae lack complex multicellular structures that are found in seaweeds [10].

Algae are extremely important not only ecologically, but also phylogenetically. It is through that all the major groups of animals and plants originated in the sea, and even today this is where one can find representative of many ancient evolutionary lineages. Thus, if we are to be able to understand the diversity and the phylogeny of the plant world, it is of fundamental importance, indeed essential to investigate the algae [4].

Algae are widely present in freshwater environment, such as lakes and rivers, where they are typically present as microorganisms. Although relatively inconspicuous, they have a major importance in the freshwater environment, both in terms of fundamental ecology and in relation to human use of natural resources. It is needed to study algal compositions of every habitat in each area for knowing beneficial algae,

harmful algae, and water quality of water bodies of that area [11].

Shwe Kyar Lake is located in Minn San Quarter, Sagaing Region. Shwe Kyar Lake is boundary with Ayeyarwady River to the East, Myo Thit Quarter to the West, Thaw Tar Pan Quarter to the North and Sein Kone Quarter to the South.

The aims of the present study were to record the some species of algae growing in Shwe Kyar Lake and to provide the information for those who interest in managing and monitoring the aquatic ecosystems and in application of algae as a food supply.

2. Materials and Methods

2.1. Study Area

Shwe Kyar Lake is situated in Minn San Quarter, Sagaing Region. It lies between 21° 51' and 22° 13' N Latitude and between 96° 36' and 96° 13' E Longitude. It has an area of 1546.785 m². It cover sea level 228.009 m. This Lake had the ranges pH 7.5-8.0. Algae samples were collected from Shwe Kyar Lake during the periods September 2019 and May 2020. The location map of study area was shown in Figure 1 and sampling sites of Shwe Kyar were shown in Figure 2.

2.2. Collection of Algal Specimens

Water samples were taken from the upper surface of the study area. The positions of all sampling sites were measured by Global Position System (GPS), temperatures were measured by thermometer and pH of water was measured by using pH meter. Algal populations were counted under the microscope by using Fuchs- Rosenthal haemocytometer by [7]. The collected algal specimens were examined by using compound microscope (Olympus) in laboratory, Department of Botany, Yadanabon University.

2.3. Laboratory Observation and Classification of Algae

The collected algae were examined and identified. The measurements of algae were taken by using micrometer. After that they were recorded by digital camera. Then, the samples were identified with the thallus shape, size, colour, chloroplast, pyrenoids and sinus structure. Some collected specimens had been listed by the classification system of [5]. The taxonomic

descriptions of algae have been done by the references, [3], [6], [9] and [11].

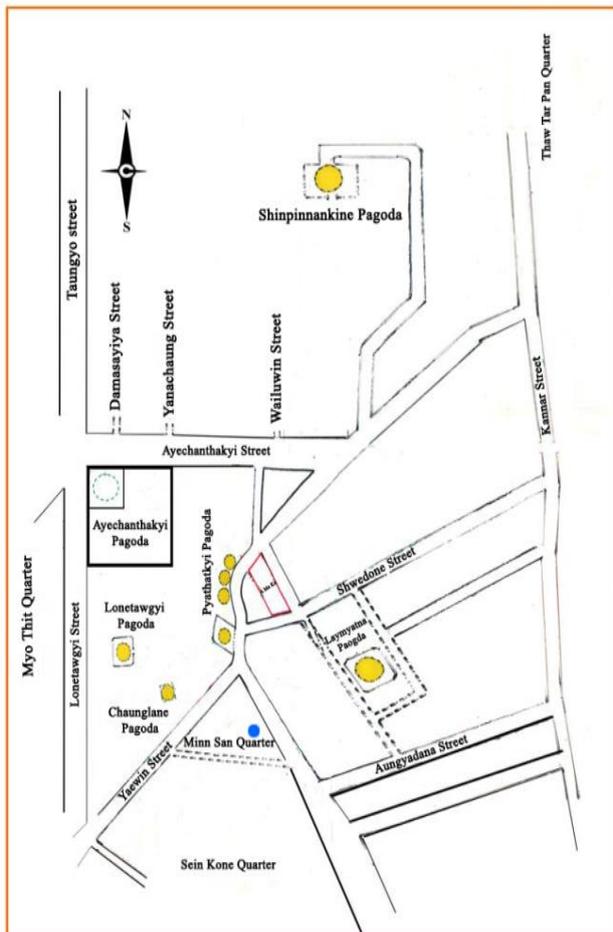


Figure 1. Location Map of Study Area

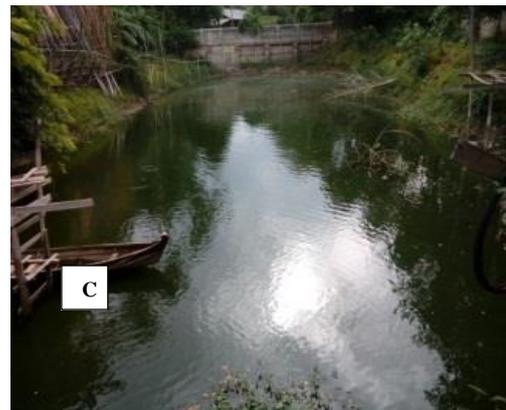


Figure 2. Station Sites of Shwe Kyar Lake

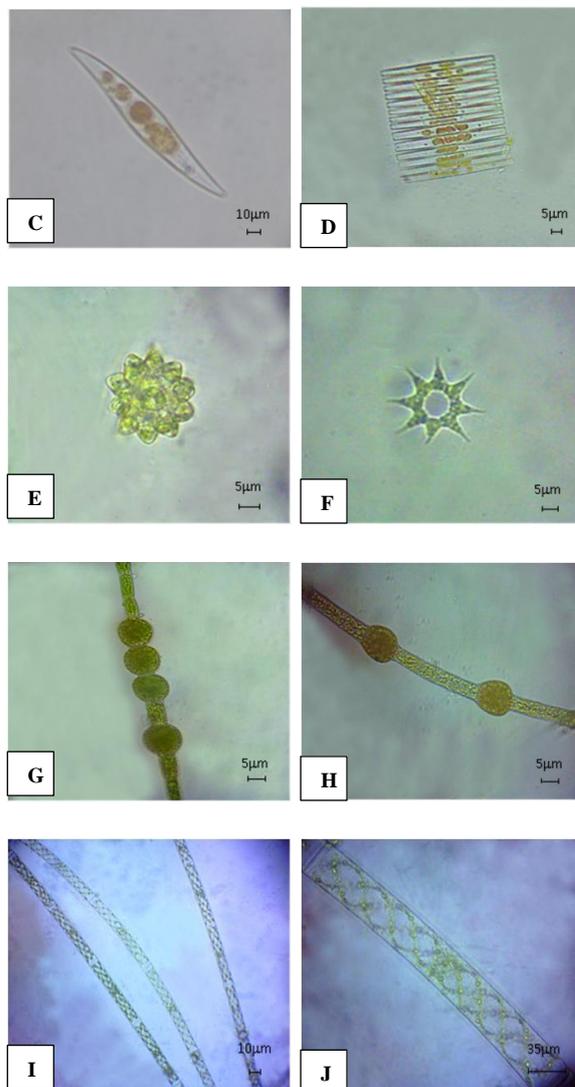
- A. Station 1 (Southern side of the Shwe Kyar Lake)
- B. Station 2 (Western side of the Shwe Kyar Lake)
- C. Station 3 (Northern side of the Shwe Kyar Lake)
- D. Station 4 (Eastern side of the Shwe Kyar Lake)

3. Results

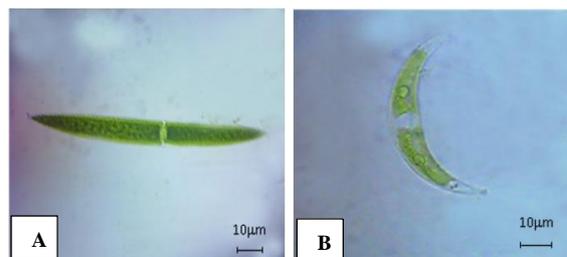
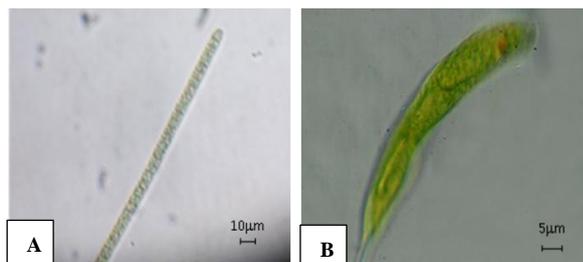
The samples of algae were collected Shwe Kyar Lake, Minn San Quarter, Sagaing Region. The total algal specimens are found 18 species, 11 genera, 8 families and 6 orders and 4 classes belong to 4 divisions in this study area. Among them 1 species, 1 genus, 1 family belong to 1 order of Cyanophyceae; 1 species, 1 genus, 1 family belong to 1 order of Euglenophyceae; 2 species, 2 genus, 1 family belong to 1 order of Bacillariophyceae; 14 species, 7 genera, 5 families belong to 3 orders of Chlorophyceae had been identified, described and recorded (Table 1 and Figure 3 - 4).

Table 1. Some algae species found in Shwe Kyar Lake, Minn San Quarter, Sagaing Region

| Division | Class | Order | Family | Genus | Species |
|--------------|-------------------|-----------------|------------------|----------------------|--------------------------------------------------------------------------|
| Cyanophyta | Cyanophyceae | Oscillatoriales | Phormidiaceae | <i>Planktothrix</i> | <i>Planktothrix agardhii</i> Gomont |
| Euglenophyta | Euglenophyceae | Euglenales | Euglenaceae | <i>Euglena</i> | <i>Euglena pseudospiroides</i> Swirenko |
| Chrysophyta | Bacillariophyceae | Pennales | Naviculaeae | <i>Gyrosigma</i> | <i>Gyrosigma spenceri</i> (Quekett) Cleve |
| | | | | <i>Tabellaria</i> | <i>Tabellaria fenestrata</i> (Lyngbye) Kutzing |
| Chlorophyta | Chlorophyceae | Chlorococcales | Scenedesmusaceae | <i>Coelastrum</i> | <i>Coelastrum reticulatum</i> (Dangeard) Seen |
| | | | Hydrodictyaceae | <i>Pediastrum</i> | <i>Pediastrum simplex</i> var. <i>radians</i> Lemm |
| | | Oedogoniales | Oedogoniaceae | <i>Oedogonium</i> | <i>Oedogonium decipiens</i> Wittrock |
| | | | | | <i>O. pyriforme</i> Wittrock |
| | | Zygnematales | Zygnemataceae | <i>Spirogyra</i> | <i>Spirogyra exilis</i> West and West |
| | | | | | <i>S. fluviatilis</i> Rabenhorst |
| | | | Desmidiaceae | <i>Closterium</i> | <i>Closterium acerosum</i> (Schrank) Ehrenberg |
| | | | | | <i>C. venus</i> var. <i>crassum</i> Croasdale |
| | | | | <i>Cosmarium</i> | <i>Cosmarium cucumis</i> Corda |
| | | | | | <i>C. cyclicum</i> Lundell |
| | | | | | <i>C. granatum</i> var. <i>cancavum</i> Lagerhein |
| | | | | | <i>C. garrolense</i> Roy & Bissett |
| | | | | | <i>C. pyramidatum</i> var. <i>convexum</i> Krieger & Gerloft |
| | | | | <i>Pleurotaenium</i> | <i>Pleurotaenium trabecula</i> var. <i>rectum</i> (Delponte) West & West |



**Figure 3. A. *Planktothrix agardhii* Gomong
 B. *Euglena pseudospiroides* Swirenko
 C. *Gyrosigma spenceri* (Quekett) Cleve
 D. *Tabellaria fenestrata* (Lyngbye) Kutzing
 E. *Coelastrum reticulatum* (Dangeard) Seen
 F. *Pediastrum simplex* var. *radians* Lemm
 G. *Oedogonium decipiens* Wittrock
 H. *O. pyriforme* Wittrock
 I. *Spirogyra exilis* West and West
 J. *S. fluviatilis* Rabenhorst**



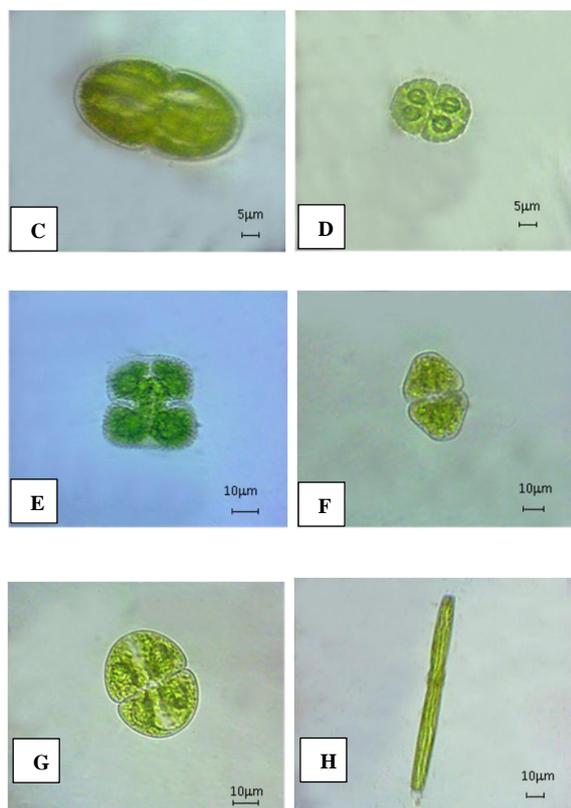


Figure 4. A. *Closterium acerosum* (Schrank) Ehrenberg
 B. *Closterium venus* var. *crassum* Croasdale
 C. *Cosmarium cucumis* Corda
 D. *C. cyclicum* Lundell
 E. *C. granatum* var. *canavum* Lagerhein
 F. *C. garrolense* Roy and Bissett
 G. *C. pyramidatum* var. *convexum* Krieger and Gerloft
 H. *Pleurotaenium trabecula* var. *rectum* (Delponete) West and West

4. Discussion

In the present study, algal specimens observed were belonged to 18 species, 11 genera, 8 families, 6 orders and 4 classes in study area.

When the algae species assigned to respective divisions was taken into consideration, it was displayed that Chlorophyta 77.78%, followed by 11.11% Chrysophyta, 5.56% Euglenophyta and 5.56% Cyanophyta each.

The diversity of algae is mainly based on the environmental factors such as temperature and pH. In the study area, the range of temperature was between from 27°C to 29 °C and pH value of water varied from 10.5-8.0.

It has been stated that some member of green algae can be used as a food supply in many parts of the world. For instance, *Spirogyra* was eaten in Northern and Eastern parts of the Shan State, Myanmar [1]. Therefore, it is hope that one genus recorded in this work have potential utilization as a food.

According to [8], in *Coelastrum*, the water temperature usually ranged from 26.5°C to 29.5°C. In the present study, Shwe kyar Inn, the water temperature was in rainy 28°C, in summer 29°C and in winter 27°C. *Coelastrum* was abundantly in Shwe kyar Lake. Thus, this study is in agreement with [8].

According to [2], Euglenoids are generally found in environment, where there is an abundance of decaying organic material. Typical habitats include shallow lakes, farms, pond, wetlands, brackish, sand and mudflats. In the present study, *Euglena* can be found at mudflats of Shwe Kyar Lake. Thus, these observations are in agreement with the statement of [2].

5. Conclusion

Species composition of algae in fresh water of Shwe Kyar Lake was studied. Factors affecting on the species composition of algae depend in the temperature and pH of water. The algae of Lake were in other factor for forming blooms, because of accumulating nutrients from their surroundings.

According to the present study, it can be concluded that algal maximum population such as, *Gyrosigma*, *Tabellaria*, *Euglena* and *Coelastrum* were found in winter. The algal minimum population such as, *Planktothrix*, *Pediastrum*, *Oedogonium*, *Spirogyra*, *Closterium*, *Cosmarium* and *Plurotaenium* were occurred in summer and rainy.

Thus, the algal species were found increase in winter at Shwe Kyar Lake, Minn San Quarter.

Algae are very diverse and very applicable for the researchers like taxonomists, environmentalists and ecologists. Some members of Chlorophyta are edible and mostly are important food sources of primary consumers.

Therefore, the present research work give the records of algae inventing support the information on distributed sites of individual species that interested to be looking for and contribute the information on systematic characterization in taxonomic study of algae in the future.

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