

Some Algae From Pin Chaing Dam And Its Surrounding Area, Mogaung Twonship

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Abstract

In this study, algae specimens were collected from three sampling sites in Pin Chaing Dam, Mogaung Township, Kachin State during January to December 2019. All the algae specimens were identified and described with photomicrographs. Totally 30 species belong to 22 genera, 17 families, 8 orders and 5 classes of 4 divisions were identified. The water temperature of study sites range between 20°C - 32°C. During the present study, the highest species number was Chrysophyta and the lowest one was Rhodophyta. Among them *Spirogyra* was abundantly found in all locations. *Anabaena* and *Lymbya* were commonly found in study area. The species of *Netrium*, *Cosmarium*, *Closterium*, *Euasturm*, *Onychonema* and *Xanthidium* were rarely found in this study area.

Key Words: Algae, Chrysophyta

Introduction

The present study deals with the algae found in Pin Chaing Dam, Mogaung Township in Kachin State. Pin Chaing Dam was started to build in 1994 and finished in 1995. It lies between North latitude 25° 6' 45" and 25° 6' 47", East longitude 96° 39' 22" and 96° 39' 24". The altitude of study area is 225m above sea level. It is bounded on the east by Pin Chaing Village, on the west by Pin Lone Village, on the South by Pin Baw Village and North by Min Kone Village. It has an area of 1.73 square mile. The variation in water temperature ranged from 20°C - 32°C. Nam San Chyin stream flows into Pin Chaing Dam and then into the Mogaung Stream.

Many of the algae attached to submerged rock, wood, soil, the surface of trickling filters, filter beds, or coagulation basin walls may form continuous carpets of growth. While a few of the algae are found in soil and on surfaces exposed to air, the great majority of them are truly aquatic and grow in the waters of ponds, lakes, reservoirs, streams and oceans. (Palmer, 1980).

The form of the plant body of algae varies from the relative simplicity of a single cell to the more striking complexity exhibited by the giant kelps and the rockweeds, unicellular, colonial, filamentous, membranous and tubular types of algal plant body occur. (Bold *et al.*, 1985).

Food companies have started serious activities to market functional foods with microalgae and cyanobacteria, such as pasta, bread, salad sauces, ice cream, pudding, yogurt and other milk products and soft drinks. (Pulz *et al.*, 2014).

Algae are rich in the antioxidant vitamin C and E in higher concentration than land plants. Algal compounds having antioxidant properties help to protect from skin aging, such related skin damage and other photoaging problems, cutaneous inflammation and skin cancer. (Hansan *et al.*, 2017)

The aims of this research are to identify, classify and describe the algae species in Pin Chaing Dam and its surrounding area and to provide information of algae for researchers who are working in phyiological field.

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Materials and methods

Algae samples were collected from Nam San Chyin stream, Mogaung Township, Kachin State of Myanmar and the elevation is about 225 m above sea level. It lies between Latitude 25° 6' 45" and 25° 6' 47" N and between Longitude 96° 39' 22" and 96° 39' 24" E. Collection of specimens were performed within January to December 2019.

The position of study area was measured by Global Position System (GPS). The water temperature and pH value were measured by thermometer and pH meter during the collection time

Laboratory observations and sketching on algae samples were made by using compound microscope at Department of Botany, University of Myitkyina. Moreover, measurement of algae wastaken by using micrometer. All species were recorded by photomicrographs. They are identified up to specific level base on the thallus shape, size, colour, chloroplast, pyrenoids and sinus structure.

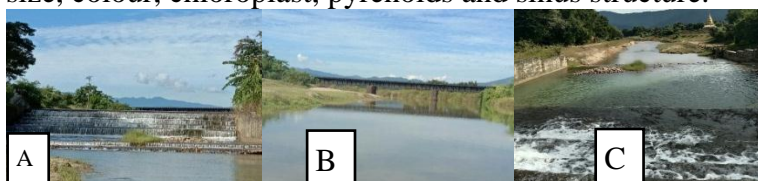


Figure 1 Sampling sites of the study area.

- A. Site 1 (Pin Chaing Dam)
- B. Site 2 (Upper Part of Pin Chaing Dam)
- C. Site 3 (Lower Part of Pin Chaing Dam)

Results

Taxonomic Study of the Algal Flora

In this paper, totally 30 collected algae species were recorded form this study area. In the present study, 30 species belong to 22 genera, 17 Families, 8 Order, 5 Class and 4 Division had been classified described and recorded with photomicrographs. The systematic classification of algae was showed in Table.

Table 1. Classification of Algae Found in Pin Chaing Dam and its surrounding area.

Division	Class	Order	Family	Genus	Species
Cyanophyta	Cyanophyceae	Oscillatoriales	Oscillariaceae	<i>Lyngbya</i>	<i>Lyngbya spiralis</i> Geitler
				<i>Oscillatoria</i>	<i>Oscillatoria amphibian</i> Agardh
					<i>Oscillatoria sancta</i> (Kutzing) Gomont
					<i>Spirulina major</i> Kutzing
			Phormidiaceae	<i>Spirulina</i>	
		Nostocales	Nostocaceae	<i>Anabaena</i>	<i>Anabaena affinis</i> lemmermann
Rhodophyta	Compsopogonophyceae	Compsopogonales	Compsopogonaceae	<i>Compsopogon</i>	<i>Compsopogon coeruleus</i> (Balbis ex C. Agardh) Montagne
	Rhodophyceae	Batrachospermales	Batrachospermaceae	<i>Batrachospermum</i>	<i>Batrachospermum arcuatum</i> Kylin
Chrysophyta	Bacillariophyceae	Pennales	Tabellariaceae	<i>Tabellaria</i>	<i>Tabellaria frnestrate</i> (Lyngbye) Kutging

Table 1 Continue

Division	Class	Order	Family	Genus	Species
			Achnantheaceae	<i>Achnanthes</i>	<i>Achnanthes flexella</i> (Kutzing) cleave
			Fragilariaceae	<i>Ctenophota</i>	<i>Ctenophora pulchella</i> Willians & Round
			Naviculaceae	<i>Gyrosigma</i>	<i>Gyrosigma</i> <i>accuminatum</i> (kutzing) Robenhorst
			Cymbellaceae	<i>Rhopalodia</i>	<i>Rhopalodia gibba</i> (Ehrenberg).O.Moller
			Nitzschiaceae	<i>Hantschia</i>	<i>Hantschia amphioris</i> (Ehrenberg) Grunow
			Surirellaceae	<i>Surirella</i>	<i>Surirella robosta</i> Ehrenberg
Chlorophyta	Chlorophyceae	Chlorococcales	Hydrodictyaceae	<i>Hydrodictyon</i>	<i>Hydrodictyon</i> <i>reticulatum</i> (L.) Lagerheim
		Scenedesmaceae	Scenedesmus	<i>Scenedesmus</i>	<i>Scenedesmus hystrix</i> <i>lagerheim</i>
		Zygnematales	Zygnemataceae	<i>Spirogyra</i>	<i>Spirogyra protecta</i> Wood
					<i>Spirogyra</i> <i>rhizobrachiialis</i> Jao
			Mesotaeniaceae	<i>Netrium</i>	<i>Netrium digitus</i> Ehrenberg
			Desmidiaceae	<i>Closterium</i>	<i>Closterium. ehrenbergii</i> Meneghini ex Ralfs
					<i>Closterium lunula</i> (Muller) Nitzsch
				<i>Cosmarium</i>	<i>Cosmarium ambadiense</i> Groenblad & Scott
					<i>Cosmarium</i> <i>pseudoornatum</i> B. Eichler et Gutwinski
					<i>Cosmarium</i> <i>pseudopyramidatum</i> Lundella
					<i>Cosmarium quadrum</i> var. <i>sublatum</i> (Nordstedt)
					<i>C.subcostatum</i> Nordstedt
				<i>Euastrum</i>	<i>Euastrum pectinatum</i> Brebisson.
				<i>Onychonema</i>	<i>Ochychorema larve</i> var. <i>Latum</i> West & wett
				<i>Xanthidium</i>	<i>Xanthidium acueatum</i> Ehrenberg
					<i>Xanthidium</i> <i>fasciculatum</i> Ehrenberg

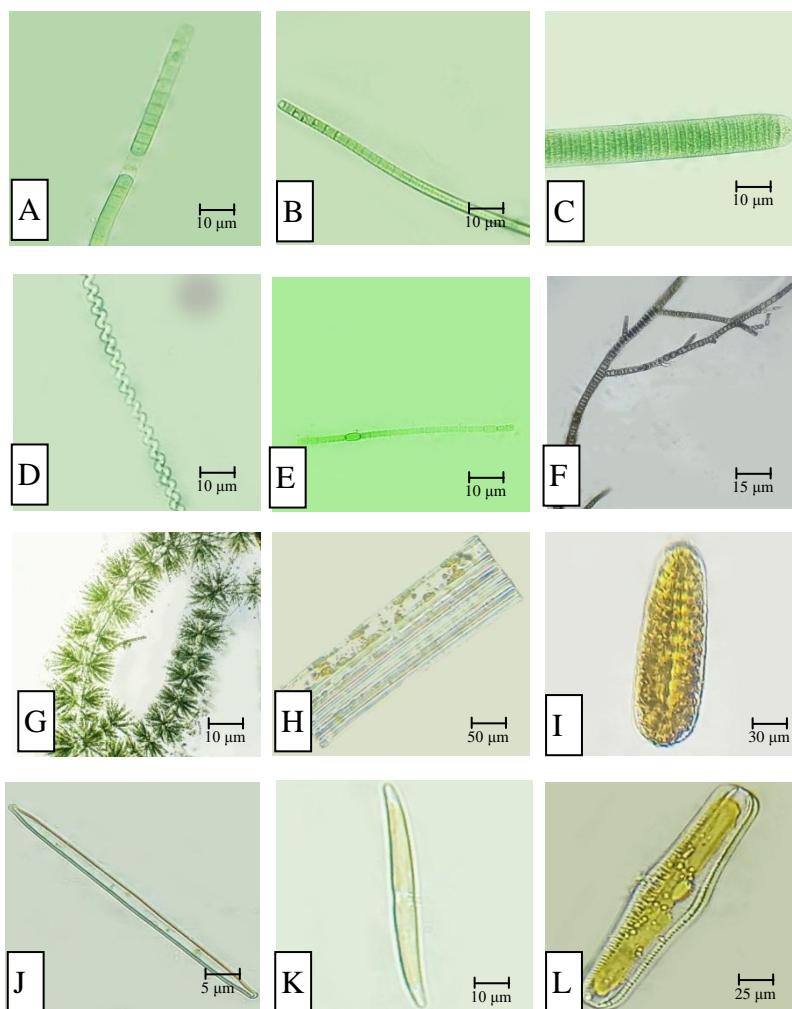


Fig 2A. *Lyngbya Spiralis* Geitler

B. *Oscillatoria amphibian* Agardh

C. *O. Sancta* (Kutzing) Gomont

D. *Spirulina major* Kutzing

E. *Anabaena affinis* Lemmermann

F. *Composopogoncoeruleus*

G. *Batrachospermum arcuatum* Kylin

H. *Tabellaria fenestrata* (lyngbye) Kutzing

I. *Achnanthes flexella* (Kutzing) cleave

J. *Ctenophora pulchella* Willians & Round

K. *Gyrosigma accuminatum* (Kutzing)

Robenhorst

L. *Rhopalodia gibba* (Ehrenberg)O.Muller

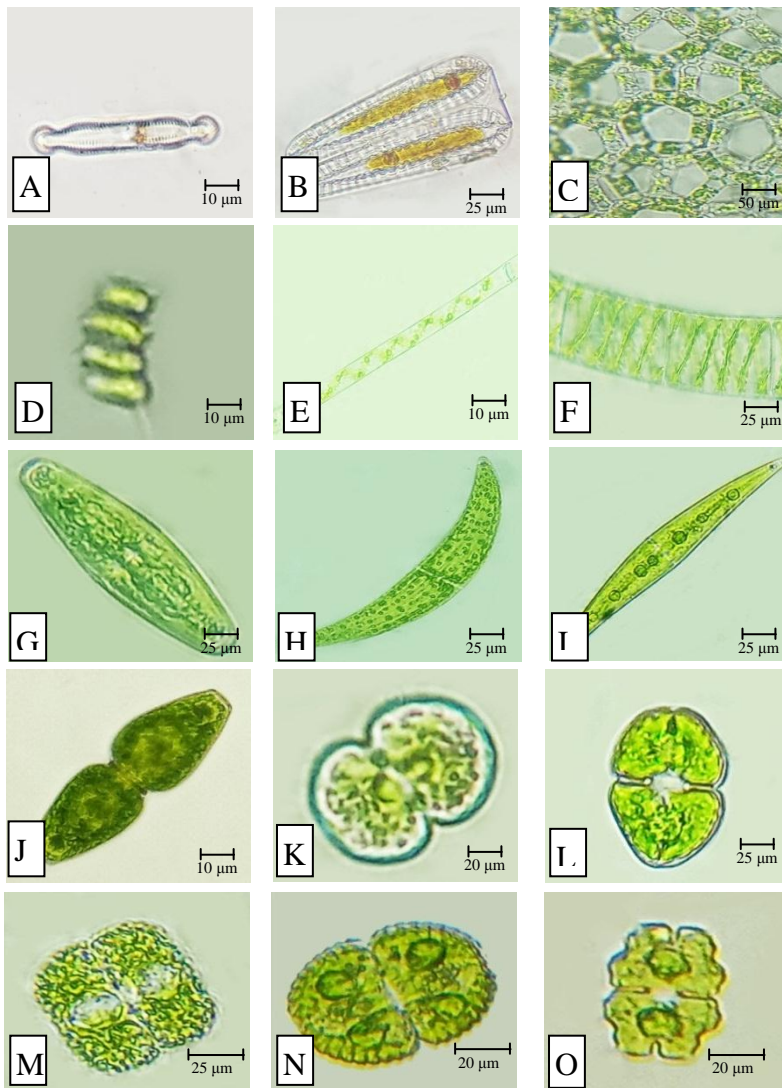


Fig3 A. *Hantzschia amphians* (Ehrenberg) Grunow
 B. *Surirella robusta* Ehrenberg
 C. *Hydrodictyon reticulatum* (L.) Lagerheim
 D. *Scenedesmus hystrix* Lagerheim
 E. *Spirogyro protecta* Wood
 F. *Spirogyro rhizobrachialis* Jao
 G. *Netrium digitus* Ehrenberg
 H. *Closterium ehrenbergii* Meneghini
 I. *C. lunula* (Muller) Nitzsch
 J. *Cosmarium ambadiense* Groenblad & Scott
 K. *C. Pseudomatium* B. Eichler et Gutwinski
 L. *C. Pseudopyramidatum* Lundell
 M. *Cosmarium quadrum* var. *sublatum* (Nordstedt)
 N. *subcostatum* Nordstedt
 O. *Euastrum pectinatum* Brebisson



exRalfs

Fig 4 A. *Onychonema* Laerve var. *Latum* West & West
 B. *Xanthidium aculeatum* Ehrenber
 C. *X. fascicalatum* Ehrenerg



Discussion and Conclution

In this research, algae samples were collected from Pin Chaing Dam, Mogaung Township, Kachin State. According to the result, 30 species belong to 22 general, 17 families, 7 Orders, 5 classes and 4 divisions were reported. The water temperature ranged from 20°C - 32°C and pH were 6.8 to 7.0 throughout the study area. Nam Sam Chying stream coming out of Shwe Kyet Taung stream flow into Pin Chaing Dam and then into the Mogaung stream.

The sampling site 1 was Pin Chaing Dam. *Lynbya*, *Oscillatoria*, *Tabellaria*, *Achnanthes*, *Ctenophora*, *Gyrosigma*, *Rhopalodia*, *Hantzchia*, *Surirella* and *Spirogyra* were occurred abundantly in site 1. However *Spirulina* and *Anabaena* were observed minimum density. The sampling site 2 was upper part of Pin Chaing Dam. *Compsopogon*, *Batrachospermum*, *Oscillatoria*, *Tabellaria*, *Achnanthes*, *Ctenophora*, *Gyrosigma*, *Rhopalodia*, *Hantzchia*, *Surirella*, *Hydrodictyon*, *Scenedesmus*, *Spirogyra*, *Lynbya* and *Cosmarium* were recorded in sampling site 2. Among them, *Compsopogon*, *Batrachospermum*, *Spirogyra* and *Cosmarium* were occurred abundantly. *Hydrodictyon*, *Scenedesmus*, *Netrium*, *Euastrum* and *Onychonema* were rarely found in site 2. The sampling site 3 was lower part of Pin Chaing Dam. *Compsopogon*, *Batrachospermum*, *Spirogyra*, *Closterium*, *Cosmarium*, *Xanthidium*, *Lynbya*, *Oscillatoria*, *Tabellaria* and *Surirella* were occurred abundantly in this area. *Scenedesmus*, *Closterium*, *Euastrum*, *Gyrosigma*, *Rhopalodia* and *Anabaena* were observed as low numbers of species. *Oscillatoria*, *Lynbya*, *Spirogyra* and *Diatoms* were found in all sampling sites.

Algae are abundant in streams where they may be attached to submerged twigs or rock and other materials forming the stream bed (Palmer, 1980). According to John (2002), characteristic feature of many blue green algae is the present of gas vacuole in the cell, which are often sufficient enough to more the cell positively buoyant. It can be seen that the species of *Lynbya* and *Oscillatoria* floating on the water. This observation was agreement with John (2002). The most members of *Rhodophyte* are marine forms, but *Compsopogon* and *Batrachospermum* were fresh water and was found in Nam San Chyin stream. Bellinger & Sigeo (2010), state that Diatoms the phytoplankton population in spring and early summer. In this research, during the winter season and summer season were abundantly found in Pin Chaing Dam and its surrounding area. This finding agreed with Bellinger & Sigeo, (2010). According to Smith, (1950) Chlorophyta are most abundant during late spring and early autumn. In the present study during the winter season, algae were abundantly found. Thus, this study is in agreement with state by Smith, (1950). Algae are treated as vegetable and may be combined with other sources of protein such as beef, pork, fish, chicken and soy bean curd (tofu) (Abbott, 1978).

As the conclusion, the present research is to provide the information on the existence of 30 species of algae with their morphological characters.

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