



Title	Zooplankton Community in MEIKTILA Lake, MEIKTILA, Central Myanmar
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## Zooplankton Community in Meiktila Lake, Meiktila, Central Myanmar

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### Abstract

Zooplankton community in Meiktila Lake, Meiktila, Central Myanmar investigated during October 2009 to August 2011 revealed a total of 16 species of zooplankton and one copepod nauplius larva. Zooplankton community represented with 11 species of rotifers (68.75%), three species of cladocerans (18.75%) and two species of copepods (12.5%). Among the species recorded *ceriodaphnia rigudii*, *Macrocyclus fuacus*, *Mesocyclops leuckarti* and copepod nauplius are considered very common and very thrived well in the study area because they were observed throughout the study period.

**Keywords:** zooplankton community, Meiktila Lake.

### Introduction

Zooplankton are minute aquatic animals that are non motile or very weak swimmers and they drift in water column of ocean, seas or freshwater bodies to sunlight zone where food resources are most abundant and they are also found in deep ocean water (Ferdous and Muktadir, 2009).

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Zooplankton plays important role in food web by linking the primary producers and higher trophic levels. Zooplankton is required as a first food for many cultured fish, for others it contributes to faster growth and higher survival (Ludwig, 1999).

Zooplankton species are cosmopolitan in nature and they inhabit all freshwater habitats of the world, including polluted industrial and municipal wastewaters. Zooplankton are not only useful as bioindicators to help us detect pollution load, but are also helpful for ameliorating polluted waters (Mukhopadhyay *et al.*, 2007).

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In view of this, community of zooplankton in Meiktila Lake was investigated and described.

## Materials and Methods

### Study Area

Meiktila located in Mandalay Region is included in the dry zone of Myanmar. It is situated between  $20^{\circ}51'$  -  $20^{\circ}55'$  N and between  $95^{\circ}49'$  -  $95^{\circ}54'$  E. The area of the town is 1.9 square kilometers. The Meiktila Lake is a large freshwater body located at the centre of the Meiktila Town. The Lake measures 1.12 km in length and 0.08 km in width and covers an area of 0.09 sq.km. Water from Meiktila Lake is used not only for irrigation but also a source of drinking and domestic use (Fig. 1).



Fig. 1 Location of Meiktila Lake, showing the study sites  
Source : Satellite Image

### Study Sites

A total of seven sampling sites were allocated in Meiktila Lake.

**Site I**

Location - Near the pumping station No. 2, near the middle of Pauk Chaung Bridge at the center of the western edge of Meiktila Lake.

**Site II**

Location - Near the pumping station No. 3, at the southern edge of Meiktila Lake.

**Site III**

Location- Near the common entrance of Mondaing and Nyaung-gone irrigation channel into the lake, at the southern edge of Meiktila Lake.

**Site IV**

Location- Near the pumping station at the south east edge of the Meiktila Lake.

**Site V**

Location- Near the pumping station No. 6, at the northeast edge of Meiktila Lake.

**Site VI**

Location - Near the pumping station No.4, where the Mondaing irrigation channel enters into the northern part of Meiktila Lake.

**Site VII**

Location- Near the north west edge of Meiktila Lake.

**Study Period**

This study was conducted from October (2009) to August (2011). The duration of study period was divided into first year (October 2009 to August 2010) and second year (October 2010 to August 2011).

**Collection of Zooplankton**

The samples were collected from designated seven sampling sites of Meiktila Lake. Collections were made by horizontal hauls with the aid of zooplankton nylon net (YRK- 520E) with 19 x21.5cm mouth diameter and 7 $\mu$  mesh size attached with 30 ml sampling bottle. The hauling distance was about 1.25 m at each sampling sites and the hauling time for each collection was 5 seconds. Samples were fixed in 4% Formalin soon after collection. Zooplankton samples from seven sampling sites were taken at the same

time of day. Samples were collected two months interval from seven representative sampling sites starting from October 2009 to August 2011.

### Identification of Zooplankton

The zooplankton species were identified following Pennak's (1953), Davis (1955) and Edmonson (1966). Zooplankton species were identified under a compound microscope with different magnifications of 10x4, 10x10, and 10x 100.

The microphotographs of zooplankton species were taken using DP -12 Olympus digital camera attached to microscope.

### Results

A total of 16 species and one copepod nauplius of zooplankton was observed in Meiktila Lake during October 2009 to August 2011.

### Systematic position

Phylum	-	Rotifera
Class	-	Monogononta
Order	-	Ploima
Family	-	Asplanchnidae
Genus	-	<i>Asplanchna</i>
Species	-	<i>Asplanchna pridonta</i> Goose, 1850(Plate IA)
Specie	-	<i>Brachinus angularis</i> Gosses, 1851(Plate I. B)
Species	-	<i>Brachionus calyciflorus</i> Pallas, 1766 (Plate I. C)
Species	-	<i>Brachionus diversicornis</i> (Daday , 1883) (Plate I. D)
Species	-	<i>Brachionus quadridentatus</i> Hermann, 1783 (Plate I. E)
Species	-	<i>Brachiouns ruben</i> Ebreberg , 1838 (Plate I. F)
Species	-	<i>Keratella tropica</i> Apstein, 1907 (Plate II. A)
Species	-	<i>Notholca acuminata</i> (Plate II. B)

Species	-	<i>Lecane luna</i> (Muller, 1776) (Plate II. C)
Species	-	<i>Epiphane</i> sp. (Plate II. D)
Species	-	<i>Filinia longiseta</i> (Ehrenberg, 1834) (Plate II. E)
Species	-	<i>Diaphanosoma brachyurum</i> (Lievin, 1848) (Plate II. F)
Species	-	<i>Daphnia</i> sp. (Plate III. A)
Species	-	<i>Ceriodaphnia rigaudi</i> Richard, 1894 (Plate III. B)
Species	-	<i>Macrocyclops</i> sp. (Plate III. C)
Species	-	<i>Mesocyclops leckurti</i> Claus, 1857 (Plate III. D)

### Composition of Species

Zooplankton species is represented with Rotifera (64.70%) and Arthropoda (35.29%) during the study periods (Table 1).

Among the different classes, Monogononta occurred the maximum composition of species (64.70%) and Crustacea (35.29%) (Table 1)

The highest species composition was recorded in order Ploima (58.82%), followed by Cladocera and Copepoda (17.64% each) and Flosculariaceae (5.88%) (Table 1).

Seven species were observed under family Branchionidae (41.17%), followed by three species under Cyclopoidae (17.64%), two species under Daphnidae (11.76%) and one species each under the rests of family (Table 1).

Table 1 Composition of zooplankton species in different phyla, classes, orders and families in Meiktila Lake during October 2009 to August 2011

Phylum	Class	Order	Family
Rotifera 64.71% (11 species)	Monogononta 64.71 % (11 species)	Ploima 62.5% (10 species)	Asplanchnidae 6.25% (1 species)
			Branchionidae 43.75 % (7 species)
			Lecanidae 6.25% (1 species)
			Epiphanidae 6.25% (1 species)
		Flosculariaceae 6.25 % (1 species)	Testudinellidae 6.25% (1 species)
Arthropoda 35.29 % (6 species)	Crustacea 35.29% (6 species)	Cladocera 18.75 % (3 species)	Sididae 6.25% (1 species)
			Daphnidae 12.5% (2 species)
		Copepoda 12.5% (2 species)	Cyclopidae 12.5 % (2 species)



A. *Asplanchna pridonta*



B. *Brachioums angularis*



C. *Brachioums calyciflorus*



D. *Brachioums diversicornis*



E. *Brachioums quadridentatus*



F. *Brachioums ruben*



A. *Keratella tropica*



B. *Notholca acuminata*



C. *Lecane luna*



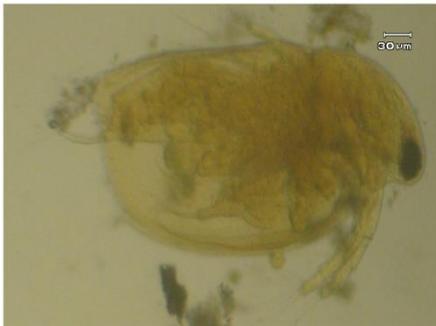
D. *Epiphane* sp.



E. *Filinia longiseta*



F. *Diaphanosoma brachyurum*



A. *Daphnia* sp.



B. *Ceriodaphnia rigaudi*



C. *Macrocylops* sp.



D. *Mesocyclops leuckarti*

## Discussion

Zooplanktons are microscopic free floating animals which play a vital role in aquatic food web. They are choice food of fishes in general and juveniles in particular. They graze heavily on algae, bacteria and minute invertebrates.

In the present study, regarding three major groups of zooplankton, rotifer is dominant group (11 species), followed by cladoceran (three species) and copepod (two species).

Among the recorded species, six species, *Keratella tropica*, *Notholca accumulate*, *Ceriodaphnia rigudii*, *Macrocylops fuscus*, *Mesocyclops leckurti* and Copepod naupilus were observed throughout the year in all sampling sites of both study periods, therefore, they may be considered very common species and thrive well in the study area.

Soe Soe Maw (2011) recorded the highest abundance of rotifers and the lowest abundance of copepods in Shwetachaung canal. In the present study, highest number is found in copepods and lowest number in rotifers. The rotifers are found in polluted water, therefore more rotifer species are found in Shwetachaung canal than Meiktila Lake. In contrast, copepod prefers more clean water, therefore more copepod individuals were observed in Meiktila Lake than Shwetachaung canal.

The information of zooplankton in any water body of any region is very important for the management of fishery. Although the species recorded in this study are very less compared to other studies in the country. It is hoped that the zooplankton community in Meiktila Lake presented may be useful in fishery practices in the area industry.

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