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## **Diversity of Copepods in Freshwater Wadali Lake, Amravati (M.S.) Cladoceras and Rotifera's functions in freshwater ecosystem**

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### **Abstract:**

Zooplanktons are free-floating, microscopic animals that live in aquatic environments. It is known that these ecosystems support a wide variety of organisms. Since they are sources of food, zooplanktons are significant to fish. Cladocera, copepods, rotifers, and ostracoda are the different groups into which zooplankton are divided. Numerous researchers, both domestically and internationally, have examined the zooplankton in freshwater environments. Fresh water is a necessary resource for life and serves as a habitat for a large portion of Earth's biodiversity. The biodiversity of phytoplankton and zooplankton is also rich in nature, with zooplanktons helping to bio monitor water pollution. The primary habitats of fresh water are ground water zones, rivers, streams, and other lotic bodies. It also affects the earth's climate. Thus, the study has been conducted from the freshwaters of Wadali Lake because copepods play a crucial role in maintaining the equilibrium of the freshwater ecosystem.

**Introduction:** Amravati's coordinates are 77.75 °E and 20.93 °N. It is 343 meters (1125 feet) above sea level on average. Situated 156 km (97 miles) west of Nagpur, it functions as the district administrative hub of Amravati. Pohara and the Chirodi Hills are located to the east of the city, as are the two lakes, Chhatri Talao and Wadali Talao. Within the city is the 60-meter-tall Maltekadi Hill. Zooplanktons, which are free-floating, microscopic animals found in aquatic environments, are among the many organisms that aquatic ecosystems are known to support. Because they serve as food sources, zooplanktons are significant to fish. The groups of zooplankton include rotifer, copepod, cladocera, and ostracoda. (8) Numerous researchers have looked into freshwater zooplankton in India and other countries. Fresh water is a vital resource for life and the habitat for a large portion of Earth's biodiversity. Zooplankton and phytoplankton have rich biodiversity in nature, and zooplanktons are important in biomonitoring water pollution. The primary freshwater habitats are the lotic bodies (rivers and streams), ground water zones, and two aquatic habitats. It also affects the earth's climate. Therefore, the study was conducted in Wadali Lake's freshwaters because copepods play a crucial role in maintaining the equilibrium of the freshwater ecosystem.

## Methods and material

### Survey

The area of research is Amravati city in relation to the study of fresh water Wadali lake. The survey of the various fresh water bodies near Amravati was undertaken to as to find the various types of fishes in the nearby reservoirs. The survey was conducted during the first week of January, February, March and April 2016. After the survey the Wadali lake has been selected for the present study as the fishes of fresh water species was available during this month for carrying the project work its correlation with micro-organism.

### Site Selection

The sampling station was fixed so as to reflect existing complex environment conditions, i.e Wadali lake which is situated in East part of Amravati city.

A random sampling method was used for the collection of samples from the selected site over two different region and season. January, February March and April 2016. The samples were collected by two methods firstly collected the simple bottle method and zooplankton mesh net consisting of a cylindrical tube.

## Result and Dissusion

The copepod biodiversity shows the following species with complete classification and morpho

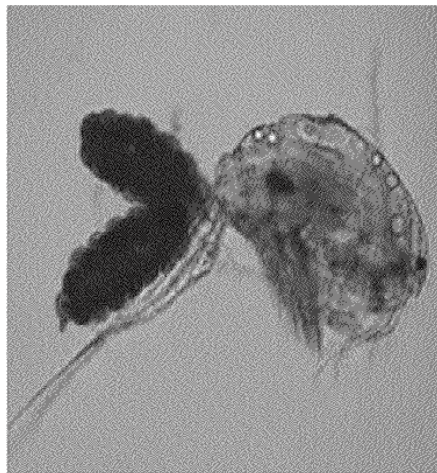
### Scientific Classification

3) CLADOCERA

### SCINTIFIC CLASSIFICATION

No.3: CLADOCERA

### 2) SCIENTIFIC CLASSIFICATION



Mesocyclops ogunnus

Kingdom: Animalia

Phylum: Arthropoda

Subphylum: Crustacea

Class: Maxillopoda

Subclass: Copepoda

Order: Cyclopoida

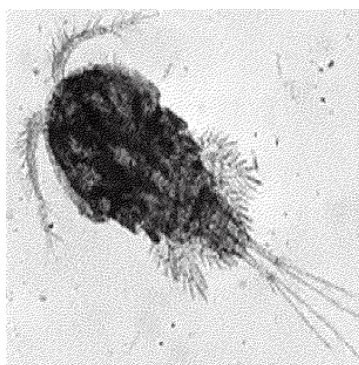
Family: Cyclopidae

Genus: Mesocyclops

- 1) Mesocyclops is a genus of copepod crustaceans in the family Cyclopidae
- 2) It is used as a nontoxic and inexpensive
- 3) The genus mesocyclops contains 129 species.
- 4) A big advantage of the mesocyclops is that it is possible to teach schoolchildren.
- 5) A field trial in Vietnam has shown that large-scale elimination of *Aedes aegypti* larvae is possible.
- 6) Mesocyclops is a host for the pathogen causing parasite round worm Guinea worm.
- 7) Many cultures have traditions and customs that forbid the introduction of animals into fresh water storage vessels as dangerous taboos.
- 8) It is used as a nontoxic and inexpensive form of biological mosquito control.
- 9) Mesocyclops can be easily harvested, bred and released into freshwater containers where the *Aedes aegypti* mosquito larvae
- 10) *Aedes aegypti* mosquito larvae is the vector of Dengue fever.

### Scientific Classification

#### Cyclops



*Cyclops sp.*

Kingdom: Animalia Phylum: Arthropoda Subphylum: Crustacea Class: Maxillopoda  
Subclass: Copepoda Order: Cyclopoida Genus: cyclops

- 1) Body is elongated somewhat brought anterior and narrow the posterior end
- 2) cyclops, copepods, members of Cyclopoid a are small, planktonic animals living both in the sea and in freshwater habitats.
- 3) The length of animal measure up to 1.5 to 5mm in length.
- 4) They are capable of rapid movement.

- 5) Body is differentiated measure into cephalothoracic and abdomen.
- 6) The head and first thoracic fuse to form cephalo thoracic, which is covered by carapaces.
- 7) Cyclopoids are distinguished from other copepods by having first antennae shorter than the length of the head and thorax, and uniramous second antennae.
- 8) The main joint lies between the fourth and fifth segments of the body.
- 9) Single median eye is present on dorsal surface of the carapace.
- 10) The fourth abdominal segment bears a caudal style or fork tail and anus present on dorsal side. logical characters.

Animals of fresh waters are extremely diverse, and include representatives of nearly all phyla. The zooplankton include animals suspended in water with limited powers of locomotion. Like phytoplankton, they are usually denser than water, and constantly sink by gravity to lower depths. The distinction between suspended zooplankton having limited powers of locomotion, and animals capable of swimming independently of turbulence-the latter referred to as nekton is often diffuse.

Freshwater zooplankton are dominated by four major groups of animals: protozoa, rotifers, and two subclasses of the Crustacea, the cladocerans and copepods. The planktonic protozoa have limited locomotion, but the rotifers, cladoceran and copepod micro crustaceans, and certain immature insect larvae often move extensively in quiescent water

Many pelagic protozoa (5-300  $\mu\text{m}$ ) are meroplanktonic. in that only a portion, usually in the summer, of their life cycle is planktonic. These forms spend the rest of their life cycle in these elements, often encysted throughout the winter period. Many protozoans feed on bacteria sized particles (most cells  $<2\mu\text{m}$ ), and thereby utilize a size class of bacteria and detritus generally not utilized by large zooplankton. (6) Although most rotifers (150 $\mu\text{m}$ -1mm) are sessile and are associated with the littoral zone.

some are completely planktonic; these species can form major components of the zooplankton. Most rotifers are non predatory, and omnivorously feed on bacteria, small algae, and detrital particulate organic matter.

Most food particles eaten are small ( $<12\mu\text{m}$  in diameter). Most cladoceran zooplankton are small (0.2 to 3.0 mm) and have a distinct head; the body is covered by a bivalve carapace. Locomotion is accomplished mainly by means of the large second antennae. Planktonic copepods (2-4 mm) consist of two major groups, the calanoids and the cyclopoids. These two groups are separated on the base of body structure, length of antennae, and legs. Hence in the present study two copepods has been identified.

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