



Diversity of Copepods in different water bodies from Lakhani, Maharashtra (India)

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Abstract

The present study reports the Copepods diversity from the different water bodies of Lakhani, District Bhandara, Maharashtra (India). 9 species of Copepods are recorded first time from this region. Out of these 1 species belonged to Diaptomidae family of order Calanoida while remaining 8 from the family Cyclopidae of the order Cyclopoida. The taxonomic notes and key for their identification are appended and their bioindicator value in the aquatic pollution studies is discussed.

Keywords: *Aquaculture, Bioindicator, Calanoida, Copepoda, Cyclopoida, Eutrophication*

Introduction

Among the zooplankton, Copepods constitute about 50-60% of the total number of animals present in a water body. Copepods are of great economic importance. The young fish fry survive on planktonic Copepods in aquaculture. Many small and large freshwater fish feed on copepods. These organisms constitute an essential link in aquatic food chain and form an intermediate trophic level between bacteria, algae and protozoan on the one hand and small and large plankton eaters, mainly fish, on the other (Sehgal, 1983). They are the representative indicators of water pollution (Dzyuban and Kuznetsova (1978), Carter (1971), Patalas (1972), Ringler and Langford (1967). Kurasava (1975), Radhakrishna & Rangareddy (1976) gave an account on Copepods for their indicator value in water pollution. The members of Copepods are extensively studied from India. Gorge, (1966), Baruah *et al.*, (1993) recorded Copepods species varied between 7 and 8.

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Report on a collection of 14 species of Copepoda from Nepal by Henri and Isabella (1977). Sars (1903) gave an account on taxonomy of Copepoda. Due to the inconceivable importance of biodiversity, the studies on collection of base line data related to fauna are important. Otherwise most of the existent organisms may go unrecorded. Present work is primarily based on the work conducted on some water bodies situated at Lakhani region. In the present investigation 9 species of Copepods are reported.

Materials and Method

The zooplankton samples were collected from different sampling stations for a year; the samples were filtered using plankton net with bolting cloth of 25 μ . Then plankton concentrate was preserved in 4% formalin and Copepods were identified according to key from Ward and Whipple (1959) and Sehgal (1983).

Results and Discussion

Following species of Copepods were recorded from Lakhani:

Taxonomic notes: Class: Crustacea, Subclass: Copepoda, Order: Calanoida, Family: Diaptomidae, Sub-family: Diaptominae:

Heliodiaptomus viduus: Ovigerous female with one ovisac attached to the ventral side of the genital somite. General form of the body oval without any segmentation of head and thorax. Antennae with indistinct coxa and basis. Body length: 0.25 mm. Distribution: Assam, West Bengal, Orissa, Andhra Pradesh, Tamil Nadu, Kerala.

Order: Cyclopoida, **Family:** Cyclopidae, **Sub-family:** Eucyclopinae.

Ectocyclops phaleratus: Female, body thick widest in the middle. Posterior thoracic segment armed with transverse row of spinules on ventral side. Antennule 9 jointed. Genital segment slightly wider than long receptaculum seminis divided into anterior and posterior parts, Caudal furcal rami of female. Body length: 1.10 mm. Distribution: Punjab, Himachal Pradesh, West Bengal and Deccan Plateau.

Macrocyclus distinctus: Female, anterior part of body oval shaped. Caudal rami 2-3 times longer than wide, inner margin of each ramus provided with continuous row of densely hairs. Lateral setae in posterior half of each ramus, distal apical setae longer. Antennule 17 segmented. Body length: 1.70 mm. Distribution: Punjab, Kashmir and Tamil Nadu.

Paracyclops fimbriatus: Female, body flattened dorso-ventrally, anterior end oval. Last thoracic segment extended into wings. Genital segment wider than long. Caudal rami 4-5 times longer than wide, dorsally each ramus provided with transverse row of spinules; distal two apical setae equal in length; outer seta spine like but thicker than inner one. Antennule 9 segmented, hardly reaching to the middle part of cephalothorax. Body length: 0.70 mm. Distribution: Madhya Pradesh, West Bengal and Himachal Pradesh.

Sub-family: Cyclopinae

Cyclops vicinus: Female, body slender. Last thoracic segments extended into posteriorly directed large wing like blades. Abdominal segments carry rows of small posteriorly directed spines. Caudal rami 8-9 times longer than wide.

Antennule 17 segmented almost reaching to the middle of second thoracic segment. Body length: 0.85 mm. Distribution: Kashmir, Deccan Plateau.

Acanthocyclops bicuspidatus: Female, body slender and covered with thick cuticle and small spinules. Caudal rami almost parallel and 6-8 times longer than wide. Each ramus provided with small spinules in the proximal half, inner apical setae longer than outer one. Apical setae thick and well developed. Antennule 15 segmented reaching up to the end of first thoracic segment. Body length: 1.20 mm. Distribution: Deccan Plateau.

Microcyclops bicolor: Female, last segment of the thorax completely rounded on either side and studded with stout seta. Cuticle of body pitted throughout. Furcal rami 3 times longer than wide. Each ramus inner apical distal setae shorter than outer distal seta, median apical seta comparatively short and thick. Antennule 10 segmented hardly reaching to the posterior end of first thoracic segment. Body length: 0.80 mm. Distribution: Orissa, Andhra Pradesh.

Mesocyclops leuckarti: Male, body relatively wide. Caudal rami 2.9-3.2 times as long as wide. Each ramus inner apical seta more than twice the length of outer one; median apical seta long and well developed. Antennule 17 segmented and reaching to the posterior end of second thoracic segment. Body length: 0.85 mm. Distribution: Uttar Pradesh, West Bengal, Orissa, Andhra Pradesh, Tamil Nadu and Kerala.

Mesocyclops Hyalinus: Male, body stout and compact. Caudal rami 2.9 times longer than wide. Each ramus inner apical seta twice the length of outer distal, median apical seta much longer than the outer one. Antennule 17 segmented; distal two segments with hyaline margin. Body length: 0.80 mm. Distribution: Kashmir, Rajasthan, West Bengal and Tamil Nadu.

Copepods are important member of the zooplankton for their role in the tropic dynamics and in energy transfer in the aquatic ecosystem, provide food for fishes in fresh water ponds, lakes and play a major role in fish production (Kamble and Meshram, 2005; Pawar *et al.*, 2003). In spite of this great importance, our knowledge on the taxonomy of freshwater calanoida and cyclopoida



of the country is still very inadequate and is mostly limited to some earlier works. Balamurugan *et al.*, (1999) reported six species of copepods belonging to order Cyclopoida from water body with heavily loaded organic enrichment due to influx of sewage. Species of Cyclops recorded more due to the abundance of diatoms and blue green algae (Meshram, 1996). In the present investigation the Cyclopoids occurred more throughout the year in all ecosystems from Lakhani region. Among Calanoids, *Heliodyptomus viduus* and among Cyclopoids, *Mesocyclops leuckarti* occurred throughout the year. Similar findings were found by Khan (2003) from West Bengal. Kurasawa (1975) noticed the dominance of Copepoda in oligotrophic lakes but Cyclopoid Copepoda were dominant in eutrophic lakes of tropical region. Kotangale (1988) states that the absence of diaptomus sps. or its diminishing significance showed that the water bodies are eutrophic. In the present investigation 1 species of Diaptomus and 8 species of Cyclops disclosed that the water bodies of Lakhani are eutrophic. Further studies on diversity of these species would be helpful in evaluating their bioindicator role.

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