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Research Article

Occurrence of Cladocera: Bosminidae from Andhra Pradesh

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Abstract

Two cladoceran species belonging to family Bosminidae *Bosmina longirostris* from Ameenpur irrigation tank, Medak District and *Bosminopsis deitersi* from Sriramsagar, Nizamabad District were collected and observed as a new distributional record to Andhra Pradesh. It is also noticed that these species are pollution intolerant, and could be used as biological tool for further biomoitoring of freshwater habitats.

Keywords: *Bosmina longirostris, Bosminopsis deitersi,* Pollution intolerant and biological tool.

Introduction

Cladocera invariably constitute a dominant component of freshwater zooplankton, play an important role in aquatic food chain and also contribute significantly to dynamics and secondary productivity in freshwater ecosystems, Rane (2011). Cladocera is a primarily freshwater monophyletic group and an important component of the micro-crustacean zooplankton. It's an ancient group of palaeozoic origin about 620 species are currently known globally, Forro *et al*. (2008). 190 species belonging to 49 genera and 10 families has been reported from India, of this family Bosminidae constitute 04 species, Raghunathan and Suresh Kumar (2003). Further, earlier few notable studies on Cladocera of Andhra Pradesh includes Patil (1986), Siddiqi and Chandrasekhar (1993), Patil and Panda (2003) and Chandrasekhar (2004). The extensive exploration of freshwater cladocera from various reservoirs of Northwest Andhra Pradesh is in progress, the present preliminary study reports two cladoceran species *viz*. *Bosmina longirostris* and *Bosminopsis deitersi* belonging to family Bosminidae (Fig. 1 & 2), which is reported for the first time from Andhra Pradesh.

Materials and Methods

The Sriramsagar Reservoir located at latitude 18°58´4.85''N and longitude 78°20´33.87''E in Nizamabad district (Site - 1). Ameenpur irrigation tank, situated at latitude 17°31´19.80''N and longitude 78°19'52.00''E, Ameenpur village, Medak district (Site - 2). Zooplankton collections were made by towing of the surface water column in the littoral region through zooplankton net mesh size 64µm (No. 25), preserved in 4% neutralized formalin and labeled for further detailed taxonomical identification. Identification was made through regional level literature Venkataraman (1987), Michael and Sharma (1988) and Ranae (2011), and the specimens were deposited in the National Zoological Collection, Freshwater Biology Regional Centre at Hyderabad.

Result and Discussion

Family Bosminidae Sars, 1865

Key to the genera and species of Bosminidae

1. Antennules are large not united at the base, almost parallel to each other…… *Bosmina longirostris* (O. Muller, 1776).
2. Antennules are united at base and diverging at apex… *Bosminopsis deitersi* Richard 1895.

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***Bosmina longirostris* O. F Muller, 1776**

1776. *Lynceus longirostris* O. F. Muller, *Havnia*: 76, tab. 10, fig. 7-8

1841. *Eunica longirostris* Koch, *Heft*: 35.

1854. *Bosmina curvirostris* Fischer, P. 426.

1860. *Bosmina curvirostris Leydig*, p. 208

1862. *Bosmina longirostris* Sars, Forhandi. Vidensk. Selesk. *Christiania*: 162.

Materials examined

Eleven examples of *Bosmina longirostris* were sorted from zooplankton collection of Ameenpur irrigation tank. Reg. No: FBRC/ZSI/INV/N: 789, Coll. D: M. Karuthapandi.

Diagnostic features

Body oval, transparent, whitish yellow, highest width in the middle and dorsal side evenly curved. Head large and arched, eyes are prominent with distinct lens located at ventral corner of the head shield. Head shield is broader in the middle and blended in the dorsal margin of the tip. Antennules are very large and distinct characteristic features compared to other cladoceran species. Antennules run parallel to each other, curved, attached at the tip of the head shield and diverged from the base. Antennas are small with 3 and 4 segmented rami. The ventral margin of carapace with many setae. Postabdomen is short and broad, with two pectinate large claws, without basal spine, a distinct concave deep intrusion in the margin of the postabdomen and two short abdominal seta. Postroventral region is denticulate and distinctly larger. The posterior regions of the carapace is narrow then the anterior.

Distribution in India

Meghalaya, West-Bengal, Maharashtra, Tripura and Kashmir.

Elsewhere: Cosmopolitan

Bosminopsis deitersi Richard, 1895

1895. *Bosminopsis deitersi* Richard, *Bull. Soc. Zool. Defrance*; 20:96, fig. 1- 4

Materials Examined

25 examples of *Bosminopsis deitersi* were sorted from the zooplankton collection of Sriram-sagar reservoir. Reg. No: FBRC /ZSI/INV/N: 790. Coll. D: M. Karuthapandi.

Diagnostic features

Body transparent, almost oval, head large, broadly rounded dorsally, distinctly concave anterior and produced into a robust rostrum; with distinct supra ocular depression. Antennules long, united at their bases; with about 5-6 sensory setae on ventral side near apex and tip of the rostrum with bristles. Eyes are moderately larger, located in middle of head region. Posterior ventral corners of the carapace are marked with five spinular projections, posterior region of the valve corner with distinct lager spine. The posterior joints of the carapace are distinct and pointed downward. The valves and base of the rostrum with polygonal reticulation, post abdomen small tapering distinctly.

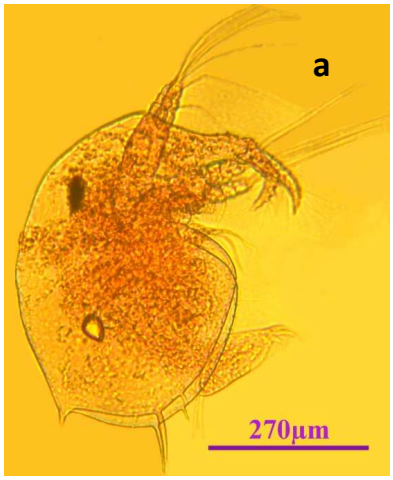
Distribution in India

Assam, Meghalaya, Tripura, Delhi, Madhya Pradesh, West Bengal, Rajasthan, Tamil Nadu and Kerala.

Elsewhere: Pantropical

According to Forro *et al.* (2008) there are two genera and four species including one endemic species belonging to family Bosminidae was recorded from the oriental region. In India till now four species of Bosminidae has been reported, Sharma (1987), Ragunathan and Suresh Kumar (2003). *Bosmina longirostris* and *Bosminopsis deitersi* were reported from several places of India but not recorded from Andhra Pradesh so far, may be due to lack of exploration and expertise. The present study reported as a new distributional record to this region, in addition to increase in the cladoceran diversity of the state. Hence, according to Hellawell (1986) these species were pollution

Fig.- 1. *Bosmina longirostris*



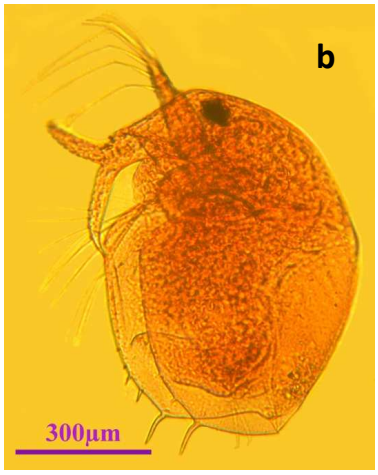


Fig. - 2. *Bosminopsis deitersi*

intolerant. *Bosmina longirostris* was recorded from Ameenpur tank during post monsoon and winter (December 2010 – February 2011), but in other seasons it was disappeared may be due to increasing nutrient content. The nutrient content of the tank such as phosphate 0.2-1.0mg/L, nitrate 1-75mg/L, shows high nutrient rich due to eutrophication. Therefore the present study also recommends *Bosmina longirostris* as a biological indicator for non-polluted environment and it could be used as one of the tool for biomonitoring of fresh water habitats for the better management and conservation.

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