

# Occurrence of *Hemicyclops thalassius* Vervoort & Ramirez, 1966 (Copepoda: Poecilostomatoida: Clausidiidae) in a tropical bay in Brazil.

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## Abstract

*Hemicyclops thalassius* Vervoort and Ramirez, 1966 is reported for the first time from Guanabara Bay, Brazil. This marine copepod occurred in zooplankton samples obtained in December 1999, with a maximum density of 1213 ind.m<sup>-3</sup>, thus comprising an important fraction of the local mesozooplankton community.

**Key words:** zooplankton, copepod, Clausidiidae, *Hemicyclops thalassius*, Guanabara Bay, Brazil.

This note provides the first record of *Hemicyclops thalassius* Vervoort and Ramirez, 1966 (Copepoda, Poecilostomatoida, Clausidiidae) in Guanabara Bay, state of Rio de Janeiro, southeastern Brazil (22°41' S/ 43°02' W). The bay is a shallow, partly mixed coastal estuary. The climate is humid-tropical, with a rainy season during summer (December – March) (Kjerfve *et al.*, 1997). The bay has been intensively studied in recent decades, because of its important social and economic role. The heavy anthropogenic impact has made Guanabara Bay one of the most eutrophic environments in the world. In spite of the many published reports on the zooplankton communities of Guanabara Bay, *H. thalassius* had not yet been reported (see review by Valentin *et al.*, 1999).

*Hemicyclops thalassius* is the only holoplanktonic species in the genus *Hemicyclops* (Boxshall, 1998). The paucity of planktonic members probably accounts for the low number of studies of the ecology and morphology of these copepods. Vervoort and Ramirez described *H. thalassius* in 1966, from samples obtained at Mar del Plata, Argentina (where salinities varied between 33.57 and 33.96, and temperatures between 14.00 and 16.84°C). This species has seldom been reported since. Morales *et al.* (1995) found it in plankton in the Gulf of Nagoya, an estuary on the Pacific coast of Costa Rica. Along the Brazilian coast, it was recorded by Kihara and Rocha (1993) in plankton samples from the Sergipe River estuary in northeastern Brazil, and from São Sebastião in the state of São Paulo. Coelho-Botelho *et al.* (1999) mentioned its occurrence in Sepetiba Bay, state of Rio de Janeiro (7.28 – 32.52 and 17.00 – 29.99 °C). Dias *et al.* (1999) found it in Ribeira Bay (29.00 – 38.00 and 19.00 – 28.00 °C), Angra dos Reis, on the southwestern coast of the state of Rio de Janeiro.

In this study, *H. thalassius* was recorded in 161 samples collected on 13 – 15 December 1999. Samples were obtained at a fixed station (22°54'18" S/ 43°08'47" W) at 1, 15 and 30 meters depth, during low and high tides. Collections were made using a water-pump, and the water was filtered through a 200-µm-mesh net. Samples were preserved with 4% formalin neutralized with sodium tetraborate. Salinity and temperature data were taken at the same time, values varied from 28.1 – 36.0 and 15.7 – 23.6 °C respectively.

A total of 30 specimens of *H. thalassius* were identified. Males and females occurred in approximately equal ratios. The maximum density found was 1213 ind.m<sup>-3</sup>, with a mean density of 158 ind.m<sup>-3</sup>. Identification was based on Vervoort and Ramirez (1966). A sample of 6 males and 6 females was deposited in the Carcinological Collection of the Department of Zoology, Federal University of Rio de Janeiro (UFRJ).

## Description

### *Hemicyclops thalassius*

DZUFRJ-4756, 6 males and 6 females without egg sacs, Brazil, Guanabara Bay, 22°54'18" S/ 43°08'47" W, Dec. 1999.

Diagnosis. - This species is distinguished from all the others of the genus by the following combination of characters of the adult females: body slender, without distinct contraction between prosome and urosome. Genital complex with smoothly rounded sides anteriorly. Anal somite ventrally with smooth distal margin.

All the specimens found in Guanabara Bay conform to these characters.

General description - The mean length of females found in Guanabara Bay was  $945 \pm 47 \mu\text{m}$  ( $n = 15$ ). The general shape of the body is slender, the anterior part (cephalothorax) is elongate-oval, and the abdomen is short. The head and the somite bearing the first pair of legs are fused to form the cephalic somite, which comprises a large proportion of the cephalothorax. The cephalic somite tapers gradually anteriorly, and is smoothly rounded in front. There is no trace of a rostrum or rostral hairs. The lateral parts of the somites of the second, third, and fourth pairs of legs appear rounded in dorsal view. The coxae and the bases of the second to fourth pairs of legs are invisible from above. The somite bearing the fifth pair of legs is small and rounded. The genital somite shows no line of fusion laterally or dorsally; laterally, the walls are swollen anteriorly; and in both lateral and dorsal views, a pair of rounded genital flaps is distinctly visible. Each furcal ramus bears 5 marginal setae, 2 of them long and thick. The egg-sacs are attached to the genital complex under the rounded lateral swellings. These sacs are as long as the abdomen. Each sac examined contained 12 to 23 large globular eggs; of 8 pairs of sacs examined, each female bore the same number of eggs per sac.

Males had a mean length of  $706 \pm 82 \mu\text{m}$  ( $n = 15$ ). The shape of the body is similar to the female, but smaller. The general outline of the cephalothorax is as in the female. The somite of the fifth pair of legs is visible from above. The genital somite is longer and broad, with slightly vaulted sides. The setation of the furca is as in the female.

The clutch size found for *H. thalassius* in the present work was larger than that reported by Vervoort and Ramirez (1966). The reason for this difference may be the differences in temperatures at the two localities; the highest temperature in Mar del Plata was near the lowest temperature in Guanabara Bay. Several recent reports have indicated a positive relationship between clutch size and temperature in copepods (Ara, 2001 for *Acartia lilljeborgi*; Koski and Kuosa, 1999 for *Acartia bifilosa*; Liang and Uye, 1997 for *Pseudodiaptomus marinus*; Powlik *et al.*, 1997 for *Tigriopus californicus*; Escribano *et al.*, 1996 for *Calanus chilensis*).

There is still insufficient information regarding the seasonal abundance and distribution of this species in continental shelf waters, estuaries, or open seas. However, our observations revealed that these animals may comprise a significant fraction of mesozooplankton communities. In Guanabara Bay, their densities were similar to the densities of other common zooplankters, except for the most abundant species such as *Acartia tonsa*, *Paracalanus parvus*, and *P. quasimodo*, which have mean densities of 5000 ind.m<sup>-3</sup>. According to all previous reports, the presence of *H. thalassius* in the estuarine Guanabara Bay was to be expected.

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