

NOTA BREVE

PRELIMINARY ASSESSMENT OF MORPHOLOGICAL ALTERATIONS IN THE COPEPOD *Acartia lilljeborgi* DUE TO ENVIRONMENTAL CHANGES IN THE VITÓRIA ESTUARINE SYSTEM, VITÓRIA, ES, BRAZIL

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The Vitória Estuarine System is located around 20°10'S - 40°20'W, surrounding the city of Vitória, Espírito Santo State, Brazil (Fig. 1). Water enters the system from several different sources, including sewage treatment plants, rivers, domestic raw sewage and the Espírito Santo Bay, where two major industries are located.

Samples were taken in 10 different stations within this estuarine system during the wet (Spring/Summer) and dry (Fall/Winter) seasons (1997/1998). Tows were made with a 200 µm mesh plankton net with a 30 cm mouth opening, fitted with a GO flowmeter. Material collected was preserved on a buffered aqueous solution of formalin 5%.

All 10 stations, representing the Vitória Estuarine System, presented individuals of *Acartia lilljeborgi* with two types of morphological alterations: one was an intestinal prolapse, and the other was a protoplasmic extrusion. These alterations were not only observed in all sampling locations, but also in all the different seasons.

The continued exposure of estuarine organisms to elevated levels of metal contaminants can cause tissue inflammation or degeneration, lack of repair and regeneration of damaged tissue, neoplasm formation, and genetic derangement (Kennish, 1991). Coutinho (pers. com.) sampling for heavy metals in the same estuary found high concentrations of chrome and zinc in mussel tissues. His findings, along with Kennish's remarks, leads us to believe that such high concentrations of these two metals, along with other contaminants, may be why we are finding *A. lilljeborgi* with morphological changes. We still need to perform toxicological bioassays to fully evaluate the effects of these two metals in this copepod.

During 1986/87, Dias (1994) observed the same alterations on *A. lilljeborgi* when sampling the Espírito Santo Bay, an adjacent area that influences the Vitória Estuarine System. Her observations and ours show a continuous problem due to pollution in this system that has been going on for more than 10 years. There is a possibility that individuals of *A. lilljeborgi* are developing these morphological alterations in the Espírito Santo Bay and are entering the Vitória Estuarine system with the help of currents and tides.

Toxicological studies are still necessary to understand how these alterations are occurring, what is causing them, and their consequences to the life cycle of *Acartia lilljeborgi*. These studies will provide us with tools to monitor the sources that are contaminating this estuarine system.

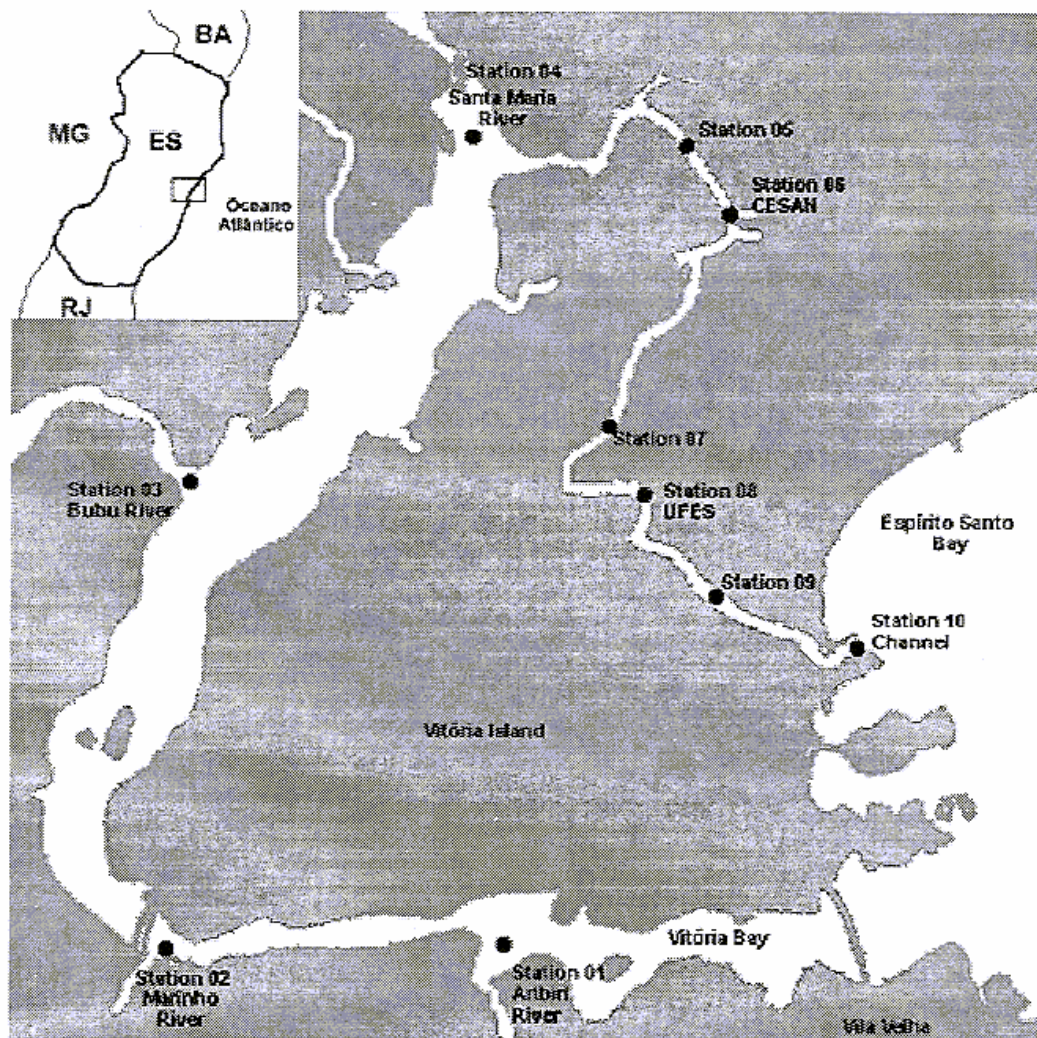


Figure 1. Location of the 10 sampling stations. Insert map shows the general location of the Espírito Santo State with a box showing the location of Vitória.

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REFERENCES

- DIAS, C.de O. 1994. Distribuição espaço-temporal dos copépodes na Baía do Espírito Santo (Vitória-ES, Brasil). *Arq. Biol. Tecnol.*, 37(4): 929-949
- KENNISH, M.J. 1991. *Ecology of Estuaries: Anthropogenic Effects*. CRC Press, 494 p.