

# The taxon *Mesocletodes* Sars, 1909 (Argestidae, Harpacticoida, Copepoda) in the South Atlantic

## Are there geographic barriers for this taxon off the African coast?

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### Abstract

During the Cruises DIVA 1 (2000) and DIVA 2 (2005) to the South Atlantic Ocean, 7 stations containing altogether 410 specimens of the taxon *Mesocletodes* Sars, 1909 were sampled. Although the Harpacticoida, which comprise amongst others the taxon *Mesocletodes* (Argestidae), are known as typical benthic habitants, the Walvis and Guinea ridge do not seem to be geographic barriers for most species.

### Introduction

Each deep-sea sample contains an enormous amount of new species throughout all meiofauna groups - too many to describe them all. Therefore, for the time being, it is helpful to reduce the investigations to small but representative taxa. One of them are the Argestidae Por, 1986, which are detected in all deep-sea samples. Furthermore, they provide one of the most abundant taxa of benthic living, harpacticoid copepods in the deep oceans. Additionally, due to their large body size and characteristic cylindrical body shape, Argestidae are easy to find in meiofauna samples. These facts make them very well feasible for taxonomical and geographical investigations on species level.

Within the Argestidae, the taxon *Mesocletodes* provides half of all Argestidae discovered in the Cape and Angola basin and one third or more in the Guinea basin. Due to the high occurrence, this taxon is supposed to represent the geographical distribution of Argestidae in the Southeast Atlantic very well.

### Results

Altogether, 406 specimens, belonging to 51 scientific new species of *Mesocletodes* are detected in 6 sampled stations distributed over Cape, Angola and Guinea Basin. One sampled station in the Angola Basin is not considered, since the majority of specimens was broken and difficult to identify. Although the sampling effort was almost the same at each station, the Guinea Basin showed the highest values concerning specimens, species and abundance, whilst one station in the Angola Basin showed very low values.

Few *Mesocletodes* species were detected in all sampled stations, e.g. *Mesocletodes spinulosus* sp. nov. (fig. 3). But most species were only found in few stations, such as *Mesocletodes dorsiproessus* sp. nov. (fig. 4).

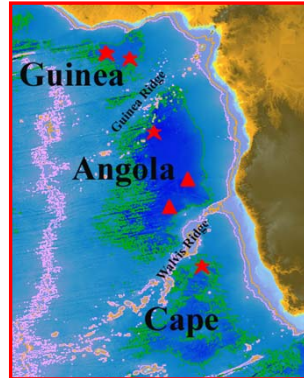


Fig. 1: Sampled deep-sea Basins in the South Atlantic Ocean during DIVA 1 and DIVA 2  
depth contours: —2000m —3000m —5000m  
▲ DIVA 1; ★ DIVA 2;

### Material and Methods

During the cruises DIVA 1 (2000) and DIVA 2 (2005) to the south Atlantic Ocean, three deep-sea basins, the Cape, Angola and Guinea basin off southwest Africa were sampled with a multicorer (fig. 1). The obtained Argestidae Por, 1986 were identified to species level.

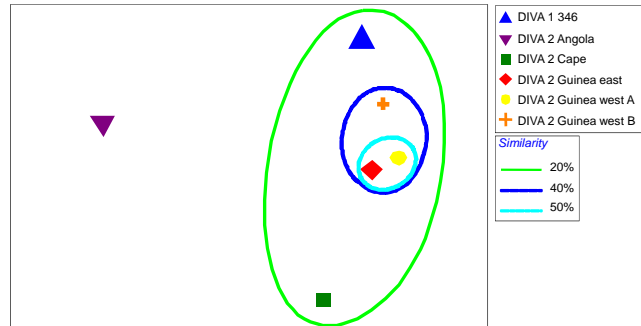


Fig. 2: Bray Curtis Similarity for *Mesocletodes* of the sampled stations during DIVA 1 and DIVA 2

### Discussion and Conclusions

The MDS plot (fig. 2) based on not transformed abundance data shows high similarity between the three stations in the Guinea Basin, which is clearly separated from the Cape and Angola Basin. Further, the eastern and one of the western stations are clustering together, whilst the second western station is somewhat different. The high dissimilarity between the Angola Basin and all other stations is the affect of low species number and abundance.

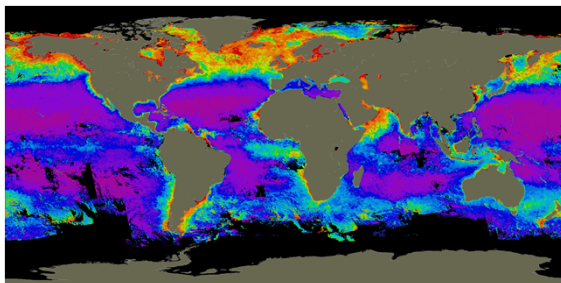


Fig. 5: Surface chlorophyll content (summer) high content, low content

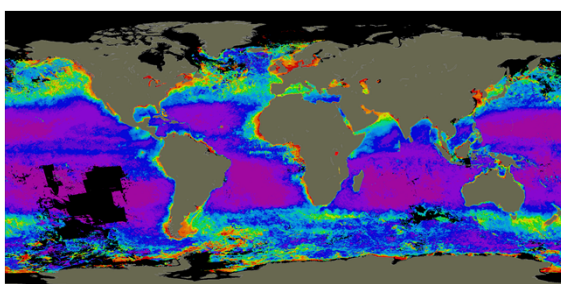


Fig. 6: Surface chlorophyll content (winter) high content, low content

As follows, the Guinea Ridge could be a barrier for more *Mesocletodes* species than the Walvis Ridge. But this is pretty unlikely, since the latter is higher than the first (fig. 1) and therefore rather a barrier to small, benthic, immobile animals. This leads to the assumption that there are other factors affecting the distribution of species in the South Atlantic than geographic barriers. But first investigations concerning sex, affiliation to the *Mesocletodes abyssicola* group and ocean currents did not lead to plausible explanations. Considering the seasonally high surface chlorophyll content (fig. 5 and 6), the food availability seems quite likely to be the reason for the accumulation of species in the Guinea Basin. But up to now, nothing is known whether and how much food from the surface actually reaches the bottom.

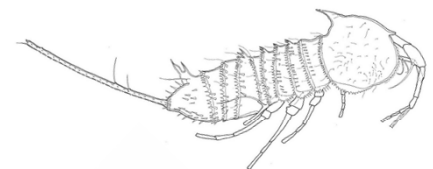


Fig. 4: *Mesocletodes dorsiproessus* sp. nov.



Fig. 3: *Mesocletodes spinulosus* sp. nov.