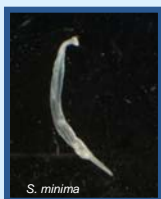


Chaetognatha of the Namibian Upwelling Region

Biomass, abundance and trophic position

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Introduction

Chaetognatha are an important group of carnivorous zooplankton in the Benguela upwelling system (Clark *et al.*, 2001). They are transparent marine metazoans living in various marine habitats (Vannier *et al.*, 2007). These predators play an important role in the food change and also in the pelagic ecosystem. They can be found at different depths between the surface and several thousands of meters. The main parameters which influence the vertical distribution are temperature, salinity, light density (Casanova, 1999), species, ontogenesis (Kehayias *et al.*, 1994) and last but not least prey (mainly Copepoda) density (Marazzo & Nogueira, 1996).

Purpose of this study

Investigation of:

- > Distribution - horizontal (shelf → offshore) and vertical (depth)
- > Species composition
- > Ontogenetic differences in the distribution
- > Trophic position of Chaetognatha in the food web

Methods

Samples were taken on the Discovery cruise 356 in September and October 2010 at several stations located off northern Namibia (Fig. 1) with a double 1m²-MOCNESS (Fig. 2)

All Chaetognatha species were sorted into different size classes and classified into three maturity stages following Zo (1973).

Carbon and nitrogen percentages and stable isotopes analyses for the different samples were determined using Thermo Finnigan Delta V Isotope ratio mass spectrometer (EA-1112 CHN-Analyzer).

Results

- > Highest abundances were detected in the upper 50 m at all 4 stations (Fig. 3)
- > Highest abundance was found at the shelf brake stations (Fig. 3)
- > The heterogeneity of the species increases from the coast to the open ocean (Fig. 4)
- > Ontogenetic differences in the distribution were found for some species (Figs. 5 + 6)
- > Differences in trophic position were detected between 4 species (Fig. 7) and between different areas (Fig. 8)

Conclusion

- > This study will help to understand the influence of the environmental changes on the distribution and behavior of Chaetognatha.
- > Chaetognatha are very abundant and influence the standing stocks of the prey.
- > Results of this study will help to assess the material fluxes within the pelagic trophic web.

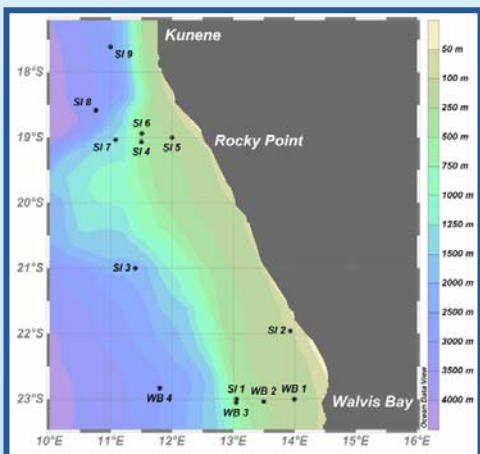


Fig. 1: Researched area with all stations (SI = stable isotopes samples; WB = distribution samples)

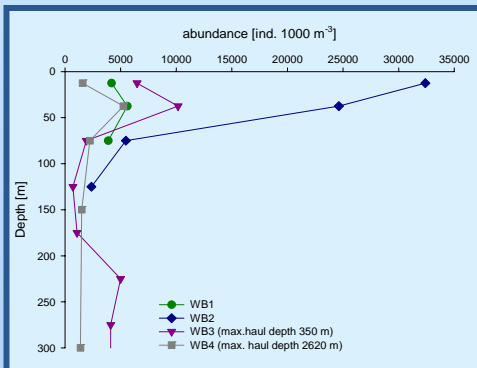


Fig. 3: Abundances of Chaetognatha on the Walvis Bay transect

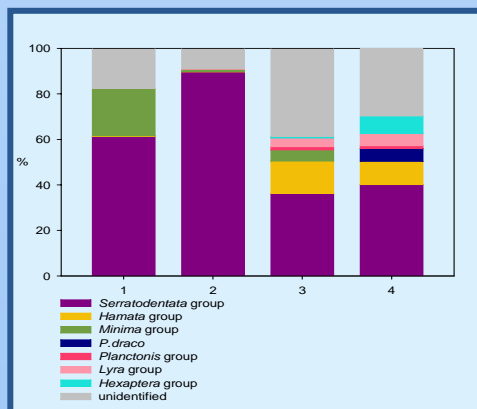


Fig. 4: Relative composition of Chaetognatha groups at the 4 station of the Walvis Bay transect

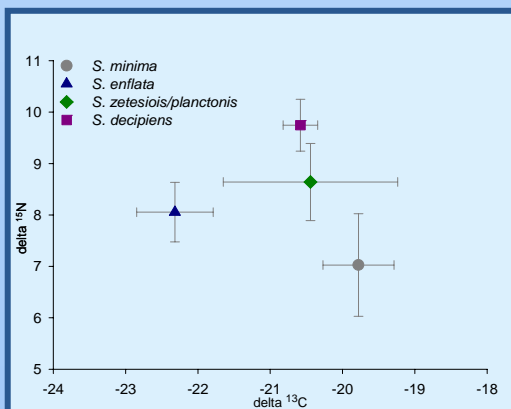


Fig. 7: $\delta^{15}\text{N}$ - $\delta^{13}\text{C}$ plot of different species

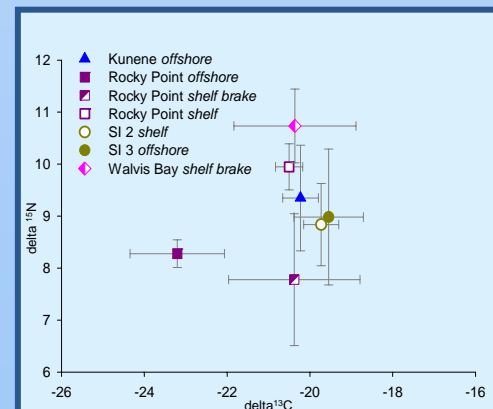


Fig. 8: $\delta^{15}\text{N}$ - $\delta^{13}\text{C}$ plot for different areas

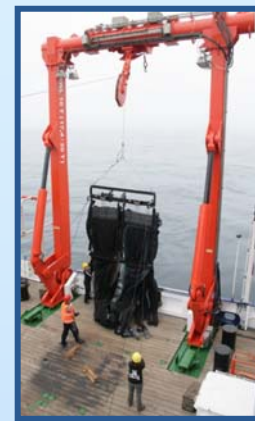


Fig. 2: Double 1m²-MOCNESS

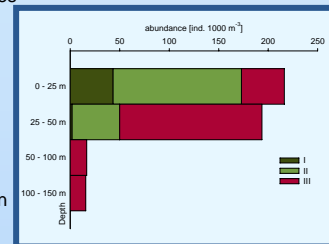


Fig. 5: Ontogenetic vertical distribution of *S. minima* (station WB2)

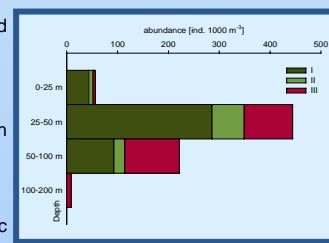


Fig. 6: Ontogenetic vertical distribution of *P. draco* (station WB4)

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