

The feeding ecology of four semi-pelagic fish species in the North Sea: a case of Belgian water

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On a global scale there is an evolution taking place from marine systems dominated by demersal fish species (and fisheries) towards systems with more (semi-) pelagic fish. Unlike the benthic ecosystems (benthos - demersal fish), the pelagic ecosystem in the Belgian part of the North Sea is little studied. In the pelagic foodweb zooplanktonic organisms play a key role as primary food source for higher trophic levels such as fish and seabirds. The aim of this study is to assess and compare the link of pelagic fish and their planktonic food sources of the Belgian part of the North Sea.

The stomach content results were combined with results from the piscatorial and planktonic research in order to reflect on the energy fluxes (production/consumption) present in marine foodweb. A total of 140 stomachs of Herring (*Clupea harengus*), Sprat (*Sprattus sprattus*), Mackerel (*Scomber scombrus*) and Horse mackerel (*Trachurus trachurus*) were analysed under microscope at ILVO laboratory. The selection of prey types was estimated using a selectivity index (Chesson, 1983) and stomach contents were compared between fish in a time period using non-metric multi-dimensional scaling (non-metric MDS). Differences between tows were tested using randomization tests based on permutations of the similarity matrix.

In order to assess the evolution within this pelagic ecosystem, indicators were and still are developed based on this zooplankton. Because of this, monitoring spatial and temporal variations within planktonic ecosystem is crucial. Due to present climate changes the distribution of certain marine organisms has moved north with more than 10 degrees during the previous 30 years.

This study compares current distribution data with data from the past, to see whether changes in distribution have occurred. Have we lost certain species? What about new/invasive species? What are the peak densities and at what time of the year are they found?

Reference

Chesson J. 1983. The estimation and analysis of preference and its relationship to foraging models. *Ecology* 64 (5):1297-1304.