

**Long-term dynamics of small copepods in a coastal area of the Baltic Sea**

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**Abstract:**

Zooplankton community in Pärnu Bay (Gulf of Riga) is dominated by two small calanoid copepods - *Eurytemora* and *Acartia*. Although similar in size, they exhibit slight differences in physiology and behavior, e.g. have different temperature preferences, movement patterns and feeding mode. Using long-term (1957-2013) high frequency (weekly to biweekly) monitoring data, we show the taxon-specific differences in long-term and seasonal abundance patterns of *Eurytemora* and *Acartia*. The maximum of peak production of *Eurytemora* was found in July until the early-1990s, but advanced about two months, into May, for the period of 1995-2005. *Acartia* spp. did not show comparable long-term variability of seasonality. Common to both taxa were the higher early summer abundances after mild winters, but *Eurytemora* exhibited additionally a markedly changed seasonality with up to one month earlier peak abundance after mildest winters, while the seasonal pattern of *Acartia* remained relatively stable over time. The association with ambient SST was similar for both taxa with the slope of the positive association increasing with the developmental stage. *Eurytemora* was also sensitive to top-down control – expressed by negative relationship with the abundances of the non-native invertebrate predator *Cercopagis pengoi* in late summer, while *Acartia* showed rather positive association with *Cercopagis*. Lack of negative effect on *Acartia* could indicate either lower predation pressure, or stronger effect of similar environmental preferences, e.g. the higher water temperature. Taxon-specific temporal patterns and responses to external drivers shown here support the notion that the species composition is at least as relevant variable as the total abundances of small copepods in the food web and climate change research.

**Key words:**

*Eurytemora affinis*, *Acartia* spp., Pärnu Bay (Gulf of Riga), hydroclimate forcing, predation

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