

Poster title: Effects of environment and life-history on diversity correlations in Baltic estuarine benthic communities

Tema: Modeller for biodiversitet

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Biodiversity is traditionally assessed by looking at the distribution of species in a community, but it can also be investigated by calculating genetic richness of the taxa within the respective communities (Hughes et al., 2008). Recently, new molecular techniques for measuring biodiversity more broadly have also entered the debate. Though the methods follow different approaches to measure diversity they certainly can be related, as the respective drivers of biodiversity at these different biological levels might be similar (Vellend, 2005). By combining ecological community studies and molecular population genetic techniques, the degree of similarity of species (community)- and genetic biodiversity patterns can be investigated by assessing the “species-genetic diversity correlations” (SGDCs).

This PhD project focuses on SGDCs in estuarine marine ecosystems, by investigating relations between population and community dynamics on one hand, and genetic diversity on the other. These changes are affected to various degrees by environmental factors (such as salinity, temperature, sediment composition, etc.), biological factors (e.g., species interactions) and anthropogenic disturbances besides physical distances. This study is the first large scale comprehensive study of SGDCs (Species Genetic Diversity Correlations) in an aquatic ecosystem, investigating the relationship between population dynamics and genetic diversity in benthic invertebrate communities throughout the Greater Baltic Sea. With this pioneering knowledge, we aim to shed new light on the understanding of ecosystem dynamics and pave the way for the future of natural conservation, and resource management.

The Baltic Sea is a unique aquatic ecosystem, mainly characterized by a decreasing salinity gradient from South towards North. The project includes two major field campaigns, including comprehensive sampling of benthic macro fauna at seven stations throughout the Greater Baltic Sea, and a revisit of three of the stations in a temporal series over two years. Through these field campaigns, we will be able to assess the changes in communities over a large distance and time, and by that investigate which members of the benthic community are most relevant for understanding SGDCs and whether SGDCs can help us understand ecosystem-level consequences of biodiversity change.

We will present the preliminary results of the spatial study focusing on the species diversity within and between benthic fauna communities using the Baltic Sea as a proxy for a salinity gradient. By assessing a broad spatial range of communities, as well as a range of biological and environmental factors, it is likely to detect correlations in β -diversity, and which factors that are driving them.

Referencer

Hughes, A. R., Inouye, B. D., Johnson, M. T., Underwood, N., & Vellend, M. (2008). Ecological consequences of genetic diversity. *Ecology letters*, 11(6), 609-623.

Vellend, M. (2005). Species diversity and genetic diversity: parallel processes and correlated patterns. *The American Naturalist*, 166, 199–215.