

Diversity patterns of rocky reef assemblages in the Baltic Sea: Interferences between natural and anthropogenic drivers

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Abstract

Anthropogenic pressure on marine coastal ecosystems is increasing and benthic habitats are particularly affected. Effective marine resource management is needed which rely largely on the knowledge of the distribution of critical species and habitats. Rocky reefs are such important habitats, hosting diverse macrobenthic assemblages, which in turn support higher-order consumers. For the brackish Baltic Sea, reefs are important to be included in MPA networks, since human impact is dramatic on the inland sea with a drainage basin including around 85 million people. However, detailed information on rocky reef macrobenthos beyond SCUBA depth is rarely available. To assess depth- (vertical) and geographical-related (horizontal) diversity patterns and drivers on a regional spatial scale, deep reefs in the southwestern Baltic Sea were sampled in 2016 and 2017 by means of photographic surveys using a towed camera platform. Analysis of high-res images revealed a significant changeover of species along the depth gradient (vertical variation). However, data indicate that horizontal variation along the salinity gradient is greater and accounts for dramatic changes in diversity within 200 km. Main human pressure represents eutrophication, acting mainly along the vertical axis by reduced light penetration depth and increased particulate matter concentration. Results point to the importance of considering deep coastal reefs in future MPA designs.