

## How does seascape structure affect seagrass fish assemblages? A seasonal case study from the Baltic Sea and Skagerrak

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Investigating distribution patterns among organisms through large-scale (km) approaches became common in terrestrial environments with the introduction of landscape ecology in the 1980s. This has contributed to increased understanding of the importance of spatial heterogeneity among landscapes and how pattern-process relationships vary with scale. In marine environments, however, studies using similar scale-dependent methods are relatively uncommon, especially in temperate waters, such as Skagerrak and the Baltic Sea in Sweden. In this study, we explore how seascape structure (i.e. composition and configuration of benthic habitat patches) influences fish assemblage compositions during summer - and autumn seasons in 20 eelgrass (*Zostera marina*) meadows on the Swedish east (Baltic Sea) -and west coasts (Skagerrak). In general, seascape structure had a larger influence on fish assemblage variables in the summer season compared to the autumn. Surprisingly, seascape structure also had more and stronger influence on fish assemblage variables in the Baltic Sea compared to Skagerrak. For instance, juvenile fish abundance in the Baltic was positively influenced by seascape heterogeneity. Interestingly, this is in contrast to previous findings from the Swedish Skagerrak coast, where juvenile abundance was shown negatively correlated to complexity (heterogeneity) of seascapes. In fact, most of the fish assemblage variables from the Baltic Sea (e.g. total abundance, juvenile abundance, low-level carnivores and mid-level carnivores) were positively influenced by more complex seascapes, indicating the importance of spatial heterogeneity among seascapes in the Baltic Sea. This research offers new insights into habitat patch dynamics in relation to mobile organisms in temperate coastal areas, particularly in the Baltic Sea region.

Keywords: seascape; landscape ecology; eelgrass; fish; baltic sea; skagerrak