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Advancing the knowledge base for fisheries management and habitat conservation – the importance of understanding food web interactions

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Coastal ecosystems are highly productive and provide a number of essential services to society. They are, however, under increasing pressure from growing human populations along the coasts. In the Baltic Sea, eutrophication, habitat loss and fishing cause major impacts on coastal biodiversity and ecosystem services. There is a need for advancing our understanding of the ecosystem effects of these pressures, to develop management measures to protect and restore degraded habitats and fish populations.

In this talk, I will review recent research on how human pressures and food-web processes interact to regulate coastal fish populations in the Baltic Sea. I focus specifically on large predatory fish, these being of central importance both to ecosystem functioning and to fisheries. Apart from providing food and opportunities for recreation, research shows how they, through their predation, may regulate lower trophic levels and thereby counteract the effects of eutrophication and contribute to healthy habitats. At the same, the populations of these fishes are limited by the availability to spawning and nursery areas, illustrating the tight coupling between fish and their habitats.

While juveniles of the predatory fish may be influenced by predation from smaller fish species, the adults are affected not only by fisheries, but also by predation from seals and cormorants. These processes interact to shape fish populations, and it is important that we learn to understand the relative impacts of, and interactions between, them to develop efficient management measures. In the last part of my talk, I will provide examples of topics

where research is particularly needed to aid management in restoring coastal ecosystems and maintaining a sustainable use of their resources.