

# Marine Ecology and Evolution

The department aims for a mechanistic understanding of the structure and dynamic behaviour of marine macrobenthos populations and communities. Taking up one of the great challenges in modern ecology, we try to understand the properties of populations and communities on the basis of characteristics of individual organisms. We focus on the role of bottom-up (food input and competition for food and other resources) as well as top-down (predation) processes in structuring benthic communities.

The work within the department of MEE covers three major themes:

- The structuring role of top-predators in marine ecosystems
- Competition, life-history strategies and dynamic energy budgets
- Recruitment and dispersal in relation to spatial and genetic structure of benthic invertebrate populations

At the level of the individual benthic invertebrate, studies were continued on performance (e.g. growth, age and size at maturity, fecundity, survival, or more generally energy budgets) in response to food availability and other environmental conditions, as well as research on the consequences of choosing a specific energetic strategy for competitive interactions and fitness.

At the population level, we focused intensively on recruitment processes (e.g. intra- and interspecific adult-juvenile competition by means of settlement inhibition by adults, or the competition for food affecting the age and size at metamorphosis), because it has been observed that the period around the settlement of the recruits is extremely important in marine benthic population regulation. In 2007 recruitment studies were performed again in intertidal systems (Wadden Sea), shallow coastal seas (North Sea) and in coral reef communities in deep water (continental shelf edge) and in the tropics (Caribbean). In 2007 also the work on an avian predator, the red knot *Calidris canutus* and its bivalve prey was continued in the Wadden Sea as well as on the Banc d'Arguin, Mauritania. The red knot colour ring programme which started there six years ago begins to produce reliable estimates of annual survival rates in relation to habitat choice.

The department was closely involved in the 'Global Flyway Network', a foundation by Dutch law, that was established in 2006 in association with Birdlife Netherlands and Birdlife International. Using the Global Flyway network as an umbrella, the amalgamation is intended of a series of existing demographic research initiatives into a true worldwide observatory of the changing fates of shorebird populations and the habitats on which they depend.

In 2007 Jeroen Reneerkens (on preen wax composition of sandpipers), Isabel Smallegange (on interference competition and patch choice in shore crabs) and Joana Cardoso (on growth and reproduction in bivalves) defended their PhD theses.

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