

MARINE ECOLOGY AND EVOLUTION



The department aims at 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:

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

In 2006 the work on an avian predator, the red knot *Calidris canutus* and its bivalve prey in the Wadden Sea was continued and the research program on the Banc d'Arguin, Mauritania could be further extended due to PhD and post-doc grants. The red knot colour ring programme which started there six years ago, begins to reveal reliable estimates of annual survival rates in relation to habitat choice. Studies on interference among foraging turnstones *Arenaria interpres* and among foraging shorecrabs *Carcinus maenas* were continued in laboratory experiments.

At the level of the individual benthic invertebrate, interest was directed towards 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, and a start was made with studying the consequences of choosing a specific energetic strategy for competitive interactions and fitness.

At the population level, it has been observed that the period around the settlement of the recruits is extremely important in marine benthic population regulation. Henceforth over the last few years 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). In 2006 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).

This year Wouter Vahl defended his PhD thesis about interference competition among foraging waders and Joana Cardoso finished the preparation of her thesis. The work of both is summarized below.

