

Habitat fragmentation and homogenisation are expected to substantially affect global biodiversity over the next century, but their effects on ecosystem processes are still unclear. Manipulative experiments explicitly testing the relationship between biodiversity and ecosystem processes have largely been carried out in isolated, homogenous environments that do not incorporate structural heterogeneity. Here we experimentally investigated the effects of biodiversity, faunal movement and habitat heterogeneity on bioturbation and nutrient generation in marine benthic communities. Communities were established within a multi-patch mesocosm system, in which patches were either isolated or connected by corridors. Our results show that bioturbation intensity and nutrient generation are enhanced in more diverse systems, but that the magnitude of effect is underpinned by the presence of a dominant species. Moreover, increasing the openness of the system and allowing fauna to move and select patches, positively affected both bioturbation and nutrient generation. Collectively our findings suggest that the effects of species loss are likely to be more dramatic in fragmented habitats and that some ecosystem processes are best maintained by retaining habitat heterogeneity.

18:00 - 18:15 ECOSYSTEM ENGINEERING EFFECTS ON BIODIVERSITY.

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Folkard, A. Department of Geography. Lancaster Environment Centre. Lancaster University. UK.

Reise, K. Alfred Wegener Institute (AWI) for Polar and Marine Research. Wadden Sea Station Sylt. Germany.

Olenin, S. Coastal Research and Planning Institute. Klaipeda University. Klaipeda, Lithuania

Within MarBEF RMP D-4-4.2-2, we have studied in a broad range of ecosystems the role of native and/or invasive ecosystem engineers on biodiversity. The MarBEF RMP enabled its members to carry out joined experiments, and to discuss concepts. Our presentation will provide an overview of the latest findings of our RMP, as are currently being published in a special issue. In addition to this overview, we will show the results of a series of flume studies, in which we tried to unravel the mechanisms by which ecosystem engineers affect biodiversity. The flume studies clearly show that ecosystem engineering effects on biodiversity is strongly determined by local hydrodynamics. The latter may offer an explanation for the contrasting effects of ecosystem engineers on biodiversity that have been reported in the literature. The conditional outcome depending on hydrodynamic forcing may explain why it is so difficult to derive general assembly rules that ascribe the effect of ecosystem engineers on biodiversity.

18:15 - 18:30 BIODIVERSITY, TRAIT DYNAMICS AND ECOSYSTEM PROCESSES UNDER GRADUAL AND CATASTROPHIC DISTURBANCE: A MODEL ANALYSIS

Matthijs Vos; Soetaert, Karlina, Heip, Carlo; Middelburg, Jack. Ecosystem Studies. Netherlands Institute of Ecology, CEME. Yerseke. The Netherlands

Herman, Peter. Spatial Ecology. Netherlands Institute of Ecology, CEME. Yerseke. The Netherlands

We use a mechanistic model to show how species traits and diversity shape major ecosystem functions, under both gradual and catastrophic disturbance. We focus on successional patterns in marine benthic communities and evaluate how species extinctions modify ecosystem functioning.

Auditorium museum

Session 1.4 Discoveries from integrated data systems

Chairs : Ward Appeltans; Mark J. Costello; Edward Vanden Berghe.

16:30 - 16:45 COMPARISON OF THE PERFORMANCES OF TWO BIOTIC INDICES BASED ON A SOFT-BOTTOM MACROZOOBENTHOS PAN-EUROPEAN DATABASE.

Grémare Antoine, Station Marine d'Arcachon, University Bordeaux 1, France.

The pan-European MacroBen database was used to compare the performances of AMBI and BQIES, two of the main biotic indices recently proposed within the European Water Framework Directive. A total of 18287 stations were selected and later divided into four subareas: Celtic-Biscay Shelf, Mediterranean, North Sea and