

BIANNUAL ACHIEVEMENTS REPORT July 2016

[Marine Ecosystem Research Programme]

Report completed by: Paul Somerfield pjs@pml.ac.uk

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Programme's key achievements and overall progress over the last 6 months:

The Marine Ecosystems Research Programme is now approaching the half-way stage, although different components are on different time-tables. Over the last period major components of the fieldwork have been completed, including cruises to collect information on seabed organisms, plankton, fish, birds and mammals and localised fieldwork and experimental studies looking at feeding relationships and how material moves among different ecosystem components, as examples. We have demonstrated how an ensemble approach using very different models of the ecosystem may be used to address a policy need and are using our knowledge about ecosystem change to link to changes in services. The services that the programme focuses on are food provision, leisure and recreation, biological checks and balances, and bioremediation of waste. We are actively engaging with our policy partners and have had face-to-face meetings with the MMO and policy customers at Defra, among others. Working with our stakeholders we prioritised a list of policy questions which provide a basis for discussion and for ongoing work across the programme. KE activities have included news items on television, activities to engage the public, newsletters and growth and evolution of the programme website (www.marine-ecosystems.org).

Key Achievements

Engaging with stakeholders

Often there is too little information flow between scientists and policy makers, so that scientific results produced by big multi-disciplinary science programmes such as MERP may not be used to inform decision-making to the extent that they could be. A group of MERP scientists met with Defra policy customers (MSFD, MCZ, fisheries, data) in February 2016 to highlight existing and planned policy-relevant MERP outputs, and to give policy-makers opportunities to discuss how our research can be more clearly directed towards issues that may influence policies. The consortium received positive feedback from Defra and there was great interest in what the MERP has been achieving and intends to achieve. Policy customers confirmed that the policy questions prioritised by the MERP are appropriate and largely cover their evidence needs. It was agreed to have a further briefing, and plans are also being made to engage with regional administrations by appropriate routes.

Bringing data together to support novel science

Body size data for UK marine species has been collated into a comprehensive new database. Body size is a key ecological variable, and is integral to a number of the models included in MERP's ensemble, yet information on the body size of marine species tends to be scattered across multiple databases and literature sources. We linked data from the Ocean Biogeographic Information System and the World Register of Marine Species to generate a provisional list of ~6,600 valid species in UK waters. Body size information was collated from the literature, from existing online databases, and

from datasets newly compiled in MERP. These include a new database of seabird biometrics, measurements of some 36,000 benthic invertebrates sampled during MERP cruises, and new estimates of zooplankton sizes derived from MERP field work at the Western Channel Observatory. To date we have size estimates for ~2,400 valid UK marine species. The workflow used to produce this dataset is fully documented and repeatable, with data assembly, cleaning, and manipulation performed programmatically in R.

Modelling with impact

Our modular ecosystem model development, exemplified by the new version of ERSEM developed within MERP, was presented at the kick-off of the “Network of Experts for ReDEveloping Models of the European Marine Environment”. This network was set up by the European Commission to advise on in-house modelling at the Joint Research Centre (JRC). As a result JRC has adopted our modular approach to ecosystem modelling to support contributions from many European institutes, and to ensure ERSEM is part of its model toolbox.

Issues and Remedial actions

There have been no major delays in the programme, and small delays and changes are being managed. Delivery of key components is on track, and integration across the programme continues to improve.