

Title:	Case Study: Eastern Channel Regional Environmental Assessment and monitoring for aggregates
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Summary:	The study concerns follow up work to a Regional Environmental Assessment of multiple aggregate dredging applications in the Eastern English Channel. A regional monitoring programme has been developed which includes habitat mapping as a principle component. A description of habitats and species across the region and a 'type' site were produced from a range of data, e.g. geophysical, camera/video. Monitoring is focussed on physical processes, e.g. sediment deposition, and biological communities, e.g. benthos. The collaborative approach taken has provided various benefits, including for habitat mapping, such as pooling of resources amongst individual developers, confidence in interpretation over varying spatial scales and providing a context in which to determine significance of operations.
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1. Introduction

The East Channel Region (ECR) is situated in the Eastern English Channel approximately 20km south of Eastbourne. Because of the concerns regarding the cumulative and in-combination effects of applications to dredge aggregate from this area the East Channel Association (ECA) was formed to provide a focus for coordinated regional monitoring and management of operations. A Regional Environmental Assessment was prepared in 2003. Following on from this a regional monitoring programme has been developed with habitat mapping as a principle component.

The ECA Regional Monitoring Blueprint v0.3 was completed in 2005. This is constantly under review and any changes made will be accounted for in subsequent versions of the document. The first annual monitoring and management report has recently been completed and describes the results of baseline studies.

Baseline studies provided a description of regional seabed habitats and faunal communities. In addition, a regional 'type site' was chosen at which studies have and will be undertaken to determine the nature of physical impacts resulting from the extraction of aggregate in the region.

2. Aims and Objectives

The aims and objectives of the ECR regional monitoring programme were presented in the ECA Regional Monitoring Blueprint v0.3 as follows:

Aims of the Regional Monitoring Blueprint

- To specify the procedures and study methods designed to test the predictions of the REA in relation to environmental effects of dredging.
- Ensure integration of regional and site specific monitoring using compatible/comparable data sets
- Guide development of impact thresholds by Year 5 that can be used to inform future dredging management decisions.
- Specify the scope of information necessary to provide species and habitat information to safeguard, and inform the management of, commercial and conservation interests.
- Provide a coherent five year plan, with annual stock take and review of regional monitoring data and information, aimed at informing decision making by industry and regulators.
- Ensure a precautionary, responsible audit regime is adhered to and inform major review in years 4-5.
- Provide input to a management framework that adheres to the principles of sustainable development: minimising environmental impacts, providing social and economic benefit,

whilst acknowledging the requirement to manage extraction of natural resources for the benefit of future generations.

Objectives of the ECR Regional Monitoring Plan

- To provide a regional baseline of the pre-dredge status of seabed habitats and biota in the Eastern English Channel in the vicinity of the proposed dredging.
- To provide a regional reference point against which predictions concerning spatial and temporal impacts due to dredging may be tested.
- To allow the predictions concerning impacts due to dredging to be tested.
- To assist in management of individual licence areas whilst ensuring a regional perspective is maintained.
- To ensure that data gathered from individual licence areas are comparable and compatible for combination across the regional area
- To help inform development of thresholds that may be applied to dredging management and enable further limitation of impacts during the life of dredging permissions.
- To place the conservation importance of the area into a regional and national context through the development of Habitat, Species and Biodiversity Action Plans.

3. Technical outline

Baseline studies, including acquisition of geophysical, grab sample, beam trawl, scallop dredge and drop camera/video data, were undertaken across the region, i.e well established methods along with extensive seabed photography.

The two main elements of the monitoring programme are physical process monitoring (sediment mobilisation, deposition and transport) and biological community monitoring (benthic, epibenthic, shellfish and demersal fish communities across the region. This is being achieved in part through acquisition of regional and licence specific data to provide a description of seabed habitat and faunal communities against which impact can be monitored.

Basic interpolation is being used to highlight regional habitat trends and features (e.g. Figure 4). Multivariate statistics are being used to assess the relationship between different variables (sediment, infauna, epifauna). Community/biotope maps and charts are under development. Repeat biological surveys have been undertaken in 2006 to enable inter-annual comparison of monitoring data early in the life of the development.

The survey methodologies and framework for report and review of data are described in the ECA Regional Monitoring Blueprint.

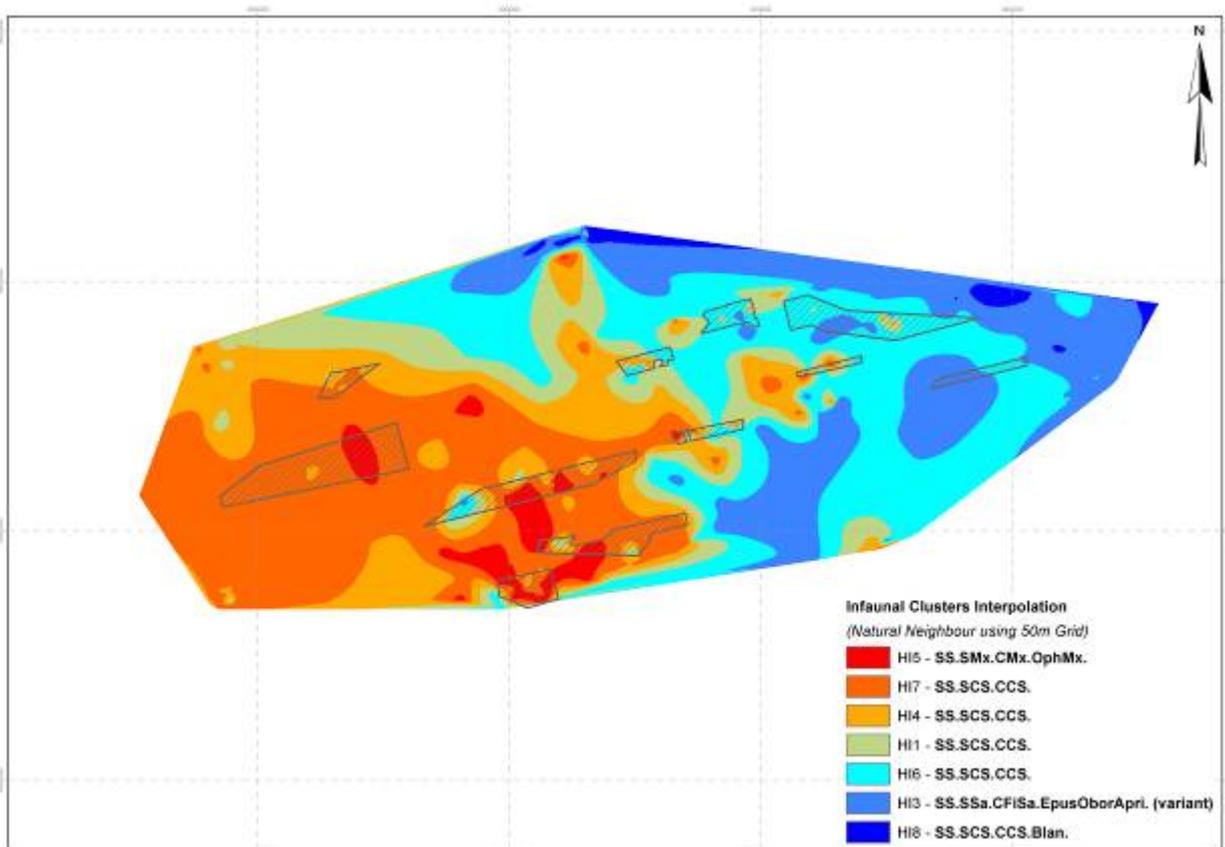
4. Main application/use

The principle uses of the seabed mapping in this example, using the categories in Gubbay *at al* 2006 (Figure 3), are policy, objectives, planning, monitoring, audit and review.

The results of the baseline studies are being analysed and interpreted to provide a regional description of habitats and species and a baseline description of the type site.

The collaborative regional approach ensures that the aggregate companies who will be working in the area maximise the acquisition of monitoring data and that available data are comparable between sites.

Figure 1: Basic interpolation of infaunal community clusters determined using Hamon grab samples (0.1m²), to which have been ascribed biotopes based on output from static image analysis from the same sites. Grey hatching indicates potential dredging areas. Illustration courtesy of ECA and EMU Ltd.



5. Conclusions

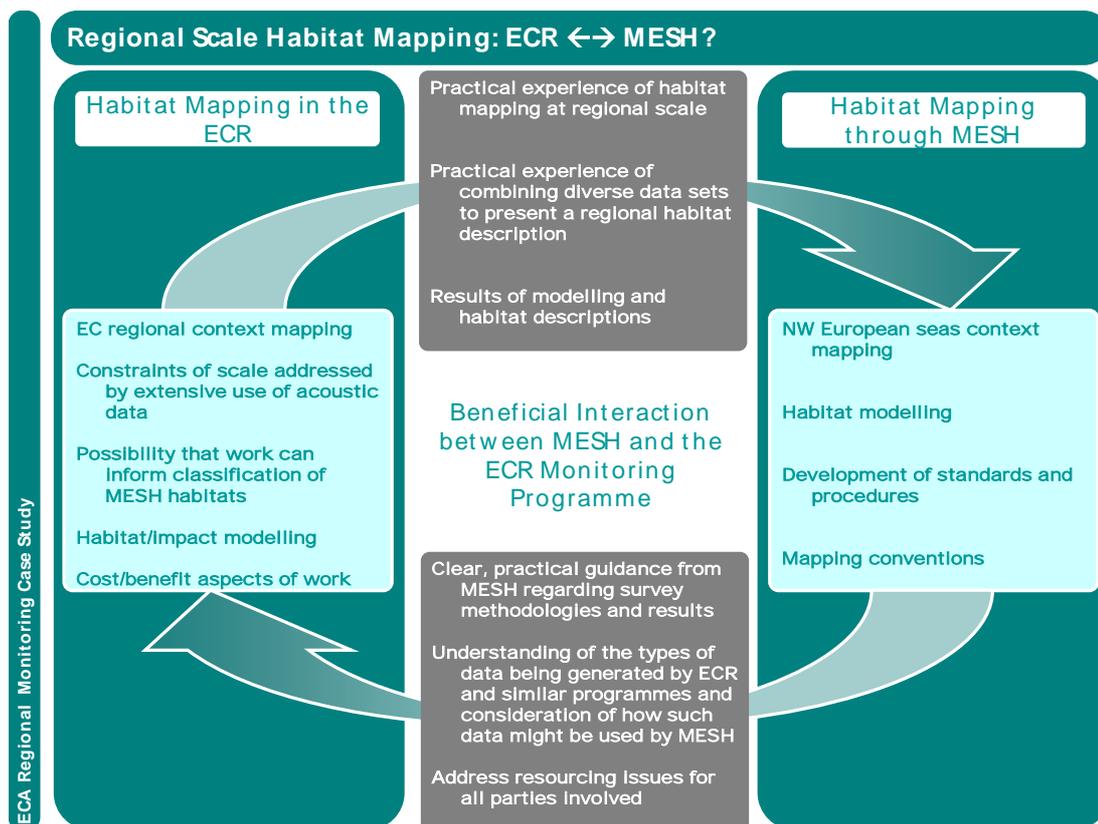
The regional approach also enables regulatory bodies and government advisors to focus attention on the whole development rather than each individual application, thereby allowing them to best use their resources when reviewing the monitoring data and providing guidance.

A number of key issues have been highlighted including:

- Practicality: Improved cost/benefit of monitoring at a regional scale by pooling resources
- Whilst the primary purpose of the data set is monitoring and not research, it is the intention to attempt to produce data capable of informing either
- Confidence of interpretation over varying spatial scales: best use of collated data sets and other studies (e.g. ALSF Eastern Channel Habitat Survey)
- Determination of significance of operations in the context of habitat abundance through NW European Seas: work on ECA Biodiversity Action Plan

A number of beneficial interactions between the habitat mapping work carried out by this study and the MESH project have been identified. These include practical experience of combining diverse data sets to present a regional habitat description and addressing resource issues for all parties involved (Figure 2).

Figure 2 Beneficial interactions between MESH and the Eastern Channel Regional Habitat Mapping Project



6. Further information

East Channel Association (2006) Regional Environmental Monitoring and Management Report.

East Channel Association (2005) Regional Monitoring Blueprint related to marine aggregate extraction operations in the Eastern English Channel. Version 3.0.

Regional environmental assessment for aggregate extraction in the English Channel. Posford Haskoning for the East Channel Association. 2003.

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7. Acknowledgements

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