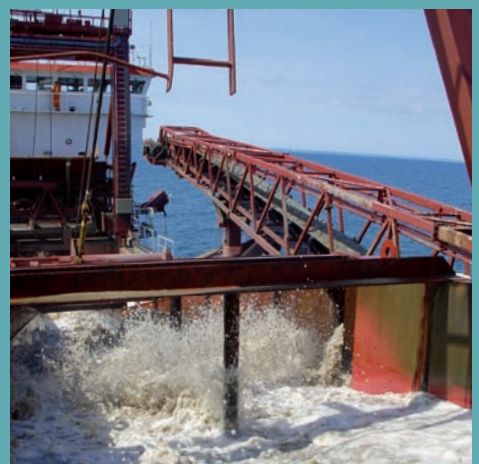


Marine Aggregate Levy Sustainability Fund (MALSF)

Science Review 2008



Summary of Technical Conference Presentations, Priority Themes for the Future & Projects Commissioned under Round 3 of the ALSF (2008-11)

MALSF STEERING GROUP REPRESENTATION

Organisations:

Department for Environment, Food & Rural
Affairs (Defra)
The Crown Estate
Natural England (NE)
English Heritage (EH)
Joint Nature Conservation Committee
(JNCC)
British Marine Aggregate Producers
Association (BMAPA)
Centre for Environment, Fisheries &
Aquaculture Science (Cefas)
Communities & Local Government (CLG)
HR Wallingford
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Acknowledgements

We are grateful for the advice and comments
of the ALSF Steering Group and for permission
of the authors to use photographs from their
presentations in the summary texts in
this review.



Introduction

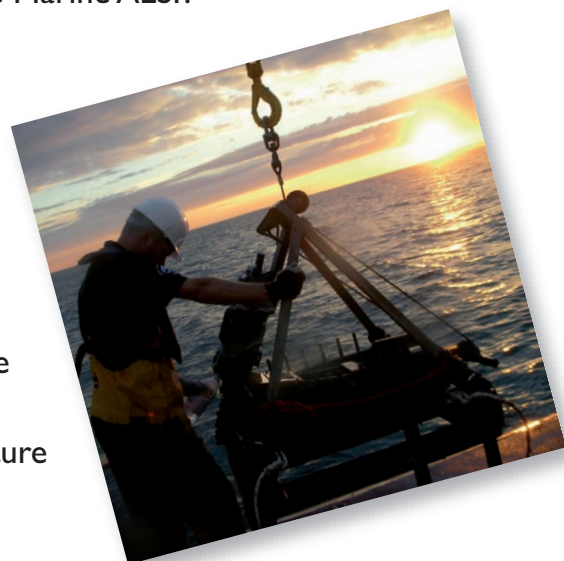
The Marine Aggregate Levy Sustainability Fund (ALSF) Technical Conference was held in February 2008 at the Centre for Engineering Manufacturing & Excellence (CEME), Rainham, Essex. The conference was the third of a series of technical conferences that have formed part of the dissemination and outreach programme for the Marine ALSF since its initiation in 2002.

The work reported in the technical conference mainly relates to projects completed under a 12-month (Round 2 extension) interim agreement in the financial year 2007-8 during which time the future of the ALSF was under review. The following Marine ALSF Science Review summarises the contributions to the Technical Conference and includes the presentations in full on CD-Rom inside the end cover of the document.



The priority themes that the Marine Steering Group identified for possible support in the future were highlighted in the conference, with a view to calling for proposals as soon as the future status of the ALSF had been clarified. We are pleased to be able to confirm that the Marine ALSF has received support for the period July 2008-March 2011 (Round 3) and that projects have been commissioned under the priority themes outlined at the Technical Conference. The Steering Group has also identified other areas where further research may be required to meet the aims and objectives of the ALSF, and where commissioned research or potential proposals may be required during the course of the current Round 3 of the Marine ALSF.

This Summary Report therefore includes not only a review of the work that has been reported at the Technical Conference for the period 2007-8 under Round 2 of the Marine ALSF, but also summarises the projects that are to be supported under Round 3 for the period 2008-2011. It is anticipated that this will enhance awareness of projects that have been recently completed, or are in progress, and may assist future proposals for projects that are relevant to the objectives of the Marine ALSF.



Keynote Address

Darius Campbell
Head of Marine Strategy & Environment
Division
Department for Environment, Food &
Rural Affairs (Defra).

Introduction

I am very happy to be here to help launch this conference. It is also great to be here to congratulate all those who have worked on, developed and promoted marine research under the Aggregate Levy Sustainability Fund. This work has provided vital pieces of our understanding of the marine evidence jigsaw. I know this work will prove invaluable to many people now and in the future. It helps us move towards the goals of developing within the marine environment sustainably whilst living within our environmental means.

The sea has a key role to play for all of us, from shaping and regulating our climate to providing us with food, resources and jobs. Defra's aim is to achieve its vision of clean, healthy, safe, productive and biologically diverse seas.

Importance of Aggregates

Marine dredging of sand and gravel makes a significant contribution to the supply of aggregates to the construction industry, particularly in the South East of England and South Wales. It is an important part in the provision of high quality raw materials for the construction industry. Marine aggregates appear in everything from our homes to the channel tunnel, and even in our football stadiums. They are important for beach nourishment and flood and coastal defence schemes.

The Government wishes to see indigenous mineral resources developed within a framework of sustainable development. For the economic well being of the country it is essential that the construction industry continues to receive an adequate and steady supply of aggregates to meet the needs of the community and foster economic growth.

At the same time, we recognise that dredging may cause disturbance to fisheries and damage to the marine environment. It is essential therefore, to balance the social and economic needs of the nation with the needs of the environment. Even though each year's dredging operations take place in a very small



area of the UK's seas, we must make sure that environmental impacts are minimised. Proposals to dredge must therefore have full regard to the impacts on the marine environment, sea fisheries and the potential effects on the coastline.

The Government has recognised that there are some uncertainties in the science to enable us to assess the impacts of dredging. The Aggregate Levy Sustainability Fund has provided for effective research into the marine environment to help address these.

Success of the ALSF and last Technical Conference (September 2006)

In fact the marine work under the ALSF is a great example of people working to provide a clear evidence base. Since the Fund's creation, Defra has allocated around £9 million of it on marine-related research. The range of research has been wide, but it has needed to be. Historically we have had relatively limited knowledge of the ability of the sea to recover from the aggregate dredging process. We have little baseline information on what can recover and what could be lost forever. Without this information, it is very difficult to assess where aggregate extraction is acceptable, where it is not, and where its impact can be minimised. Another gap in our knowledge is knowing what variety of marine resources are actually in the areas where extraction is proposed. After all, neither industry, conservationists, nor regulators can make informed decisions on where dredging can go ahead, unless they have information on what is happening in that area and what the potential impacts may be.

Conference Summary Report

The September 2006 Conference provided significant technical details on the projects that were disseminated around the world. Importantly it also provided a summary report so that policy makers and lay

readers could understand the science underpinning our decisions. The summary report is a great example of a document that can be easily read yet is grounded in high quality world renowned science.

Research Gaps

However, though there have been significant advances in our understanding, there is still much more we need to explore and our overall knowledge remains incomplete. At the end of the last conference we recognised specific areas - including seabed mapping, localised community impacts, effects such as noise, and understanding of socio-economic concerns – as issues where further work needed to be done. I look forward to hearing at this conference about some of the work that has been undertaken to address these gaps.

Future of the ALSF and the consultation

Defra has recently reviewed its strategy to ensure that Government is ready for the environmental challenges of the 21st Century. We have two high level goals essential to tackling our overall aims of living within our environmental means. 'Tackling the causes and consequences of climate change' and 'securing a healthy natural environment'. Underlying these activities we will be looking to promote genuinely sustainable consumption and production patterns to help us live within our environmental means whilst boosting productivity and competitiveness.

We have recently been able to announce the continuation of the ALSF. Activities under the fund will be aligned to achieve our goals and help achieve our vision for the marine environment. The fund will have £24 million available per year, £4.5m of which is currently being targeted to reduce the environmental footprint of marine extraction. A consultation on the shape of the fund, and the split of funding within it, is going on now. It can be found on the Defra website. If you want to add your thoughts to the consultation you will need to get a response in by 29 April 2008.

Change and the Marine Bill

When we think about our aims and goals for the marine environment we are thinking about an area which is seeing increasing demands. We are seeing new ports built, and increases in shipping and the size of the vessels that bring our goods from overseas. We are looking to use our maritime areas to help in the fight against dangerous climate change and provide energy security. The Government wants to see the huge growth in wind farm development continue and will open up our seas to up to 33 GW

of renewable energy. Wave and tidal power projects will come forward and a feasibility study into harnessing the power of the Severn tides is ongoing. Offshore we are also looking to develop carbon capture and storage projects, where CO₂ will be stored in geological formations deep under the seabed. We will also look to maintain our fisheries industry and protect the marine environment by developing a network of marine protected areas and conservations zones. In addition, we are faced with the challenge of the recently adopted Marine Strategy Framework Directive and will need to introduce measures to achieve its requirements in the future.

But we also need to maintain the supply of aggregates within this complex marine web, and the jobs and income that this industry provides. However, it is clear that the marine aggregates industry will be interacting in an increasingly congested and demanding environment.

This is why we are looking to bring forward a Marine Bill to be able to plan strategically for these demands. The forthcoming UK Marine Bill should help us to do this and to achieve a framework for managing our seas fit for the 21st Century. Marine planning through the Bill will allow us to strategically manage and balance activities, and to ensure that our objectives for aggregates are considered. The Bill will also develop streamlined, effective licensing of marine works such as aggregate dredging.

The Marine Bill will not only help with management of the aggregates industry, it will also improve the protection of marine ecosystems. The Bill will help us to develop an ecologically coherent network of marine protected areas by 2012 to further the conservation of marine biodiversity and meet a number of international commitments.

The Bill will also set out proposals to strengthen fisheries and environmental management arrangements. It will allow us to take more effective action to conserve marine ecosystems and help achieve a sustainable and profitable fisheries sector.

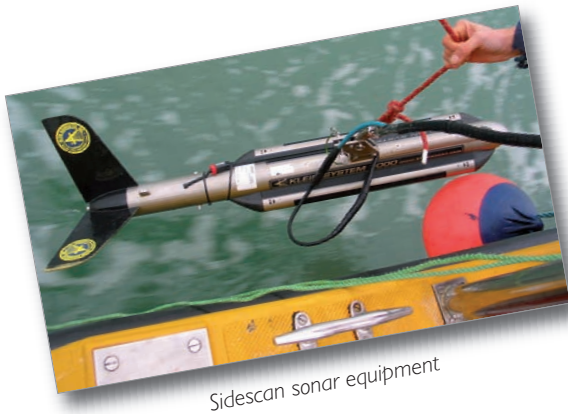
Concluding remarks

But as I have indicated, Governments struggle to develop and implement appropriate policies to address the challenges they face without a clear evidence base for decision makers. The research that the ALSF has funded in the maritime area is crucial in providing the evidence base to our decisions. I look forward to hearing more on the work that has been funded today and tomorrow and wish you all a successful conference.

Summary of Main Programme Presentations

1. 'Best Use' – Maximising the value of data collected under ALSF projects and the aggregate dredging industry

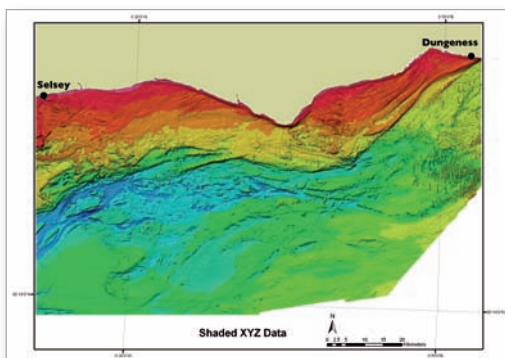
Stuart Leather, Wessex Archaeology.
s.leather@wessexarch.co.uk



Sidescan sonar equipment

MEPF Project Reference: MEPF 07/08
Project Manager: David Limpenny, Cefas
Contact: david.limpenny@cefas.co.uk

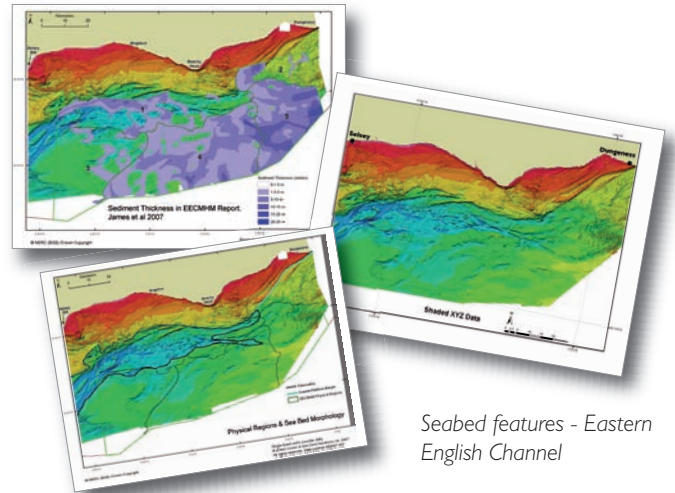
The aim of this project was to assess whether the 'collect once, use many times principle' could be used to improve communication between disciplines and to improve approaches to integrated, cost-effective field sampling in relation to marine aggregate dredge sites. The recommendations produced as a result of this project cut across many of the strategic aims of the Marine ALSF. Ways of encouraging communication and collaboration between project teams, and the development of an integrated approach to field sampling have been proposed. The project also reviewed the methods that different disciplines use to collect data, and suggests ways in which the methodologies could be adapted to better meet the needs of a variety of end-users.



Seabed morphology map

2. Application of sea bed morphology modelled from single beam echo sounder data for habitat mapping in the Eastern English Channel

Ceri James, British Geological Survey.
jwcj@bgs.ac.uk



Seabed features - Eastern English Channel

MEPF Project Reference: 04/01 Extension
Project Manager: Ceri James, British Geo. Survey
Contact: jwcj@bgs.ac.uk

This project was an extension of an earlier project. 'The Eastern English Channel Marine Habitat Map' that was completed under Round 2 of the ALSF. The interpretation of the seabed in the original study was based on high-resolution multibeam, sidescan sonar and sub-bottom seismic data, combined with extensive 'ground-truthing' based on seabed imagery, quantitative grab sampling and trawl samples. The data for the original study were necessarily confined to relatively widely-spaced corridors between which there was limited information. The present study successfully produced a seabed morphology model from a total of 4 million single beam echo soundings derived from the 26 UKHO bathymetric surveys. The results allowed improved definition of the boundaries of the five physical regions defined in the original study and also identified linear geological features not evident in the earlier interpretation. The data have reduced the uncertainty associated with placement of the boundaries representing gradual transitions from one biotope to another in the Eastern English Channel and suggest that benthic infaunal and epifaunal communities correspond with distinct morphological features.

3. Development of an appropriate hierarchical classification scheme for the supervised classification and accuracy assessment of acoustic ground discrimination system (AGDS) data

Tim Dapling, Rob Clark & Belinda Vause, Sussex Sea Fisheries Committee.

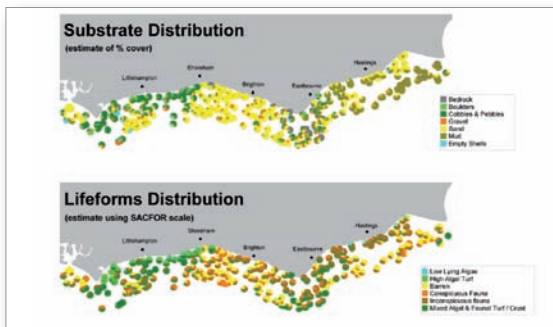
rclark@sussex-sfc.gov.uk

MEPF Project Reference: MAL0020 2007/8 Extension

Project Manager: Tim Dapling, Sussex Sea Fisheries Committee

Contact: dapling@sussex-sfc.gov.uk

Very little information is currently available for the definition of broad scale habitat maps for the near-shore zone. The rationale for this project was to develop methodologies and datasets, using existing Sea Fisheries Committee (SFC) vessels, to inform a consents decision-making process. The work is particularly relevant to marine conservation and fisheries management and the aggregate extraction consenting process. An acoustic ground classification system (AGDS) provided data on routine fisheries patrols between 2006-7. These data were interpreted and validated using a towed video system at 270 sites in the summer of 2007.



The information resulted in the following project outputs:-

- A video record of benthic habitat samples for the Sussex Sea Fisheries District
- A database for benthic habitats including biotope classification of field sites
- A plan for the continuation of acoustic data collection on routine patrols to support marine spatial planning
- A final report which is posted on the following website: www.sussex-sfc.gov.uk

4. The significance of benthic communities for higher levels in the marine food-web at aggregate dredge sites using the ecosystem approach

Bryony Pearce, Marine Ecological Surveys Ltd.

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MEPF Project Reference: MEPF 04/02b Extension

Project Manager: Bryony Pearce, MES Ltd.

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Information on the diet of fish is mostly limited to species of commercial significance and is rarely linked directly to the availability of benthic food resources at the same site from which the fish were collected. The stomach contents of over 500 fish sampled with a 2m beam trawl at aggregate extraction sites around the UK have been analysed. The project aimed at establishing whether some components of the benthos of marine sands and gravels are of more importance than others in supporting higher trophic levels in the marine food web. The samples were collected as part of two previous research projects funded through the ALSF (MEPF 04/02 & MAL0027), as well as from other surveys on the Hastings Shingle Bank. These data were analysed to establish the diet of 18 fish species in relation to prey availability in sand and gravel biotopes.

Most of the fish species were found to exploit a wide range of food prey items. Crustacea were clearly an important component in supporting higher trophic levels despite the numerical dominance of small Polychaeta in most of the deposits where samples were taken. This suggests that recovery of the biomass of the Crustacean component of the community following cessation of dredging may be of importance in the re-establishment of dredged areas as a feeding area for fish. Studies of the fish associated with *Sabellaria spinulosa* biotopes on the Hastings Shingle Bank



Sabellaria spinulosa



Pisidia longicornis

suggest that the high population densities of the porcelain crab (*Pisidia longicornis*), that characterise the community, provide a preferred crustacean food resource for the fish at this site.

5. Dissemination & raised awareness of the recoverability of *Sabellaria spinulosa* aggregations following aggregate extraction



Sabellaria community

Bryony Pearce, Marine Ecological Surveys Ltd.

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Project Reference: MAL 0027

Project Manager: Bryony Pearce, MES Ltd.

Contact: bryony@seasurvey.co.uk

This project gives an overview of the impacts of marine aggregate dredging on colonies of the Ross worm (*Sabellaria spinulosa*) at a dredge site on Hastings Shingle Bank, together with an overview of a new project at Licence Area 447 (Cutline) in the outer Thames Estuary.

Studies to date at Hastings Shingle Bank suggest that, whilst aggregate extraction may result in a loss of as much as 80% of the benthic infauna along the small area of an active dredge zone, colonies of the Annex 1 species *Sabellaria spinulosa* thrive in the immediate vicinity of dredged areas. They recolonise and grow rapidly where sand mobilised by the dredging process is transported along the seabed, and may even require conditions of enhanced sand mobility for successful recruitment and growth.

Work has been initiated at another site where *Sabellaria spinulosa* occurs in the vicinity of a site at which dredging is now taking place. Samples have been taken at Licence Area 447 (Cutline) in the outer Thames Estuary prior to initiation of dredging and are planned in relation to both distance from the dredge site and time after dredging. The recolonisation and recovery of *Sabellaria spinulosa* will then be tracked shortly after cessation of dredging and thereafter on a logarithmic scale, so that the important initial phases of recolonisation and subsequent growth of this potential biogenic reef species can be documented.

6. Predictive framework for assessment of recovery of marine benthic communities following cessation of aggregate extraction: A Genus Traits Handbook

Lindsay J Seiderer, Marine Ecological Surveys Ltd.
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MEPF Project Reference: 04/02a

Project Manager: Bryony Pearce, MES Ltd.

Contact: bryony@seasurvey.co.uk

This 'Genus Traits Handbook' is based on an analysis of the key life-history traits of over 150 taxa of marine invertebrates that characterise sand and gravel deposits around the coastline of England and Wales.

The following life-history traits were identified as of importance:-

- Fecundity
- Lifespan
- Motility of adults and larvae
- Age at maturity
- Adult body size

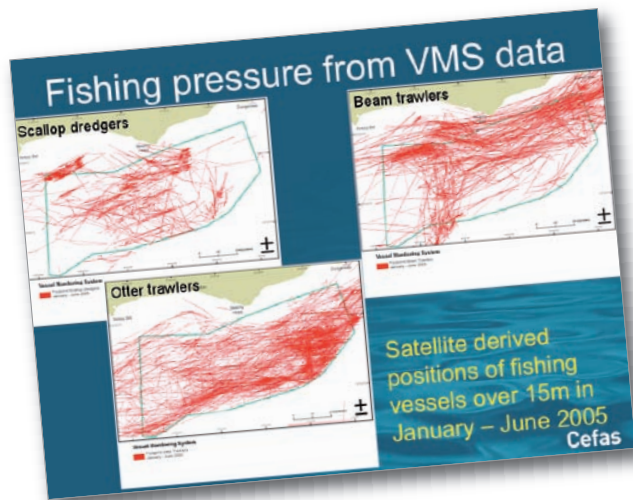
The traits can be used to predict the sensitivity to disturbance and potential rate of recolonisation of benthic infauna following disturbance by marine aggregate dredging. The handbook is intended for use by consultants and other stakeholders and provides a more consistent evidence base for predictions of impacts and recovery on the benthic infauna at sites that are to be dredged.



Benthic communities -
Sabellaria

7. Scale and impact of fishing activities in the Eastern English Channel: an initial assessment based on existing geophysical survey data

Koen Vanstaen, Centre for Environment, Fisheries & Aquaculture Science (Cefas).
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MEPF Project Reference: MEPF 07/04
Project Manager: Koen Vanstaen, Cefas
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This project was developed as a pilot study into the nature and extent of fishing impacts and activities in the Eastern English Channel. The work is intended to provide the basis for future research into the significance of the impacts of aggregate extraction on benthic communities and the wider ecosystem compared with bottom trawling activities.

Three types of trawl scars could be identified from sidescan sonar data and corresponded with scallop dredging, beam trawling and otter trawling. Satellite-based observations of fishing vessel positions (VMS) were used to extract detailed information on the extent and intensity of fishing activities in the Eastern English Channel. These showed a clear overlap with the geophysical data and suggest that the latter can be used as an index of fishing activities in the area. The VMS data suggest that bottom trawling is widespread throughout the entire Eastern English Channel. Otter trawling occurs over a wide range of substrate types. Scallop dredging is closely related to coarse substrates, whereas beam trawling was confined to sandy sediments. The geophysical data confirmed the presence of physical impact features over large parts of the Eastern English Channel, including the region

where extraction licences have been granted since 2005. This suggests that the seabed environment in large areas of the Eastern English Channel have been disturbed by fishing activities. A review of the biological data carried out as part of this project suggests that benthic communities in the Eastern English Channel may have been impacted by fishing activity.

8. Aircraft crash sites on the seabed

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EH Project Reference: 5223

Project Manager: Graham Scott, Wessex Archaeology

Contact: g.scott@wessexarch.co.uk

The seabed off the South and East coasts of England contains one of the highest concentrations of crashed historic aircraft in the world. It is particularly rich in military aircraft as a result of the Second World War. Such aircraft are automatically protected by the Protection of Military Remains Act 1986 and are likely to be encountered as part of aggregate dredging in these areas. Finds from crashed aircraft are sometimes associated with human remains but are often not recorded until the aggregate comes to a wharf, leading, in some cases, to imposition of temporary exclusion zones around relatively large areas where the material is thought to be located.



Intact aircraft in shallow water

This project was a scoping study to identify gaps in our knowledge and understanding of aircraft crash sites at sea in English territorial waters. The results show that relatively few of the many thousands of recorded losses of military aircraft of many nationalities, are in

the national heritage inventory. Notwithstanding issues of survival, the potential exists for there to be a very large number of currently unknown crash sites on the seabed.



Courtesy of Pembroke Dock Sunderland Trust

9. Marine and land sand and gravel: a comparative assessment

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MEPF Project Reference: MEPF 07/06
Project Manager: Ed Lockhart-Mummy,
Resource Decisions Ltd.
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Most of the sand and gravel used as construction aggregates in the UK comes from the land, although marine sands and gravels represent an important regional source of supply. There has, however, been no coherent approach to assessing the relative costs and benefits of exploiting these two sources of aggregates in overall policy terms.

One of the most important results of the project has therefore been to highlight a



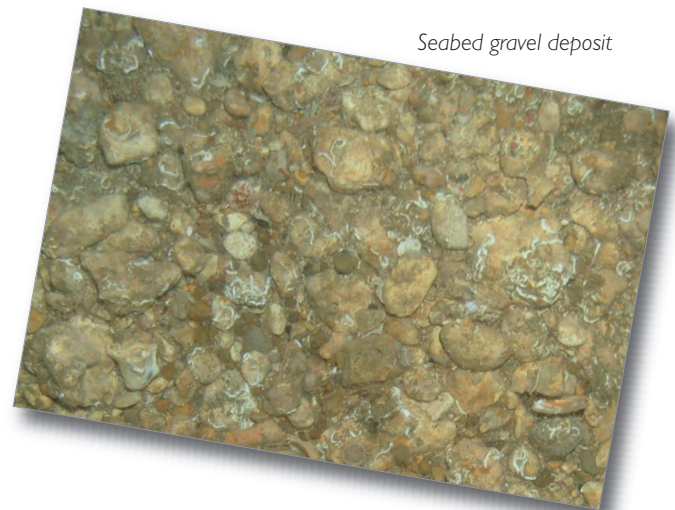
Intact aircraft

significant gap between the known and potential heritage resource. Accurate positions for the losses are rare, so the location of the vast majority of the losses is at best only vaguely known. However the project has suggested ways in which this could be done cost-effectively, enhancing the national and

local records with the assistance of aviation researchers. This will enable the relative importance of aircraft remains to be assessed more reliably and for greater use to be made of the important finds.



*Aircraft engine and landing gear
courtesy of Pembroke Dock Sunderland Trust*



Seabed gravel deposit

A feasibility study was therefore undertaken with the following aims:-

- Evaluate methods and tools
- Evaluate data sources
- Review decision-making processes
- Undertake, where possible, a preliminary assessment of the relative costs and benefits
- Make recommendations for the design of a full assessment

The project highlighted the difficulties of obtaining compatible data for marine and terrestrial sand and gravel extraction on a national scale. Many of the impacts could only be assessed subjectively, whilst others were either not collated or in sufficient detail.

If a full assessment were to be attempted at anything other than a local scale, it would be necessary to reconsider which data are collected, and how these are presented.

10. Refining areas of maritime archaeological potential for shipwrecks-AMAP I

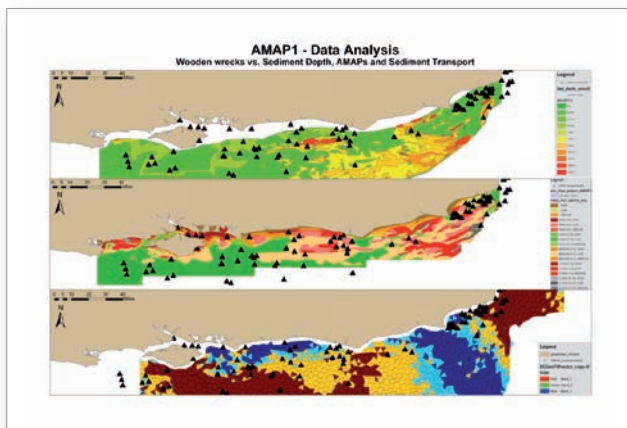
Olivia Merritt, Bournemouth University.
olivia.merritt@seazone.com

EH Project Reference: 5083

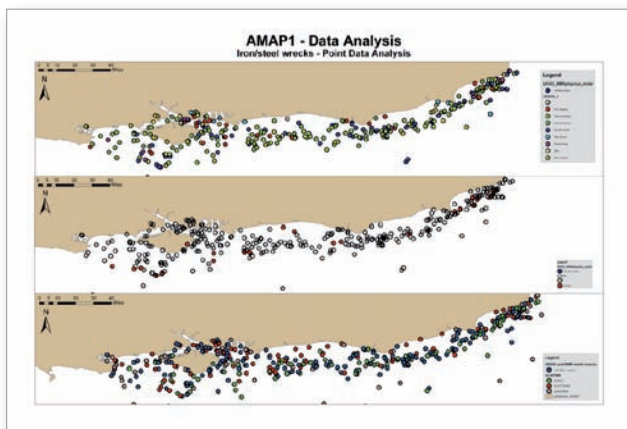
Project Manager: Olivia Merritt, Seazone Solutions Ltd.

Contact: olivia.merritt@seazone.com

This project aimed at identifying the relationships between shipwreck scatters and the archaeological and environmental factors that affect their preservation. It was run as a pilot study to develop a methodology for a GIS-based characterisation of the variables affecting the archaeological potential for shipwrecks. This was based on available digital data, with a long-term aim of developing a national GIS dataset.

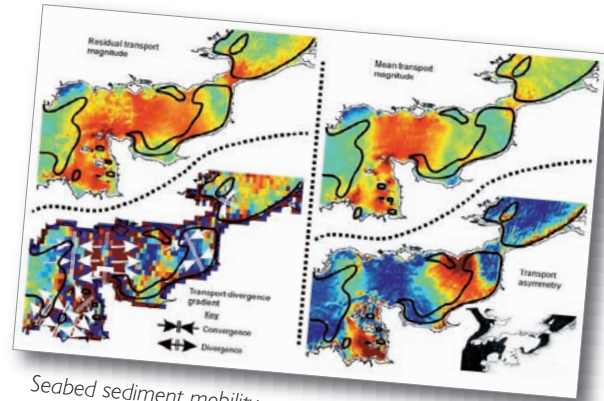


The results of the project highlight the need to develop and improve key environmental datasets. They may provide the basis to assist assessment of the potential for unrecorded shipwrecks and to improve heritage management in marine spatial planning.



11. Development of a regional sediment mobility model for submerged archaeological sites

David Lambkin, National Oceanography Centre.
D.O.Lambkin@noc.soton.ac.uk



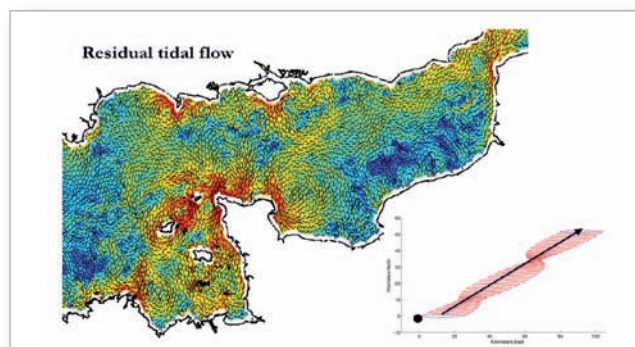
Seabed sediment mobility maps

EH Project Reference: 5224

Project Manager: Justin Dix, National Oceanography Centre.

Contact: jkd@noc.soton.ac.uk

An understanding of the sediment dynamics of underwater archaeological sites is of importance in marine archaeology, both in terms of site formation and to assist effective management of marine sites to ensure their stability. The project developed regional scale numerical models of tidal flow and sediment transport using a leading commercial hydrodynamic modelling software package (DHI's MIKE 21). The model results were used to predict the spatial and temporal variability of tidal flows and sediment transport at regional and sub-regional scales. At a local scale, they control patterns of sediment scour and accumulation. At a regional scale they determine the potential for changes in sediment input flux or gross bed level change. In combination, these processes have implications for the long-term preservation of sites of historic and archaeological significance, and the dispersal of mobile artefacts.



12. England's historic seascapes programme: consolidating the national method for historic seascape characterisation

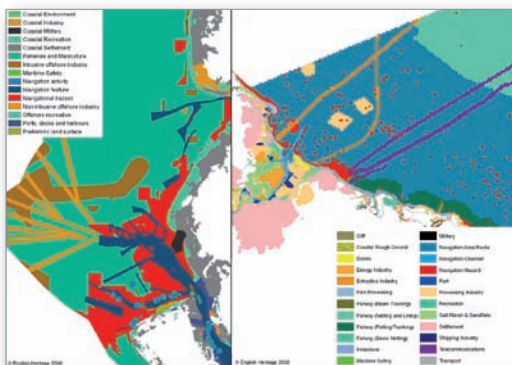
Bryn Tapper, Cornwall Historic Environment Service. btapper@cornwall.gov.uk

EH Project Reference: 5254
Project Manager: Bryn Tapper,
 Cornwall Historic Environment Service.
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The Historic Seascape Characterisation (HSC) programme seeks to extend to the coastal and intertidal environments the principles that have already been used over much of England's land area. It assesses historic character and sea-use within a Geographic Information System (GIS) using historic charts, maps and associated documentary sources alongside modern marine data. It defines areas of the marine environment that share similar historic character as 'types' of historic seascape, allowing historic trends, processes and patterns of activity to be understood in the seascapes of the present. Alongside the GIS mapping, there are accompanying texts that describe and document the HSC 'types'. These include their distinguishing attributes and locations, their features and variability and perceptions of their value in terms of amenity, research and education.



Courtesy of Whitby Museum



Seascape characterisation maps

These assessments are intended to inform and frame the broader sustainable management of change through marine planning, to identify gaps in our knowledge, encourage further research, and to support outreach and education projects.

13. Assessing ecosystem health following marine aggregate dredging

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MEPF Project Reference: MEPF 04/00 Extension
Project Manager: Keith Cooper, Cefas.
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Traditional approaches to assess the 'recovery' of biological communities on the seabed following cessation of dredging compare the extent to which the community structure is restored to that which occurred prior to dredging or in undredged sites nearby. A good deal of work on benthic communities at aggregate dredge sites where dredging has ceased suggests that recolonisation by some species occurs over time. However the species inventory may change over time, or in response to differences in sediment composition even though the 'functional health' of the ecosystem may have been restored.

This project uses the concept of functional health, rather than community composition, as a measure of 'recovery' of benthic communities at aggregate dredge sites. In this functional sense, a seabed may have recovered and the new community provide similar ecosystem services such as food, shelter and productivity, even though the species composition of the assemblage may have changed. This concept allows for a system to be altered without the conclusion that it has necessarily been damaged. The aim of the study was to employ a range of techniques to assess recovery in terms of 'functional health' of the communities present. Twelve potential techniques were identified from the literature, of which five were selected for further investigation.



Benthic marine invertebrates

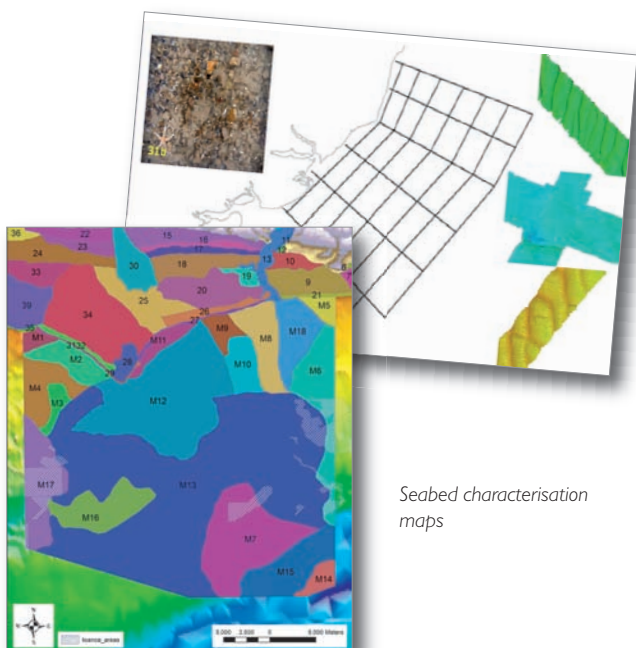
Each of these was then used to re-assess data obtained in an earlier study on the Hastings Shingle Bank. The techniques included:

- Somatic Production
- Biological Traits Analysis (BTA)
- Infaunal Trophic Index (ITI)
- Taxonomic Distinctness
- The Rao coefficient

14. 2007 Regional environmental characterisation surveys

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Seabed characterisation maps

MEPF Project Reference: MEPF 07/01 (Thames) and MEPF 07/02 (South Coast)
Project Manager: Thames: Vince Grove, Gardline. South Coast: Phil Durrant, Gardline
Project Co-ordinator: Euan McNeill, Wessex Archaeology
Contact: e.mcneill@wessexarch.co.uk

The Steering Group of the Marine Environment Protection Fund (MEPF) commissioned Regional Environmental Characterisation (REC) surveys of the outer Thames Estuary and South Coast regions in 2007.

The surveys were designed to complement industry-led Regional Environmental Assessment (REA) initiatives and to provide comprehensive regional geophysical and environmental data that would be available for a variety of users.

The surveys for each area were undertaken in two cruises. Firstly, a cruise to acquire high-resolution side-scan sonar; swathe and single beam bathymetry incorporating AGDS data, sub-bottom profiler (surface towed boomer) and magnetometer data. These were recorded along a corridor comprising a centre line and two wing lines. The second cruise was designed to acquire ground-truth data using video and stills images, Hamon and shell grab sampling at the geophysical corridor intersections, as well as scientific beam trawl samples at selected sites.

Both regions had geophysical data acquisition severely hampered by the very poor weather conditions during the summer of 2007. This led to the South Coast survey being curtailed and the line plan revised. However a full suite of seabed imagery, grab samples and other environmental data was acquired for both sites. These data have now been processed and have resulted in the following deliverables:- geophysical data in industry-standard formats, geo-referenced sonar mosaic tiles, both gridded and ungridded tidally-corrected swathe bathymetry data, video and stills imagery, faunal analysis of Hamon grab samples in PRIMER compatible format, reference collection and particle size analysis of clamshell grab samples. These data are now available for collation, interpretation and preparation of seabed maps for both areas.



15. Marine ALSF GIS database

Jamie Moore, ABP Marine Environmental Research.
jmoore@abpmer.co.uk

MEPF Project Reference: MEPF 04/07 Extension
Project Manager: Jamie Moore, ABP MER

Contact: jmoore@abpmer.co.uk



The primary object of this project was to develop a customised website (www.marinealsf.org.uk) where marine aggregate research information can be accessed. Research information is accessed

through an intuitive front-end including a search facility with provision for standard bibliographic keywords (title, abstract, date, project leader, project distributor) and an option for visual 'by map location' data queries. Direct links to digital project PDF reports have been provided where available. The visual search facility is presented using a web-enabled GIS with online user help. Registered users are also able to add metadata references to current research projects to the database by completing online metadata forms.

The project has been updated through the 2007-8 financial year incorporating records from new marine aggregate projects, including extensions to Marine ALSF research. Website usage has been monitored and shown that the system receives, on average, around 600 hits per day. Further developments are now planned to add Marine ALSF survey datasets into the system.

16. Contiguous palaeo-landscape reconstruction (Transition zone mapping for marine-terrestrial archaeological continuity)

Richard Bates, University of St Andrews.
crb@st-andrews.ac.uk

EH Project Reference: 4632

Project Manager: Richard Bates,
University of St Andrews

Contact: crb@st-andrews.ac.uk

The primary objective of this project was to assess methods for enabling contiguous palaeo-landscape reconstruction across the marine to terrestrial boundary.

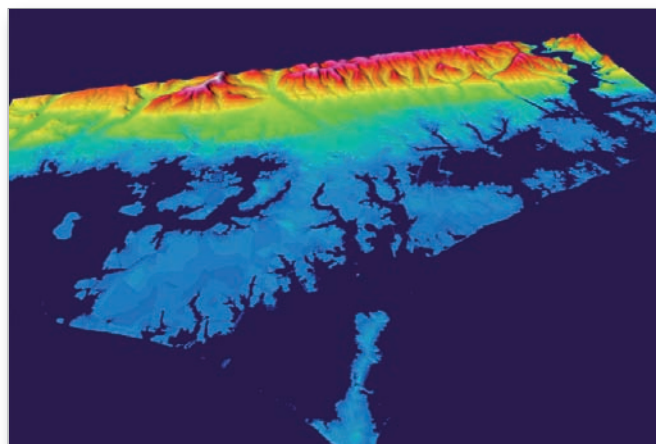
This enhances the archaeological continuity across a landscape that has been previously studied either from the sea or from land. It reduces the regional uncertainty associated with interpretation of marine sites, allowing them to not only contribute to local palaeo-landscape reconstructions, but also to a fuller understanding of their national significance. The methodology was tested on an area in the West Sussex coastal corridor between Havant and the Arun Valley.



Seabed topography - Solent and West Sussex

The project has been accomplished using the following staged approach:-

- Evaluation of methodologies for mapping contiguous landscapes
- Construction of 3D palaeo-landscape models
- Development of guidelines for mapping in the transition zone
- Dissemination and outreach



Palaeo-landscape reconstruction

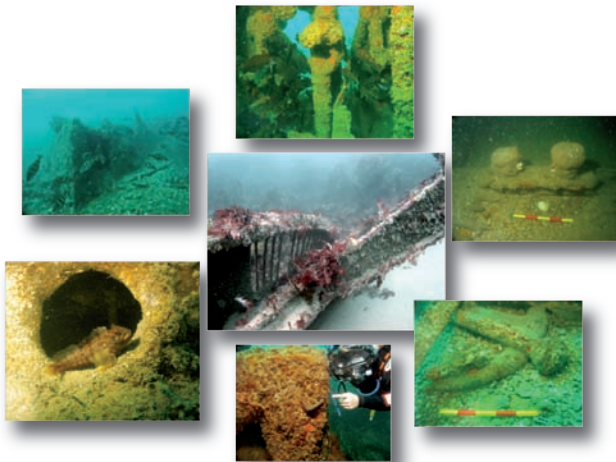
17. Wrecks on the seabed: ecology

John Gribble, Wessex Archaeology.
j.gribble@wessexarch.co.uk

EH Project Reference: 5402

Project Manager: John Gribble,
Wessex Archaeology

Contact: j.gribble@wessexarch.co.uk



Ecology of wrecks

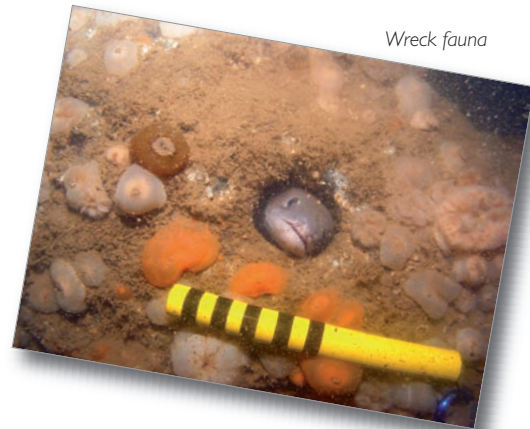
The Wrecks on the Seabed projects have yielded a good deal of information on more than 60 wrecks around the UK coast. The objectives of the present project were as follows:-

- Assess the potential of archaeological data collected from a number of wreck sites off the East Sussex coast to provide useful ecological and biological information
- Assess the value to archaeologists, ecologists and seabed developers of integrating archaeological and ecological surveys of wreck sites in future
- Propose a cost-effective, but ecologically sound methodology for recording the fauna and flora of wrecks during archaeological site survey, based on diver observations and/or stills images and video footage

This information was then used to assess whether historical wrecks have nature conservation value in terms of the species they attract or the habitats they provide, and whether exclusion zones around wrecks allow them to act as refuge areas from which recolonisation can take place after cessation of aggregate dredging.

18. Marine class descriptions and principles of selection in aggregate areas

Antony Firth, Wessex Archaeology.
a.firth@wessexarch.co.uk



Wreck fauna

EH Project Reference: 5383

Project Manager: Antony Firth, Wessex
Archaeology

Contact: a.firth@wessexarch.co.uk

This project examines possible approaches to selection of sites on the seabed that are sufficiently important in archaeological terms to warrant special measures if they are implicated in marine aggregate dredging. Such special measures could include protection by exclusion zones, recording and recovery, or some other form of mitigation. Past practice and current legal and administrative developments associated with the proposed Heritage Protection Bill point to an approach to selectivity in which six sets of criteria have a bearing on decisions:-

- Definition of historic asset
- Definition of special interest
- Principles of selection
- Selection guides
- Class description/ Step Reports
- Appropriateness of management regime

All six tiers of selectivity are reviewed in the project, and an assessment made on their potential application to marine historic assets and marine aggregate dredging. The project has specifically focussed on the following two Selection Guides:-

- Boats and ships in archaeological contexts
- Prehistoric land surfaces and deposits

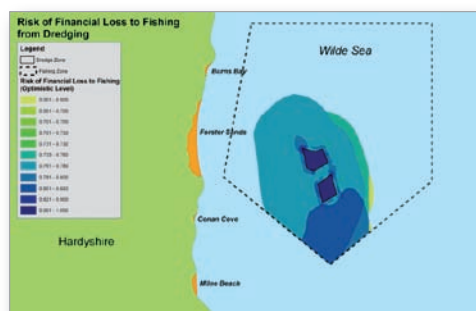
The project is intended to provide more transparent and consistent selectivity in marine aggregate areas, to be consistent with other marine activities, and with selectivity being practiced on land.



Seabed wrecks

19. Development of the marine aggregate extraction risk assessment (MARA) framework

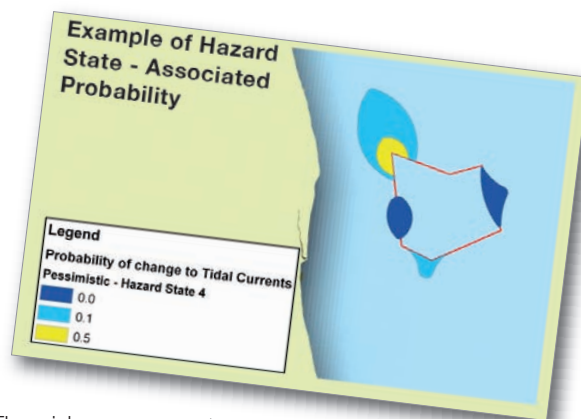
Paul Sayers, HR Wallingford.
p.sayers@hrwallingford.co.uk



MEPF Project Reference: MEPF 04/03 Extension
Project Manager: Mike Panzeri, HR Wallingford.
Contact: m.panzeri@hrwallingford.co.uk

The aim of this project was to provide a framework to help assess risks to the marine environment arising from aggregate dredging. The framework involves analysis of

the probability of potentially harmful events occurring due to dredging activity, and of the sensitivities of various receptors to these hazards. It enables the risk of environmental impact from dredging to be quantified and mapped.



The risk assessment approach potentially assists decision-makers to evaluate dredging licence applications and may support dredging operators to manage dredging activity. It does, however, involve a significant amount of data processing. The MARA-GIS project attempts to address this issue by developing a software package to operate the framework data input requirements and the calculations of risk. The current stage of work has delivered a prototype version of the MARA-GIS software, although this remains to be rigorously tested using environmental data for a dredge site.

20. Europe's lost land - the rediscovery of Doggerland

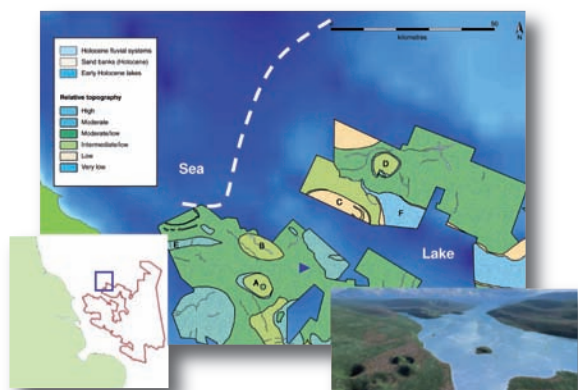
Vincent Gaffney, University of Birmingham.
v.l.gaffney@bham.ac.uk



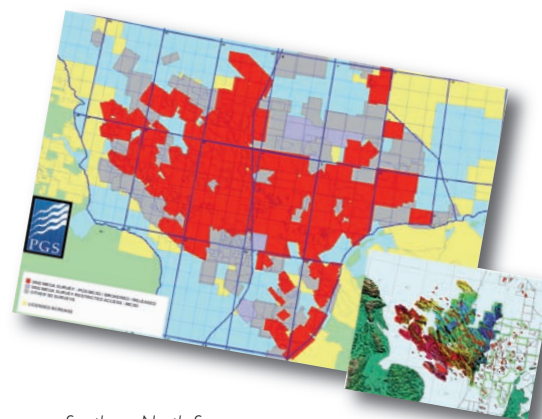
Hut dwellings and the effects of tidal incursion

EH Project Reference: 4613
Project Manager: Vincent Gaffney,
 University of Birmingham
Contact: v.l.gaffney@bham.ac.uk

The presentation tells the story of how this lost landscape, now known as 'Doggerland', was rediscovered and places the recent work within a wider archaeological context.



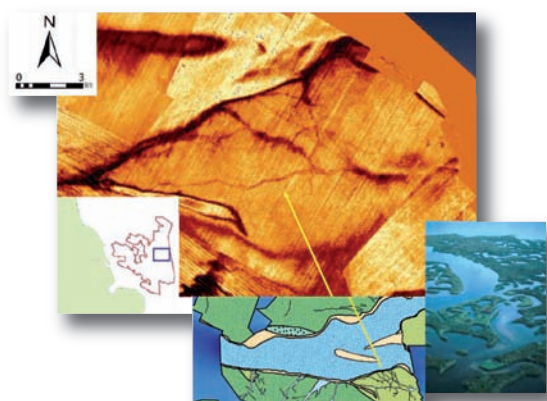
The Outer Silver Pit - Southern North Sea



Southern North Sea survey area

The North Sea Palaeolandscapes Project utilised 23,000 km² of 3D seismic data to generate models of the Mesolithic landscapes of the North Sea. The information generated as part of the project represents one of the largest examples of a potentially well-preserved, early Holocene landscape surviving in Europe. Lost to the sea more than 7,000 years ago, this was not an empty land. The coastlines, rivers, marshland and hills mapped during the project were, for thousands of years, part of a familiar landscape to the hunter-gatherers of North Western Europe, and during the process of inundation, whole territories may have disappeared within the memory of generations.

Project Web Site: http://www.iaa.bham.ac.uk/research/fieldwork_research_themes/projects/North_Sea_Palaeolandscapes/index.htm



Seabed features - 'Doggerland'

The loss of such extensive areas, insidious and slow overall, but terrifyingly fast at times, must have been devastating for the Mesolithic populations of the great northern plains. The story of this landscape is now being prepared for a popular publication.

Feedback from the 2008 Conference

A selection of quotes from delegates:

'The wide range of work and the degrees of overlap and potential synergies are very exciting.'

'The range of outputs from a wide range of science, social policy, data and outreach projects have provided an excellent benchmark for the future.'

'The fund delivered high quality information which is highly relevant to areas relating to the marine aggregate industry, but also for other marine industries.'

'The ALSF has reached a point of 'critical mass' of knowledge to enable science and management to go forward with real confidence. There has been a sound, long-term vision.'

Summary of MEPF Contracts Let in Financial Year 2007/08

The total budget for the MEPF in the Financial Year 2007/08 was £2.5m, out of which £2.2m was allocated to projects with a sum of £0.3m allocated to administration through Cefas for dissemination, conferences and science co-ordination. Details of the 2007/08 MEPF projects are summarised below:-

| | |
|--|---|
| <p>Project Reference: MEPF 07/01 Title: Thames Regional Environmental Characterisation (REC) Study Contractor: Gardline Lankelma, Salmon Road, Great Yarmouth NR30 3QS Tel: +44 (0)1493-332111 Amount Funded: £656,904 Contact: Roy Jarman E-Mail: roy.jarman@gardline.co.uk</p> | <p>Project Reference: MEPF 07/03 Title: Projects Co-ordinator for Regional Environmental Characterisation (REC) Studies Contractor: Wessex Archaeology, Portway House, Old Sarum Park, Salisbury SP4 6EB Tel: +44 (0)1722-326867 Amount Funded: £119,157 Contact: Euan McNeill E-Mail: e.mcneill@wessexarch.co.uk</p> |
| <p>Project Reference: MEPF 07/02 Title: South Coast Regional Environmental Characterisation (REC) Study Contractor: Gardline Environmental, Endeavour House, Admiralty Road, Great Yarmouth NR30 3NG Tel: +44 (0)1493-845706 Amount Funded: £907,975 Contact: Phil Durrant E-Mail: phil.durrant@gardline.co.uk</p> | <p>Project Reference: MEPF 07/04 Title: Scale & Impact of Fishing Activities in the Eastern English Channel: Assessment Based on Existing Geophysical Data Contractor: Cefas, Pakefield Road, Lowestoft NR33 0HT Tel: +44 (0)1502-562244 Amount Funded: £48,000 Contact: Koen Vanstaen E-Mail: koen.vanstaen@cefasc.co.uk</p> |
| <p>Project Reference: MEPF 04/02 (a) Title: Predictive Framework for Assessment of Recoverability of Marine Benthic Communities following Cessation of Aggregate Extraction: A Genus Traits Handbook Contractor: Marine Ecological Surveys Ltd. 24A Monmouth Place, Bath BA1 2AY Tel: +44 (0)1225-442211 Amount Funded: £38,800 Contact: Bryony Pearce E-Mail: bryony@seasurvey.co.uk</p> | <p>Project Reference: MAL 0027 Title: Dissemination & Raised Awareness of the Recoverability of <i>Sabellaria spinulosa</i> Aggregations Following Aggregate Extraction * Contractor: Marine Ecological Surveys Ltd. 24A Monmouth Place, Bath BA1 2AY Tel: +44 (0)1225-442211 Amount Funded: £19,350 Contact: Bryony Pearce E-Mail: bryony@seasurvey.co.uk</p> |
| <p>Project Reference: MEPF 04/02 (b) Title: The Significance of Benthic Communities for Higher Levels in the Marine Food-Web at Aggregate Dredge Sites using the Ecosystem Approach Contractor: Marine Ecological Surveys Ltd. 24A Monmouth Place, Bath BA1 2AY Tel: +44 (0)1225-442211 Amount Funded: £40,250 Contact: Bryony Pearce E-Mail: bryony@seasurvey.co.uk</p> | <p>Project Reference: MAL 0020 Title: Development of Hierarchical Classification Scheme Contractor: Sussex Sea Fisheries Committee, Unit 6, Highdown House, Shoreham Airport, Shoreham-by-Sea BN43 5PB Tel: +44 (0)1273-454407 Amount Funded: £61,000 Contact: Tim Dapling, Rob Clarke, Duncan Hume E-Mail: dapling@sussex-sfc.gov.uk</p> |

Project Reference: MEPF 04/05
Title: **Marine ALSF Science Co-ordinator**
Contractor: Marine Ecological Surveys Ltd.
24A Monmouth Place, Bath BA1 2AY
Tel: +44 (0)1225-442211
Amount Funded: £85,000
Contact: Richard Newell
E-Mail: science@alsf-mepf.org.uk

Project Reference: MEPF 04/00
Title: **Seabed Recovery Following Marine Aggregate Dredging. Module 1**
Contractor: Cefas, Pakefield Road,
Lowestoft NR33 0HT
Tel: +44 (0)1502-562244
Amount Funded: £47,992
Contact: Keith Cooper
E-Mail: keith.cooper@cefas.co.uk

Project Reference: MEPF 04/01
Title: **Eastern English Channel - Processing of xyz Data**
Contractor: British Geological Survey,
Sir Kingsley Dunham Centre,
Nicker Hill, Keyworth NG12 5GG
Tel: +44 (0)1159-363467
Amount Funded: £43,500
Contact: Ceri James
E-Mail: jwcj@bgs.ac.uk

Project Reference: MEPF 04/03
Title: **Development of MARA-GIS**
Contractor: HR Wallingford Ltd., Howbery Park,
Benson Lane, Crowmarsh,
Wallingford OX10 8BA
Tel: +44 (0)1491-822362
Amount Funded: £60,000
Contact: Mike Panzeri
E-Mail: m.panzeri@hrwallingford.co.uk

Project Reference: MEPF 04/07
Title: **Marine ALSF GIS. Maintenance and Update - July 2007-March 2008**
Contractor: ABP Marine Environmental
Research Ltd.
Suite B, Waterside House, Town Quay,
Southampton SO14 2AQ
Tel: +44 (0)2380-711840
Amount Funded: £11,398
Contact: Jamie Moore
E-Mail: jmoore@abpmer.co.uk

Project Reference: MEPF 07/05
Title: **Marine Aggregates: Science, Industry, Stewardship & People Networks ('Explore the Sea Floor')**
Contractor: National Museum of Wales,
Department of Biodiversity &
Systematic Biology, Cathays Park,
Cardiff CF10 3NP
Tel: +44 (0)2920-573311
Amount Funded: £11,750
Contact: Andy Mackie
E-Mail: andrew.mackie@museumwales.ac.uk

Project Reference: MEPF 07/06
Title: **Feasibility Study for an Assessment of the Relative Impacts from Exploitation of Marine and Land Sand and Gravel Reserves**
Contractor: Resource Decisions Ltd.
102 Godolphin Road, London W12 8JW
Tel: +44 (0)7890-201812
Amount Funded: £31,500
Contact: Edward Lockhart-Mummery
E-Mail: elm@resourcedecisions.co.uk

Project Reference: MEPF 07/07
Title: **Mineral Wealth - Seabed Health. Phase 2. Eastern English Channel Interactive**
Contractor: Marine Biological Association,
The Laboratory, Citadel Road,
Plymouth PL1 2PB
Tel: +44 (0)1752-633336
Amount Funded: £41,125
Contact: Jack Sewell
E-Mail: jase@mba.ac.uk

Project Reference: MEPF 07/08
Title: **'Best Use'- Maximising the Value of Data Collected under ALSF Projects and the Aggregate Dredging Industry**
Contractor: Cefas (with Wessex Archaeology),
Pakefield Road, Lowestoft NR33 0HT
Tel: +44 (0)1502-562244
Amount Funded: £25,000
Contact: Dave Limpenny
E-Mail: david.limpenny@cefas.co.uk

* This project received additional funding from The Crown Estate

Summary of English Heritage Contracts Let in Financial Year 2007/08

A total of £507,122 was allocated to projects related to the marine historic and palaeohistoric environment by English Heritage in the Financial Year 2007/08. Details of the English Heritage marine projects are summarised below:-

Project Reference: 5254
Title: **Seascapes Review**
Contractor: Historic Environment Service, Cornwall County Council
 County Hall, Treyew Road, Truro, TR1 3AY
 Tel: +44 (0)1872-322000
Amount Funded: £42,127.58
Contact: Charlie Johns
E-Mail: cjohns@cornwall.gov.uk

Project Reference: 5223
Title: **Aircraft Crash Sites at Sea**
Contractor: Wessex Archaeology, Portway House, Old Sarum Park, Salisbury, Wilts SP4 6EB
 Tel: +44 (0)1722-326867
Amount Funded: £27,126.50
Contact: Antony Firth
E-Mail: a.firth@wessexarch.co.uk

Project Reference: 4632
Title: **Transition Zone Mapping for Marine-Terrestrial Archaeological Continuity**
Contractor: University of St Andrews School of Geography & Geosciences
 Irvine Building, University of St Andrews North Street, St Andrews, Fife Scotland KY16 9AL
 Tel: +44 (0)1334-462894
Amount Funded: £57,075.18
Contact: Richard Bates
E-Mail: crb@st-and.ac.uk

Project Reference: 5224
Title: **Regional Sediment-Erosion Model for Submerged Archaeological Sites**
Contractor: Southampton University, National Oceanography Centre
 University of Southampton, Waterfront Campus, European Way, Southampton SO14 3ZH
 Tel: +44 (0)2380-596666
Amount Funded: £95,500.00
Contact: Justin Dix
E-Mail: jkd@noc.soton.ac.uk

Project Reference: 4613
Title: **3D Seismics for Mitigation Mapping of the Southern North Sea**
Contractor: University of Birmingham
 The VISTA Centre, Institute of Archaeology and Antiquity, University of Birmingham, Edgbaston, Birmingham B15 2TT
 Tel: +44 (0)1214-145513
Amount Funded: £36,014.35
Contact: Vince Gaffney
E-Mail: v.l.gaffney@bham.ac.uk

Project Reference: 5274
Title: **Data Interpretation of Marine Geophysics Seminar and Guidance**
Contractor: University of St Andrews, School of Geography & Geosciences, Irvine Building, University of St Andrews, North Street St Andrews, Fife, Scotland KY16 9AL
 Tel: +44 (0)1334-462894
Amount Funded: £7,839.82
Contact: Richard Bates
E-Mail: crb@st-and.ac.uk

Project Reference: 5402
Title: **Flora and Fauna (Geophysics, Ecology & Engagement)**
Contractor: Wessex Archaeology, Portway House, Old Sarum Park, Salisbury, Wilts SP4 6EB
 Tel: +44 (0)1722-326867
Amount Funded: £27,856.00
Contact: Antony Firth
E-Mail: a.firth@wessexarch.co.uk

Project Reference: 5383
Title: **Marine Monument Class Descriptions and Principles of Selection for Aggregate Producing Areas**
Contractor: Wessex Archaeology, Portway House Old Sarum Park, Salisbury, Wilts SP4 6EB
 Tel: +44 (0)1722-326867
Amount Funded: £13,226.09
Contact: Antony Firth
E-Mail: a.firth@wessexarch.co.uk

Project Reference: 5401
Title: **Seabed Grab Sampling**
Contractor: Wessex Archaeology, Portway House
Old Sarum Park, Salisbury,
Wilts SP4 6EB
Tel: +44 (0)1722-326867
Amount Funded: £3,505.63
Contact: Antony Firth
E-Mail: a.firth@wessexarch.co.uk

Project Reference: 3876
Title: **Seabed Prehistory Round 2**
Contractor: Wessex Archaeology, Portway House,
Old Sarum Park, Salisbury,
Wiltshire SP4 6EB
Tel: +44 (0)1722-326867
Amount Funded: £7,815.12
Contact: Antony Firth
E-Mail: a.firth@wessexarch.co.uk

Project Reference: 5083
Title: **Refining Areas of Maritime
Archaeological Potential (AMAPs)
for Shipwrecks**
Contractor: Bournemouth University
Fern Barrow, Talbot Campus, Poole,
Dorset BH12 5BB
Tel: +44 (0)1202-965046
Amount Funded: £65,448.75
Contact: David Parham
E-Mail: dparham@bournemouth.ac.uk

Project Reference: 5393
Title: **Early Years Children's Book:
Derek the Dredger**
Contractor: Hampshire and Wight Trust for
Maritime Archaeology, Room W11/95,
National Oceanography Centre
Empress Dock, Southampton
SO14 3ZH
Tel: +44 (0)2380-593290
Amount Funded: £19,846.27
Contact: Julie Satchell
E-Mail: Julie.Satchell@hwtma.org.uk

Project Reference: 3645
Title: **BMAPA Protocol for Reporting Finds
of Archaeological Interest**
Contractor: Wessex Archaeology, Portway House,
Old Sarum Park, Salisbury,
Wiltshire SP4 6EB
Tel: +44 (0)1722-326867

Amount Funded: £26,670.00
Contact: Antony Firth
E-Mail: a.firth@wessexarch.co.uk

Project Reference: 5382
Title: **Marine Geophysics Data Acquisition
and Exclusion Zones Guidance**
Contractor: Southampton University, National
Oceanography Centre, University of
Southampton, Waterfront Campus
European Way, Southampton
SO14 3ZH
Tel: +44 (0)2380-596666

Amount Funded: £23,203.00
Contact: Justin Dix
E-Mail: jkd@noc.soton.ac.uk

Project Reference: 4840
Title: **Maritime Archaeology Access &
Learning ALSF Workshops**
Contractor: Hampshire and Wight Trust for
Maritime Archaeology, Room W11/95,
National Oceanography Centre,
Empress Dock, Southampton
SO14 3ZH
Tel: +44 (0)2380-593290

Amount Funded: £12,186.36
Contact: Julie Satchell
E-Mail: Julie.Satchell@hwtma.org.uk

Project Reference: 5455
Title: **Benchmark Report Theme 4B -
Management of Extraction -
Sustainable Heritage**
Contractor: University College London, Institute of
Archaeology, 31-34 Gordon Square,
London WC1H 0PY
Tel: +44 (0)2076-794666

Amount Funded: £21,683.00
Contact: Joe Flatman
E-Mail: j.flatman@ucl.ac.uk

Project Reference: 5444
Title: **Electronic Archiving, Publishing and
Digital Preservation of the England's
Historic Seascape Data**
Contractor: Archaeology Data Service, Department
of Archaeology, University of York
King's Manor, York YO1 7EP
Tel: +44 (0)1904-433954

Amount Funded: £19,998.49
Contact: Catherine Hardman
E-Mail: csh3@york.ac.uk

Recent Developments & the Future of the ALSF

The future funding of the ALSF was under review in the Financial Year 2007-8, with recommendations made to Government in the latter part of 2007. These recommendations were then put out for consultation by the Department for Environment, Food & Rural Affairs (Defra). This consultation process was completed on 29th April 2008. Final allocations to the marine ALSF were confirmed in July 2008, and form the basis upon which the Round 3 marine ALSF projects have been allocated. The information relevant to the Marine ALSF may be summarised as follows:-

- The levy imposed on sales of primary aggregate increased to £1.95 per tonne in April 2008. The marine aggregate sector landed 14.45 million tonnes in England and Wales during 2007, so on this basis the aggregate levy can be expected to generate around £28m from marine landings. A further £370m is expected to be generated from terrestrial primary aggregate sales.
- From this total, a sum of £4.5m per year in each of the three Financial Years 2008-11 has

been allocated to Round 3 of the Marine ALSF. To date (August 2008) £14.5m per year has been allocated to terrestrial projects and a further £75m per year remains to be allocated. The ALSF is holding a further sum of £3m per year in a 'contingency' fund.

- The Delivery Partners for Round 3 of the marine ALSF are English Heritage who are responsible for allocation of a sum of £500k for marine projects relating to the archaeological and historic environment, and Cefas who administer the Marine Environment Protection Fund (MEPF). The latter has a budget of £4m per year in each of the three years.
- The funding for the first year of the current Round 3 of the Marine ALSF was confirmed in mid-July 2008. The Steering Group had, however, developed strategic aims based on policy needs (see below). During April-July 2008 projects relevant to these priority areas were evaluated so that they were ready to begin on confirmation of the fund.

Key Strategic Aims of the Marine ALSF

The key strategic aims of the ALSF have been defined in the Defra consultation document. The objectives in the marine environment are to reduce the environmental footprints of marine extraction. The Steering Group of the Marine ALSF has summarised the priority themes of the Marine ALSF in 'Marine Aggregate Extraction: Helping to determine good practice. Summary Report' Marine ALSF 2007. These are as follows:-

1. To develop and use seabed mapping techniques to improve the evidence base of the nature, distribution and sensitivity of marine environmental and archaeological resources relevant to marine aggregate activities
2. To increase understanding of the effects of aggregate dredging activities, including noise, and their significance
3. To develop monitoring, mitigation and management techniques where applicable, underpinned by scientific research
4. To research and understand the socio-economic issues associated with aggregate dredging activities
5. To promote co-ordination and establishment of sustainable archives for the dissemination of research related to these aims to a wide range of stakeholders

Round 3 of the Marine Environment Protection Fund (2008-2011)

Projects to be funded under Round 3 of the MEPF essentially fall into the following categories (see p22-27):-

1. Analysis, interpretation and reporting of the integrated data for the 2007 South Coast and Outer Thames REC surveys.
2. Proposals for new smaller projects that address the priority themes summarised above. The upper limit of funding defined for these smaller projects is set at £100k per year.
3. Proposals for data collection, analysis and reporting for two major new Regional Environmental Characterisation (REC) areas – one off the coast of Norfolk and the other in the Outer Humber region.
4. Appointment of 'Theme Advisors' to bring additional expertise to assist in the management and co-ordination of MEPF projects, and 'Project Co-ordinators' to assist in the management and supervision of selected projects.
5. M.Sc. Bursary Scheme.

6. Dissemination and outreach programmes. Proposals for this are likely to be sought after advice has been taken on a comprehensive Communication, Dissemination & Outreach strategy for the Marine ALSF.
7. Commissioned work identified by the Steering Group as requiring additional study. This is likely to be put out to tender by the Steering Group once funds committed to other projects have been allocated.

Calls for proposals under Round 3 of the MEPF were initially assessed as 'Expressions of Interest' (EOI) after which some proposals were selected to be carried forward to a full proposal stage. This was done to reduce the load on contractors at the early 'pre-proposal' stage and to streamline the evaluation process to meet the very tight schedule imposed by delays in confirmation of funding. The MEPF Delivery Partner (Cefas) has now initiated approved projects following confirmation of the funding.

Priorities for the MEPF can be found at:- www.defra.gov.uk/environment/waste/aggregates/funding.htm

Round 3 of English Heritage Marine ALSF (2008-2011) funding

Funding for the current Round 3 of the Marine ALSF was confirmed in July 2008. English Heritage intends to commission projects related to the following main themes:-

- Identification and characterisation of the historic environment in key existing or potential areas of marine aggregate extraction
- Research and development of practical new techniques to locate seabed historic environmental assets; to improve our understanding

of direct and indirect impacts of extraction on such assets and their settings; and to develop practical ways of mitigating such impacts to enhance conservation and management of the resource

- Marine historic environment training, dissemination and communication

Theme priorities and further information on the current Round 3 of the English Heritage disbursement scheme can be found on:- <http://www.english-heritage.org.uk/server/show/nav.1315>

Category 1

Analysis, interpretation and reporting of the integrated data for the 2007 South Coast and Outer Thames REC surveys

Project Reference: MEPF REC 08/02
Title: Analysis and Reporting of South Coast Regional Environmental Characterisation (REC) Survey Data
Contractors: British Geological Survey
Marine Ecological Surveys Ltd.
Cefas
Sussex Sea Fisheries Committee
Wessex Archaeology
Amount Funded: £372,228
Contact: Ceri James, BGS, Kingsley Dunham Centre, Nicker Hill, Keyworth, Nottingham NG12 5GG
Tel: +44 (0)1159-363467
E-Mail: jwcj@bgs.ac.uk
Duration: 14/07/08 - 01/12/09

Project Reference: MEPF REC 08/01
Title: Analysis and Reporting of Outer Thames Regional Environmental Characterisation (REC) Survey Data
Contractors: Emu Ltd.
University of Southampton
Amount Funded: £109,890
Contact: Ian Selby, 1 Mill Court, The Sawmills, Durley, Southampton SO32 2EJ
Tel: +44 (0)1489-860050
E-Mail: ian.selby@emulimited.com
Duration: 14/07/08 - 01/03/09

Category 2

New Small Projects Approved for Funding under Round 4

Proposals for new smaller projects that are to be supported under the forthcoming Round 3 of the MEPF fall into the following main themes:-

1. Mapping
2. Effects of Aggregate Dredging
3. Monitoring of Impacts
4. Socio-economic Studies
5. Co-ordination and Outreach

So far, 14 projects have been approved at a total cost of £1,742,554. Of this sum, the amount allocated in the Financial Year 08/09 is £655,328, in the FY 09/10 £696,351 and in the FY 10/11 £331,118.

In all, one of the new small projects is concerned with Theme 1 (mapping), eight are concerned with research on Theme 2 (the effects of aggregate dredging), three on Theme 3 (monitoring), one on Theme 4 (socio-economic studies) and one on Theme 5 (co-ordination and outreach). This relatively high proportion of new projects under Theme 2 reflects the continuing need to develop our understanding of the effects of aggregate dredging on seabed resources.

It is worth noting that a good deal of Theme 3 (monitoring) is carried out by the industry. Several of the other themes supported through the MALSF also incorporate monitoring into their research programmes. It is probable that Themes 4 and 5 (socio-economic studies, co-ordination and outreach) will be mainly addressed in years 2 and 3 of the current round.

Category 2 projects approved to date:

Project Reference: MEPF 08/P64
 Title: **New Techniques for Ground Truthing for Seabed Mapping**
 Theme: Mapping (1)
 Project Leader: Robert Foster-Smith
 Organisation: Envision UK (with Cefas)
 Total Cost: £70,137
 Duration: 01/08/08-28/02/11

Project Reference: MEPF 08/P02
 Title: **Marine Aggregate Integrated Assessment - A Method to Quantify Ecosystem Sustainability**
 Theme: Effects (2)
 Project Leader: Andrew Kenny
 Organisation: Cefas, Lowestoft (with ABPmer)
 Total Cost: £180,981
 Duration: 01/10/08-01/06/10

Project Reference: MEPF 08/P21
 Title: **A Generic Investigation into Noise Profiles of Marine Aggregate Dredging in Relation to the Acoustic Sensitivity of the Marine Fauna in UK Waters**
 Theme: Effects (2)
 Project Leader: Frank Thomsen
 Organisation: Cefas, Lowestoft (with ISVR)
 Total Cost: £27,234
 Duration: 21/07/08-31/12/08

Project Reference: MEPF 08/P37
 Title: **Effects of Aggregate Dredging on Marine Food Web Structure & Function**
 Theme: Effects (2)
 Project Leader: Georgi Daskalov
 Organisation: Cefas, Lowestoft
 Total Cost: £150,000
 Duration: 01/09/08-30/11/10

Project Reference: MEPF 08/P39
 Title: **Impacts of Aggregate Extraction on Adjacent *Sabellaria spinulosa* Aggregations & Other Benthic Fauna ***
 Theme: Effects (2)
 Project Leader: Bryony Pearce
 Organisation: Marine Ecological Surveys Ltd.
 Total Cost: £223,369
 Duration: 14/07/08-28/02/11

Project Reference: MEPF 08/P40
 Title: **Dredging Impacts Verified in Relation to Scientific Evidence (DIVERSE)**
 Theme: Effects (2)
 Project Leader: Keith Cooper
 Organisation: Cefas Lowestoft (with University of St Andrews & Marine Ecological Surveys Ltd.)
 Total Cost: £194,118
 Duration: 14/07/08-28/02/11

Project Reference: MEPF 08/P70
 Title: **The Development and Application of an Instrument Array to Measure the Concentration of Silt and Sand in the Overflow from Aggregate Dredgers**
 Theme: Effects (2) and monitoring (3)
 Project Leader: Mike Dearnaley
 Organisation: HR Wallingford Ltd.
 Total Cost: £59,700
 Duration: 01/08/08-31/07/09

Project Reference: MEPF 08/P73
 Title: **Assessment of the Distribution and Intensity of Fishing Activities in the Vicinity of Aggregate Extraction Sites**
 Theme: Effects (2)
 Project Leader: Koen Vanstaen
 Organisation: Cefas (with British Geological Survey, Sussex Sea Fisheries Committee and the University of East Anglia)
 Total Cost: £249,735
 Duration: 21/07/08-01/02/11

Project Reference: MEPF 08/P76
 Title: **Measuring the Effects of Suspended Particulate Matter and Smothering on the Behaviour, Growth and Survival of Key Species found in Areas Associated with Aggregate Dredging**
 Theme: Effects (2)
 Project Leader: Kim Last
 Organisation: Scottish Association for Marine Science, Dunstaffnage (with PDRA)
 Total Cost: £139,884
 Duration: 01/09/08-28/02/11

* This project received additional funding from The Crown Estate

Project Reference: MEPF 08/P18
Title: **Research, Development, Production and Evaluation of Innovative Grab Sampling Devices with a View to Improving the Quality and Efficiency of Sea-Bed Sediment Sampling**
Theme: Monitoring (3), mapping (1) & effects(2)
Project Leader: John Coppock
Organisation: Gannet Scientific Services (with Plymouth Marine Laboratory and Cyclone Marine Ltd.)
Total Cost: £43,600 (for Phase 1 only)
Duration: 14/07/08-01/02/09

Project Reference: MEPF 08/P75
Title: **Best Practice Workshop and Guidelines on Aggregate Ecological Assessment**
Theme: Monitoring (3) and co-ordination (5)
Project Leader: Matthew Curtis
Organisation: Cefas (with Wessex Archaeology, ABPmer, MESL and JNCC)
Total Cost: £132,859
Duration: 14/07/08-01/12/09

Project Reference: MEPF 08/P33
Title: **Mitigation of Marine Aggregate Dredging Impacts: Benchmarking Equipment, Practices and Technologies against Global Best Practice**
Theme: Monitoring (3) and effects (2)
Project Leader: Ian Selby
Organisation: Emu Ltd. (with Delft University and TG Marine Ltd.)
Total Cost: £66,610
Duration: 14/07/08-31/03/10

Project Ref: MEPF 08/P14
Title: **Marine Aggregates Supply as part of a Sustainable Mix**
Theme: Socio-economic (4)
Project Leader: Edward Lockhart-Mummery
Organisation: Resource Decisions Ltd. (with Emu Ltd. and Strathclyde University M.Sc)
Total Cost: £98,475
Duration: 31/07/08-31/07/09

Title: **Derek the Dredger and the Marine Biologists**
Project Reference: MEPF 08/P27
Theme: Co-ordination and outreach (5)
Project Leader: Julie Satchell
Organisation: Hampshire & Wight Trust for Maritime Archaeology
Total Cost: £40,430
Duration: 14/07/08-31/12/09

Category 3

Data collection, analysis and reporting for two major new REC areas – one off the coast of Norfolk and the other in the Outer Humber region

Project Reference: MEPF REC 08/04
Title: **East Coast Regional Environmental Characterisation (REC) Survey**
Theme: Seabed Mapping & Characterisation
Project Leader: Dave Limpenny
Organisation: Cefas, Lowestoft Laboratory, Pakefield Road, Lowestoft, Suffolk NR33 0HT
 Tel: +44 (0)1502-562244
 david.limpenny@cefass.co.uk
Project Partners: British Geological Survey
 Wessex Archaeology
 Marine Ecological Surveys Ltd.
 Envision Mapping Ltd.
Total Cost: £2,015,125
Duration: 14/07/08-01/02/11

Project Reference: MEPF REC 08/03
Title: **Outer Humber Regional Environmental Characterisation (REC) Survey**
Theme: Seabed Mapping & Characterisation
Project Leader: David Tappin
Organisation: British Geological Survey, Keyworth, Nottingham NG12 2AD
 Tel: +44 (0)1159-363449
 drta@bgs.ac.uk
Project Partners: Guardline Environmental Ltd.
 Marine Ecological Surveys Ltd.
 Birmingham University
Total Cost: £2,147,946
Duration: 14/07/08-01/03/10

Category 4

Appointment of 'Theme Advisors' and 'Project Co-ordinators' to assist in the management and supervision of Round 3 MEPF Projects

Theme Advisors

Project Reference: MEPFT08/01
Title: **Marine Policy Objectives**
Project Leader: Chris Vivian
Organisation: Cefas, Remembrance Avenue,
Burnham-on-Crouch,
Essex CM0 8HA
Tel: +44 (0)1621-787200
chris.vivian@cefas.co.uk
Total Cost: £5,000
Duration: 14/07/08-31/03/09

Project Reference: MEPFT08/02
Title: **Data Management and Storage**
Project Leader: David Cotton
Organisation: Marine Environmental Data and
Information Network
Joseph Proudman Building,
6 Brownlow St., Liverpool L3 5DA
Tel: +44 (0)1151-7954893
dcott@oceannet.org
Total Cost: £5,000
Duration: 14/07/08-31/03/09

Project Co-ordinators

Project Reference: MEPF S07/03
Title: **Regional Environmental
Characterisation (REC)**
Project Leader: Euan McNeill
Organisation: Wessex Archaeology, Portway House,
Old Sarum Park, Salisbury,
Wiltshire SP4 6EB
Tel: +44 (0)1722-326867
e.mcneill@wessexarch.co.uk
Total Cost: £80,000
Duration: 14/07/08-31/03/09

Project Reference: MEPF S07/05
Title: **MALSF Science Co-ordination**
Project Leaders: Richard Newell
Julianna Measures
Organisation: c/o ALSF-MEPF Administrator,
Pakefield Road, Lowestoft,
Suffolk NR33 0HT
Tel: +44 (0)1795-522243
science@alsf-mepf.org.uk
Total Cost: £100,000
Duration: 01/04/08-31/03/09

Project Reference: MEPF S07/05
Title: **MEPF Communications and
Dissemination Co-ordinator**
Project Leader: Lara Murphy
Organisation: National Museum of Wales
Cathays Park, Cardiff CF10 3NP
Tel: +44 (0)2920-573242
lara.murphy@museumwales.ac.uk
Total Cost: £48,195
Duration: 14/07/08-31/03/09

Category 5

M.Sc. Bursary Scheme

One of the priorities of the Marine Environment Protection Fund is to support aggregate-related research through the provision of funds for appropriate post-graduate training.

A bursary scheme was successfully piloted in 2007 and reflected a wide range of disciplines from hydrography to socio-economics. The Marine ALSF Steering Group intends to support the continuation of the Bursary Scheme. It is directed at UK universities with marine-related schools, departments and institutes running M.Sc programmes relevant to the Marine ALSF objectives.

Bursaries are set at approximately £4,000 and may be used to cover university fees and expenses. Bursary recipients will receive an insight into marine aggregate extraction research through induction training sessions, and will have an

opportunity to meet scientists assessing the environmental impact of marine aggregate extraction. In turn, students are required to complete final projects relevant to the Marine ALSF aims, with mentoring assistance from a scientist working in the appropriate field.

For further information, and to apply for the scheme, contact the MEPF Secretariat on +44(0)1502-524361 or email secretariat@alsf-mepf.org.uk

Up to six M.Sc. bursaries have been awarded for the academic year 2008-09.

Category 6

Dissemination and outreach programmes

Effective Dissemination and Outreach programmes to bring the results of marine ALSF work to a wide range of stakeholders is an important activity of the MEPF. The Evaluation Group has received a large number of Expressions of Interest (EOI) outlining proposals aimed at children and the general public, and involving relatively large funding requirements in relation to the costs of primary research.

The Steering Group has therefore decided to seek advice on the development of a comprehensive Communication, Dissemination and Outreach strategy. This will identify key

stakeholder groups at which the projects should be aimed. It will also ensure that all aspects of Marine ALSF work, including environmental resources such as seabed geology and biological communities of conservation and economic significance as well as features of archaeological and historic significance, are properly represented. Proposals for projects related to this comprehensive Dissemination and Outreach strategy are likely to be sought for possible funding in Year 2 of Round 3 of the MEPF (ie from 01.04.09 onwards). Proposals will also be sought for a secure data storage and management system so that data generated by Marine ALSF projects can be made available for use by others.

Category 7

Commissioned work identified by the Steering Group as requiring additional study

The Steering Group may identify additional projects to support and enhance research related to the aims and objectives of the marine ALSF. Such projects are likely to be put out to tender by the Steering Group once funds committed for current projects have been allocated.

Want to Know More About the Marine ALSF?

Background to the fund

In 2002 the Government imposed a levy on all primary aggregates production (including marine aggregates) to reflect the environmental costs of winning these materials. A proportion of the revenue generated was used to provide a source of funding for research aimed at minimising the effects of aggregate production. This fund, delivered through Defra, is known as the Aggregate Levy Sustainability Fund (ALSF).

Governance

The Defra-chaired Marine ALSF Steering Group develops the commissioning strategy and oversees the delivery arrangements of the Fund for projects related to the marine environment. Details of representative organisations can be found on the inside of the front cover of this MALSF Science Review.

Delivery Partners

The Marine ALSF is currently delivered by two Delivery Partners: The Centre for Environment, Fisheries & Aquaculture Science (CEFAS) who administer the Marine Environment Protection Fund (MEPF) and English Heritage (EH) who administer funds related to the historic environment.

Cefas -The Marine Environment Protection Fund (MEPF)

The Marine Environment Protection Fund (MEPF) is administered by Cefas, who also provide Secretariat support for the Marine ALSF Steering Group and sub-groups as reasonably required by Defra.

The Secretariat is mainly responsible for:-

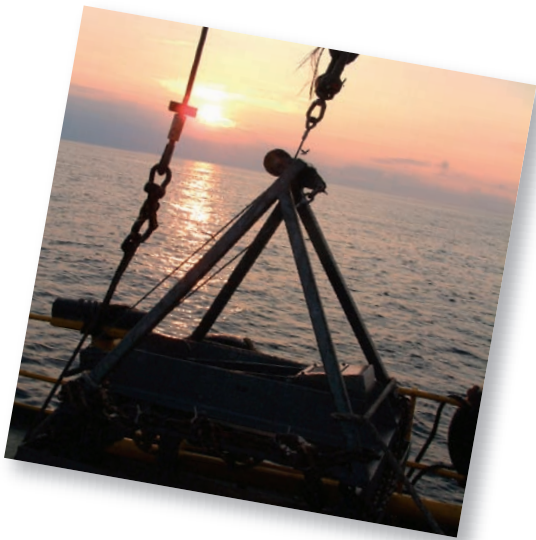
- Pre-contract activities (such as calls for proposals) by providing the necessary information to the Steering Group and its Evaluation Panels to authorise commitment of MEPF funds.
- Contract management and administration activities following formal award of projects.
- Financial management and administration activities (including fund distribution to contractors) to inform programme expenditure / budgetary reporting.
- General administration activities.
- Programme dissemination activities.
- Progress reporting on all programme activities.



ENGLISH HERITAGE

English Heritage

English Heritage is the Government's statutory advisor on the historic environment. Since 2002 this has included England's coastal, marine and maritime historic environment. In fulfilling its role of championing and caring for our marine cultural heritage, EH has disbursed Marine ALSF funding on behalf of Defra with a focus on; researching what significant archaeology lies on or under our coastal seabed; establishing the impacts on that resource created by marine aggregates dredging; finding ways of reducing these impacts; and providing news ways of access to this knowledge for industry and for the public.



Joint Funding between the MEPF and English Heritage

The MEPF and English Heritage work together through the Marine ALSF Steering Group and sub-groups to review strategy, proposals and agreements for joint funding, and any other issues of common interest arising from the marine ALSF schemes. Significant funding for research into the nature and distribution of historic and archaeological assets has been delivered through the MEPF Regional Environmental Characterisation surveys that were completed in 2007-8 and have been commissioned under the current Round 3 of the MALSF from 2008-11.

More information can be obtained from:-

<http://www.alsf-mepf.org.uk>

<http://www.english-heritage.org.uk/server/show/nav.1315>





Other publications

The recent publication "Marine Aggregates Extraction: Helping to Determine Good Practice" summarises research mainly funded through the ALSF between 2004-2007. This can be downloaded from <http://www.alsf-mepf.org.uk/downloads/downloads.asp>

Proceedings of the 2008 MALSF Technical Conference



**marine
environment
protection
ALSF**



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