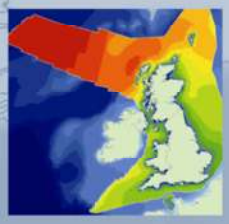
ABP mer
marine environmental research

Coastal Habitat Creation Are We Delivering?

20 November 2013

Programme

Creating sustainable solutions for the marine environment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Delegates Briefing

Welcome to this ABPmer event, we hope you will find it informative, motivating and inspiring!

Please help us make this event run smoothly by ensuring you are familiar with the following information.

General Housekeeping Arrangements
These will be given to you at the beginning of the day.

Seating and Timing – Important
One hundred people are expected today. Please make sure you take your seats in good time for the sessions and do not block the aisle ends to leave room for those arriving late.

Badges
Please wear your badges whilst attending the conference and leave them behind at the registration desk.

Breaks and Food
There are two programmed breaks. All refreshments will be served in the Smeaton Room.
Lunch is a hot fork buffet, sweet will be served at 1615hrs.

Conference Presentations
In this pack are the abstracts relating to each session. The presentations will be published online at a later date together with outcomes from the day. All delegates will receive a link to this by email during December.

Discussion
There is time in the programme for questions/discussion at the end of each session. The final session is dedicated entirely to discussing and prioritising actions for future delivery.

Other Matters
If you have any queries please approach a member of ABPmer staff.

Acknowledgements
ABPmer would like to thank the event sponsors for supporting this event and the speakers for their time and participation today.

Coastal Habitat Creation – Are We Delivering?
20 November 2013
One Great George Street, London

08:45 REGISTRATION

9:30 WELCOME & INTRODUCTION

Colin Scott, Associate, ABPmer

9:45 SESSION I: CHALLENGES/LESSONS IN DELIVERING

Delivering Flood Risk Management Strategies

John Pygott, Project Manager NCPMS, Environment Agency

Target Setting and Delivery – 3 projects, 14 years on

Sian John, Director Environment UK, Royal Haskoning DHV

Challenges in Wales

Richard Park, Habitat Creation Co-ordinator, Natural Resources Wales

11:15 BREAK

11:45 SESSION II: ECOLOGICAL CONSIDERATIONS

The Trouble with Mud

Mark Dixon, Marine Wetland Consultant

Providing for Birds

Malcolm Ausden, Senior Ecologist & Jack Rhodes, Policy Officer, RSPB

Saltmarsh Species Diversity

Hannah Mossman, Ecology Lecturer, Manchester Metropolitan University

13:15 LUNCH

14:15 SESSION III: THE WAY FORWARD

What Can We Learn from Elsewhere in Europe?

Susanne Armstrong, Senior Consultant, ABPmer

Implications of the Defra Habitat Regulations Review

Will Armitage, Head of Major Infrastructure and Environment Unit, Defra

Priorities and Challenges for Habitat Delivery

Tim Collins, Principal Specialist - Coasts & Water, Natural England

Summary

Heidi Roberts, Head of Coastal and Offshore Processes, ABPmer

16:15 TEA AND CAKE NETWORKING

17:00 CLOSE

Opening Address

Colin Scott, Associate, ABPmer
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This is the 2nd ABPmer conference on coastal habitat creation. Our 1st conference was 3 years ago in November 2010 and a lot has happened in that time. Several new projects have been, or are being, undertaken each of which adds to our understanding about their practical implementation. We have also seen a number of new policy developments in recent years.

However, as was originally highlighted during our 2010 conference, we still face challenges with evaluating **how sites are performing against their objectives**. In particular there is a lot of uncertainty about **what delivery means and what success looks like** against a range of policy driven targets. The aim is to review this issue further today. To address this, the day is broken down into three sessions:

- **Lessons/Challenges in Delivering**: A review of the lessons/challenges from project implementation drawing on case examples.
- **Ecological Considerations**. A review of ecological development in created habitats with reference to mudflat, birds and saltmarsh.
- **The Way Forward**. An exploration of the role and influence of policy drivers and what delivery might look like in the future.

This issue is complex because we are dealing with nature and natural processes as set against policy. Therefore, to help frame our discussions today and going forward I have identified the following 10 questions across 6 topic areas to consider throughout the day:

Habitat Entent Objectives

1. Are habitat definitions and the links to relevant policy drivers correct and clear?

Habitat Quality, Monitoring and Analysis

2. What role does habitat quality, richness and biodiversity play?
3. Do we need a way of framing, standardising and communicating monitoring outcomes?
4. What is the role of ratios when developing targets and gauging success?

Habitat Development and Change Over Time

5. How do we address/measure temporal habitat development and change?
6. Would thinking about temporal change also give a rationale for protecting existing habitats (e.g. through recharge)?

Habitat 'Naturalness' and Maintenance

7. What role do naturalness, sustainability and the need for management play in gauging success?

Ecosystem Services and Future Visions

8. How do we get multiple benefits and an ecosystem approach to underpin future project implementation?

Getting Sign Off and Moving to the Next Project

9. What is the process for agreeing delivery and saying the job is done?
10. Can we use such a process to achieve greater or better success in the future?

We would be grateful if you would share your thoughts on these issues on the back of the blue feedback form and hand it in at the end. We will use these to prepare a conference report and a paper to Natural England to inform their compensation measures review which is currently underway.

Delivering Flood Risk Management Strategies

John Pygott, Project Manager NCPMS, Environment Agency
T: 0113 819 6241 E: john.pygott@environment-agency.gov.uk

Since the mid 1990s the Environment Agency has been implementing a programme of managed re-alignment sites on the Humber Estuary, principally to compensate for the loss of intertidal habitat as a result of our flood risk management activities. So far we have constructed three sites covering more than 500 hectares. Further sites are planned for the future.

Since the initial sites were developed, the overall objectives for current and future re-alignments have changed. Whilst the Birds and Habitats Directives were the principal drivers for the early sites, the requirements of the Water Framework Directive and the need to address community concerns about flood risk have become increasingly important. On the Humber sites have also been promoted by other organisations to compensate for losses from their development.

The views of stakeholders and local communities have changed over the past fifteen years and have produced a more challenging environment for future scheme development. Issues such as the loss of high grade agricultural land, food security and the impact of visitors have become increasingly important.

Monitoring programmes for the two oldest Humber re-alignment sites have provided an extensive data set across a wide range of environmental parameters. This has improved our understanding of how these sites evolve over time as well as feeding into the design process for future sites. Ecosystems services assessment has demonstrated a wide range of benefits which have been delivered on the completed sites.

Target Setting and Delivery – 3 Projects, 14 years On

Sian John, Sector Director, Environment, Royal Haskoning DHV
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In 1997 the Harwich Haven Authority (HHA) applied for consent to deepen the approach channel to the Haven Ports (the Ports of Felixstowe and Ipswich, and Harwich International Port) from 12.5m below Chart Datum (bCD) to 14.5m bCD. Part of the consent received by the HHA included an obligation to create a new 16.5ha intertidal (mudflat and saltmarsh) habitat at Trimley Marshes, on the banks of the Orwell Estuary adjacent to the Stour and Orwell Estuaries Special Protection Area (SPA). The site was breached and completed in 2000 and has been monitored annually for 10 years since (Royal HaskoningDHV, 2013).

This presentation will consider the results from the Trimley Marshes Managed Realignment monitoring against the objectives that were set for the site at the outset; including to be designated as part of the SPA. In addition, managed realignment "Site A" at London Gateway was breached in 2010, with the objective of creating habitat to compensate for the influence of the development of the port on the Thames Estuary SPA (mudflat). The talk will also look at the objectives that were set for this site.

Finally, the presentation will review how the objectives were set for managed realignment at Little Oakley, Hamford Water in conjunction with the proposed development of the Bathside Bay Container Port; where DEFRA compensation parameters were used to define needs and demonstrate success.

Details of websites/key publications

John, S., Simpson M. and Gray T. (2007). *Compensatory habits: defining needs and demonstrating success*. Proceedings of the International Conference on Coastal Management, Cardiff 31 October–1 November 2007 (pages 183-192).

Royal Haskoning (2003). The London Gateway Harbour Empowerment Order (HEO) 2002. *Information* for Appropriate Assessment. Prepared on behalf of P&O, May 2003.

Royal HaskoningDHV (2013). *Mitigation and Monitoring for the Stour and Orwell Estuaries SPA and Hamford Water SPA: Annual Review 2012*. Prepared on behalf of the Harwich haven Authority, March 2013.

Challenges and Opportunities – Delivering Coastal Squeeze Compensation Habitat in Wales

Richard Park, National Habitat Creation Manager, Natural Resources Wales
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Natural Resources Wales is responsible for leading on the NHCP which is also the delivery mechanism for local authorities who share responsibilities for coastal squeeze.

Opportunities for salt marsh habitat creation within Wales' Natura 2000 Areas have been identified and refined, with detailed appraisal underway. The focus is on Areas with the greatest requirements: The Severn Estuary; Carmarthen Bay and Lleyn Peninsula and Sarnau SACs who have significant coastal squeeze losses identified in the Shoreline Management Plans and Severn Estuary Strategy in the first epoch (up to 2025).

This is a presentation focusing on some of the restraints and challenges to achieving an easy outcome for coastal squeeze compensation in Wales: funding of expensive schemes during a period of austerity; conflicts of interests within a new organisation (e.g. potentially de-notifying SSSIs); establishing accountability (and cost recovery) for coastal squeeze with third parties; defining policies on site viability as "bankable" compensation habitat in relation to SMP policies; and assessing options with landowners.

Natural Resources Wales are finding their way forward during a time of great change and making progress; and some examples will be discussed. The risks of failing to secure sufficient habitat before any potential adverse effects of sea level rise manifest themselves within the Severn Estuary Natura 2000 site are highlighted.

The Trouble With Mud

Mark Dixon, Independent Consultant
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This talk will involve a review of mudflat ecology and the processes that are involved in its creation and restoration.

To begin with, details about the physical and ecological character of mudflat habitat and its interrelationship with saltmarsh will be presented. Then the key factors that are relevant when designing new mudflat will be outlined. These include consideration of: suspended sediments, convex versus concave profiles, hydrodynamic tidal impacts and the relevance of natural systems.

The review of mudflat creation will encompass the options that exist by going forward from the existing seawall (e.g. by recharge, offshore reefs of the use of brushwood groynes) as well as the landward realignment options involving managed realignment and regulated tidal exchange (RTE).

The success factors and achievability of 'like for like' will then be addressed recognising the factors that influence change such as physical evolution, vegetation growth, invasive species, chemical influences and human intervention.

Finally, the question 'Are we delivering?' will be addressed with recommendations for the future. The global context will also be recognised.

Providing for Birds

Malcolm Ausden, Senior Ecologist, RSPB & Jack Rhodes, Policy Officer, RSPB
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We reviewed evidence of the value of re-created intertidal habitat for birds.

Re-created intertidal habitat can support high densities of feeding waterbirds, but it is not possible to draw general conclusions regarding its value for different bird species. Densities of most wader species typically increase during the first 2 to 4 winters following the introduction of tidal flooding, this probably largely reflecting the rate of increase in biomass of their main invertebrate prey. Subsequent densities of waterbirds are influenced by the extent to which newly created mudflat is replaced by saltmarsh.

We also present case studies showing the use of recently re-created intertidal habitat by wintering passerines, and demonstrating that recently created intertidal habitat can support high densities of breeding Redshank *Tringa totanus*. A major evidence gap is the lack of available information evaluating the success of schemes intended to provide compensatory habitat.

Given expected additional pressures on wildlife of coastal wetlands due to climate change, we believe that it is important, where practical, to create other important features for wildlife as part of intertidal habitat re-creation schemes. These features include saline lagoons, islands, and transitional habitats. Creating more variation in topography in middle and upper saltmarsh is expected to increase its suitability for breeding Redshank.

Saltmarsh Species Diversity

Hannah Mossman, Lecturer in Ecology, Manchester Metropolitan University
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Coastal saltmarshes are being lost and, where there is a legal requirement to compensate losses, replacement habitat should have equivalent biological characteristics. We have studied the vegetation establishment at 18 managed realignment (MR) sites (1-14 yrs old) and 17 accidentally realigned sites (25-131 yrs old), and compared this to 34 natural saltmarshes.

Plant species quickly colonised MR sites and species richness was similar to nearby natural marshes after 1 year. However, the community composition was significantly different from reference sites, with pioneer species, such as *Salicornia*, remaining dominant even on the high marsh.

The dominance of pioneer species may be because, at the same elevation, sediments were less oxygenated than on reference marshes. In contrast, sediments were well oxygenated on the high marsh but were often drier and harder than on natural marshes, which may inhibit plant colonisation. The characteristic perennial species *Limonium vulgare*, *Triglochin maritima*, *Plantago maritima* and *Armeria maritima* remained relatively rare on restored marshes, even after 50 yrs. However, *Atriplex portulacoides* was more abundant and its growth form may prevent colonisation by other species. Small-scale manipulation of the marsh surface topography may provide environmental conditions suitable for a wider range of plants and, coupled with planting schemes, may improve equivalence between restored and natural marshes.

Details of websites/key publications

Mossman HL, Davy AJ, Grant A. 2012. Does managed coastal realignment create salt marshes with 'equivalent biological characteristics' to natural reference sites? *Journal of Applied Ecology* 49:1446-1456

Mossman HL, Davy AJ, Grant A. 2012. Quantifying local variation in tidal regime using depth-logging fish tags. *Estuarine, Coastal and Shelf Science* 26:122-128

Mossman HL, Brown MJH, Davy AJ, Grant A. 2012. Constraints on saltmarsh development following managed coastal realignment: dispersal limitation or environmental tolerance? *Restoration Ecology* 20: 65-75

Davy AJ, Brown MJH, Mossman HL, Grant A. 2011. Colonization of a newly developing salt marsh: disentangling independent effects of elevation and redox potential on halophytes. *Journal of Ecology* 99: 1350–1357

Mossman HL, Grant A, Davy AJ. 2013. Implications of climate change for coastal and inter-tidal habitats in the UK. Technical Paper 10, Terrestrial Biodiversity Climate Change Report Card. Defra, London, UK.

What Can We Learn From Elsewhere in Europe?

Susanne Armstrong, Senior Marine Environmental Consultant, ABPmer
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A very large number of coastal habitat creation projects have now been implemented in the UK and elsewhere in Northern Europe. ABPmer's dedicated website (www.abpmer.net/omreg) holds data on well over 100 managed realignment (MR) and regulated tidal exchange (RTE) schemes. Most of these (over 60) have been done in the UK.

The drivers of these schemes have been fairly varied, with the largest variation observed in the UK, where flood risk management, compensation and nature conservation have dominated as the main drivers, often in combination. Compensatory schemes, as required under the Habitats Directive, which are the focus of this talk, have been particularly prevalent in the UK and along Germany's North Sea coast; only in Belgium have there also been a relatively high number of such schemes.

In Germany, port and capital dredge schemes which had effects on internationally designated sites have, to date, led to the implementation of at least 11 schemes along the German North Sea coast – most notably the Weser and Elbe estuaries. Some of these have been fairly large scale, with four exceeding 145ha in size.

Due to the generally longer monitoring horizon in Germany, none of the schemes appear to have been formally 'signed off' to date, however most have already been integrated into the Natura 2000/European site network. Further similarities and differences to the UK system will be discussed, and some lessons also drawn from the Belgium experiences.

Implications of the Defra Habitat Regulations Review

Will Armitage, Head of Major Infrastructure and Environment Unit, Defra
T: 020 7238 4592 E: will.armitage@defra.gsi.gov.uk

This presentation will focus on the Habitats and Wild Birds Directive Review undertaken by Defra between November 2011 and March 2012.

The talk will set out the rationale for the Review and the key measures impacting on coastal habitat creation.

It will then go onto provide an update on progress achieved with a particular focus on the work of the Major Infrastructure and Environment Unit (MIEU) and its experiences working on coastal development projects.

Lastly, the talk will offer some thoughts on future challenges, including touching on Defra's thinking on biodiversity offsetting which has been the subject of a recent consultation.

Priorities and Challenges for Habitat Delivery

Tim Collins, Principal Specialist – Coasts & Water, Natural England
T: 0300 060 0754 E:tim.collins@naturalengland.org.uk.

Natural England is engaged with managed realignment schemes in a number of ways:

- As a response to coastal squeeze and in particular the impacts this is having on six estuary complexes across England
- Through our involvement as a statutory adviser in relation to Natura 2000 compensation schemes
- Through our statutory advice on with respect to direct impacts on protected sites (both Natura 2000 sites and SSSIs) and the opportunities afforded by shoreline management plans and coastal strategies
- Through the agri-environment scheme programme that currently includes an option for managed realignment to re-create intertidal habitats

At the moment our proactive work is focussed on the first of these; in support of this we are currently funding a study to improve our understanding of what constitutes a 'healthy estuary' from a conservation perspective. We hope this improves our advice on the extent of managed realignment required to restore sites to favourable condition. The talk will also cover a number of topical issues:

- The current Defra/Natural England research project to assess the effectiveness of coastal Natura 2000 compensation measures (most of which are coastal);
- The development of an approach towards the 'sign off' and notification of compensation sites.

It will also pose some challenges that need to be addressed in the design and delivery of future realignment schemes:

- Are there opportunities to make realignment schemes more sustainable to future sea-level rise by using sites that lead naturally to higher ground?
- Is it possible to design realignment sites that create sustainable mudflat and subtidal as compensatory habitat?
- How can we reduce the costs of managed realignment schemes to make them more affordable?
- The response of local stakeholders and communities to managed realignment proposals has varied around the country; how can we improve engagement as new proposals are developed?