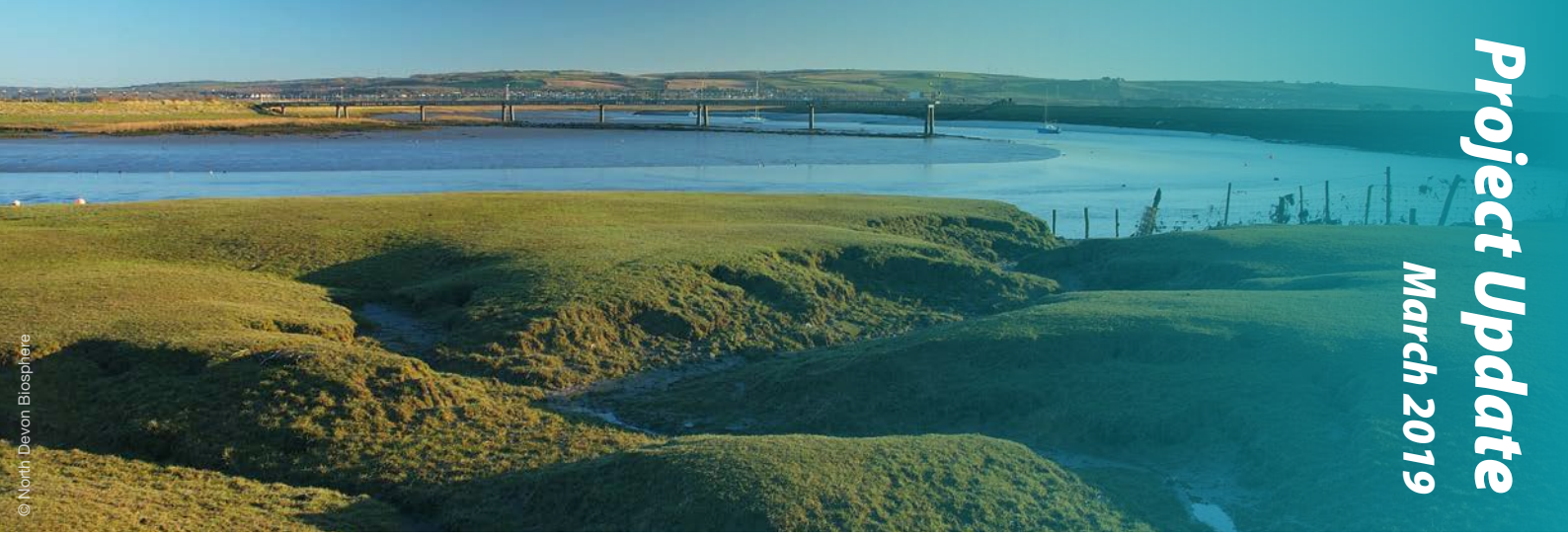


Project Update
March 2019

North Devon Marine Pioneer

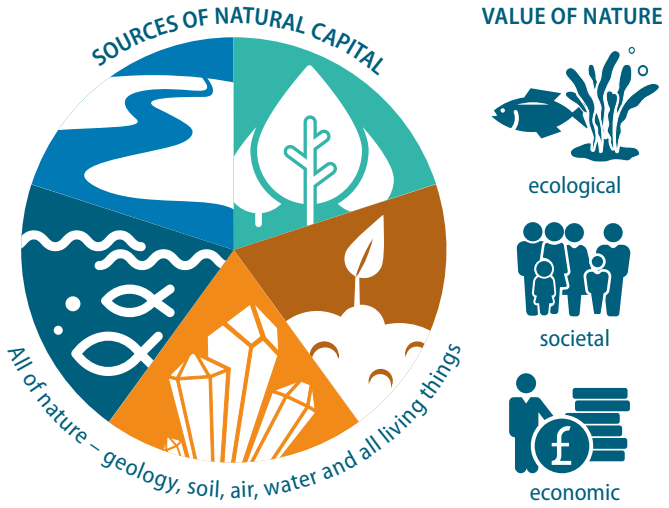
Creating saltmarsh – a natural capital approach

The challenge

- As saltmarshes are rapidly degrading and decreasing worldwide, how can we best manage our coastal defences in the North Devon Biosphere Reserve?
- Returning some areas of land to saltmarsh (managed realignment) can improve coastal stability against flooding and erosion – which are likely to increase with climate change. But how can we identify and select these land areas to maximise the benefits and minimise the costs?

Key findings

- We have been looking at benefit (and cost) flows to identify priority areas for managed realignment of saltmarshes. We have found that realignment in the North Devon Biosphere can result in a net gain – an overall improvement in natural capital.
- This is because the gains from the major ecosystem services (carbon sequestration – removing carbon from the atmosphere and storing it – and recreational benefits) outweigh the realignment costs (losses to agricultural production, damage to property, and direct costs of carrying out the work).
- Of all the sites we studied, we identified four as high priorities for managed realignment. They contain no properties, so resistance from local communities is less likely. These sites would provide large recreational and carbon benefits – the principle ecosystem services. These services contribute to heath and wellbeing improvements.
- Three of the four sites are in agricultural areas, so there would be costs to a comparatively small number of landowners, and an equitable decision-making approach would need to balance economic trade-offs with consideration for those bearing the cost burden.
- Planners should be aware that land considered for realignment may be providing valuable freshwater flooding capacity that will need to be replaced to maintain existing flood defences for communities around the estuary.



Managed realignment (also called managed retreat) involves altering coastal/estuarine defences to allow previously protected land to be flooded by the tide – usually land that was originally claimed from the sea.

In some cases the potential annual net value of sites converted to saltmarsh varied by several orders of magnitude – so informed selection of sites for managed realignment can offer substantial gains for planners and more efficient use of resources.

In practice

- These findings provide:
  - a necessary and timely analysis for the managers of the North Devon Biosphere Reserve
  - a policy tool for future management of coastal areas.
- Our framework can be used to:
  - prioritise managed realignment projects
  - predict the impact on ecosystem services of different conditions of change – such as climate change, agricultural policy and water-quality scenarios.

The future

- This study prioritised sites by purely economic assessment. But realignment should also be determined by the geomorphology and tidal dynamics of the estuary – realignment in the wrong place can lead to erosion of important areas elsewhere in the system. Future research should include a geomorphological model as part of the decision-support tool.
- Currently, over half of the UK's saltmarshes are classified as being in 'unfavourable condition'. We need more evidence on how the condition of saltmarsh affects its resilience to sea-level rise, storm events and human use (including agriculture).

Project partners

North Devon Biosphere

University of Exeter – Land, Environment, Economics and Policy Institute

SWEEP

University of Plymouth

Plymouth Marine Laboratory

Project supporter:

Environment Agency

This North Devon Marine Pioneer project contributes to the policies of the Government's 25 Year Environment Plan, *A Green Future*, by applying a natural capital approach to creating saltmarsh.

This project is a contribution to the North Devon Landscape and Marine Pioneer (northdevonbiosphere.org.uk/pioneers.html)

For more information go to: www.sweep.ac.uk and view the full working paper.

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