



Coastal Futures Conference 2024

An inclusive future for our seas



24th & 25th January, 2024

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#CoastalFutures24



Session Five

Restoration Prioritisation

Are we evolving the right solutions to deliver marine restoration and a nature-positive approach to decision-making?

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Chair

Roger Proudfoot, Environment Agency

24th & 25th January, 2024

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Q&A

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Session Five Restoration Prioritisation

Charlotte Johnson, Natural
England

Marine Restoration Potential
(MaRePo)

24th & 25th January, 2024

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Marine Restoration Potential

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MaRePo





MaRePo

Marine Restoration Potential

JP054 Marine Restoration Potential MaRePo -
JP054 (naturalengland.org.uk)

2023, Natural England, Environment Agency, JNCC,
and Cefas, Offshore Wind Evidence and Change
Programme, Marine Restoration Potential (MaRePo) |
[Marine Data Exchange](#)



- Proof of concept study to **map the restoration potential** of some of England's threatened and **declining marine habitats**.
- Supply evidence to support Natural England and Defra's work programmes on Marine Net Gain and **Offshore Wind Enabling Actions programme (OWEAP)**
- A partnership project funded by Natural England and for **The Crown Estate's Offshore Wind Evidence and Change programme (OWEC)**



Offshore
Wind Evidence
+ Change
Programme



Environment
Agency



JNCC
Joint Nature Conservation Committee

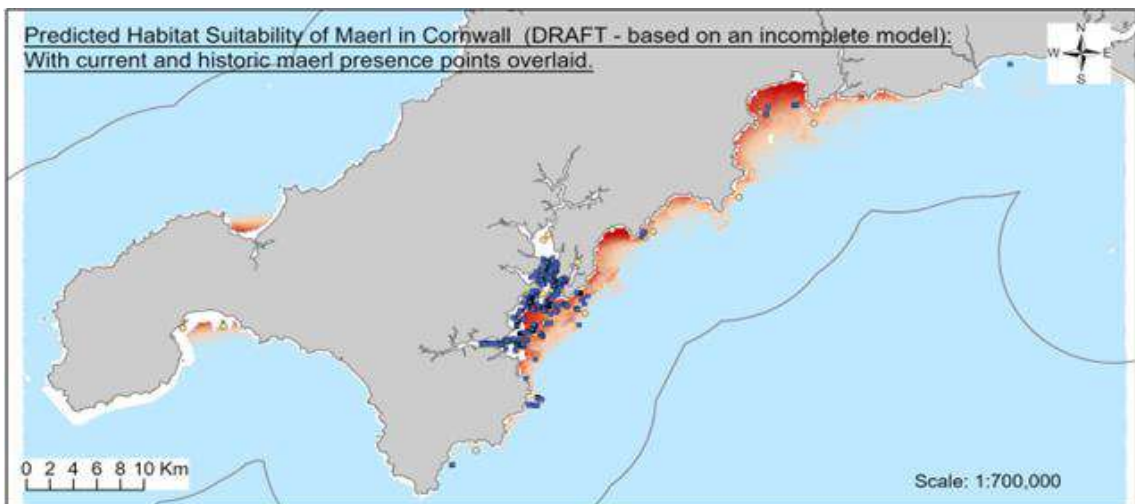
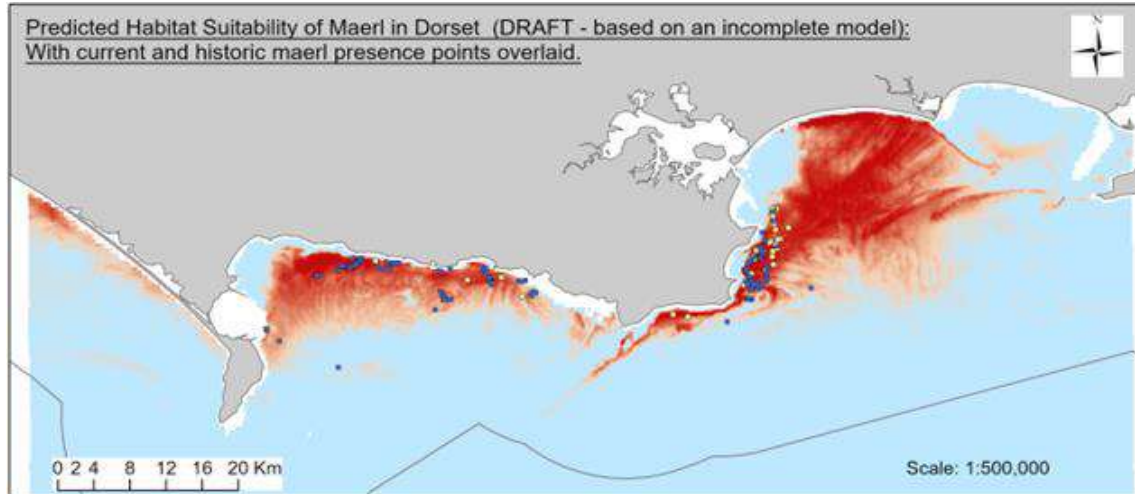


- Study on the restoration potential of OSPAR threatened and declining subtidal marine habitats:
 - Maerl beds
 - Kelp beds
 - Native oyster beds
 - Horse mussel beds
 - Sea pens and burrowing megafauna
- Explores potential scale of marine habitat restoration opportunities and where restoration of declining priority habitats is most likely to succeed.



Marine Plan Area		North East		East		South East	South		South West		North West	
Habitat		Inshore	Offshore	Inshore	Offshore	Inshore	Inshore	Offshore	Inshore	Offshore	Inshore	Offshore
Kelp (km ²)	<i>Laminaria hyperborea</i>	393	0	5	0	3	345	0	525	0	<1	0
	<i>Saccharina latissima</i>	<1	0	0	0	0	<1	0	2	0	0	0
Maerl	General habitat suitability	N/A	N/A	N/A	N/A	N/A	Some potential	N/A	Some potential	N/A	N/A	N/A
Native oyster (km ²)		383	0	104	10	193	1093	0	73	0	100	
Modiolus beds	General habitat suitability	Low	Low	Low	Low	Low	Some potential	Low	Low	Low	Low	Some potential
Sea pens & burrowing megafauna (% of marine plan area)	<i>Pennatula phosphorea</i>	51%	99%	3%	17%	0%	0%	0%	9%	15%	0%	0%
	<i>Virgularia mirabilis</i>	72%	99%	6%	15%	0%	4%	0%	9%	15%	30%	
	<i>Funiculina quadrangularis</i> (combined)	30%	92%	1%	11%	0%	0%	0%	3%	6%	2%	0%

Maerl



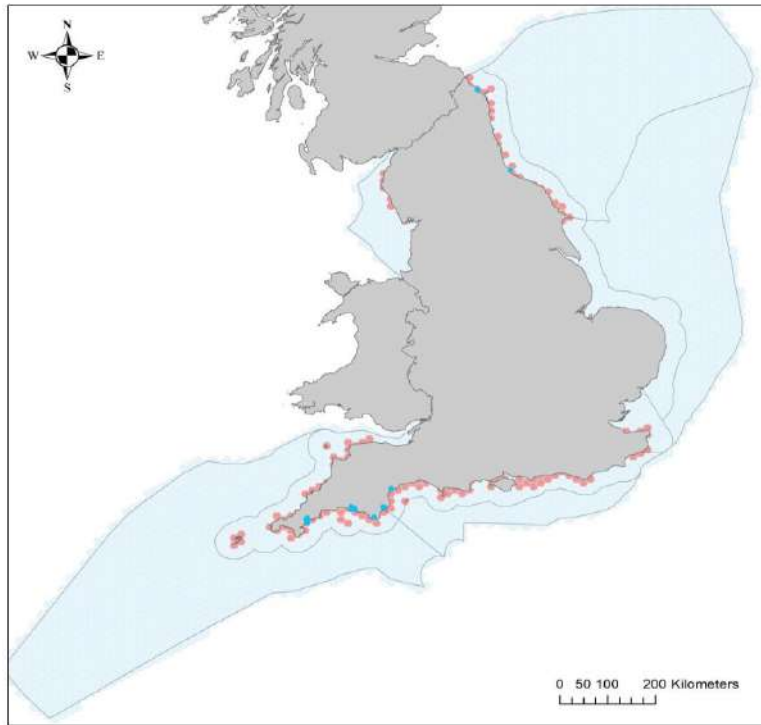
Predicted habitat suitability of maerl in Dorset (top) and Cornwall (bottom). Current distribution (yellow) and historic (blue) maerl presence points overlaid.

Current Probability of Maerl in Dorset





Kelp



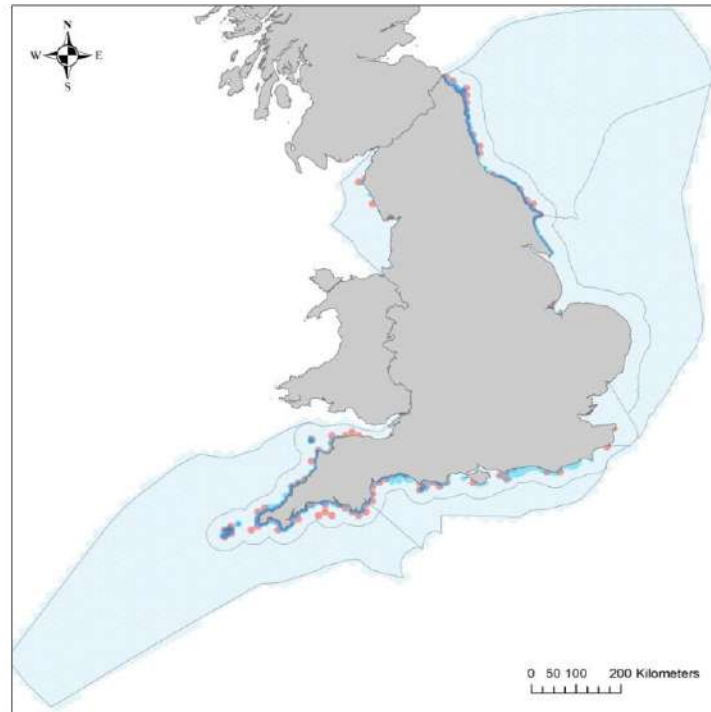
© Crown Copyright 2017

Saccharina latissima

- Land
- MMO_Marine_Plan_Areas
- Saccharina latissima* potential restoration areas (model 2)
- Saccharina latissima* potential restoration areas (model 1)

Historic Distribution

- Absent
- Present



© Crown Copyright 2017

Laminaria hyperborea

- Land
- MMO_Marine_Plan_Areas
- Laminaria hyperborea* potential restoration areas (model 1)
- Laminaria hyperborea* potential restoration areas (model 2)

Historic Distribution

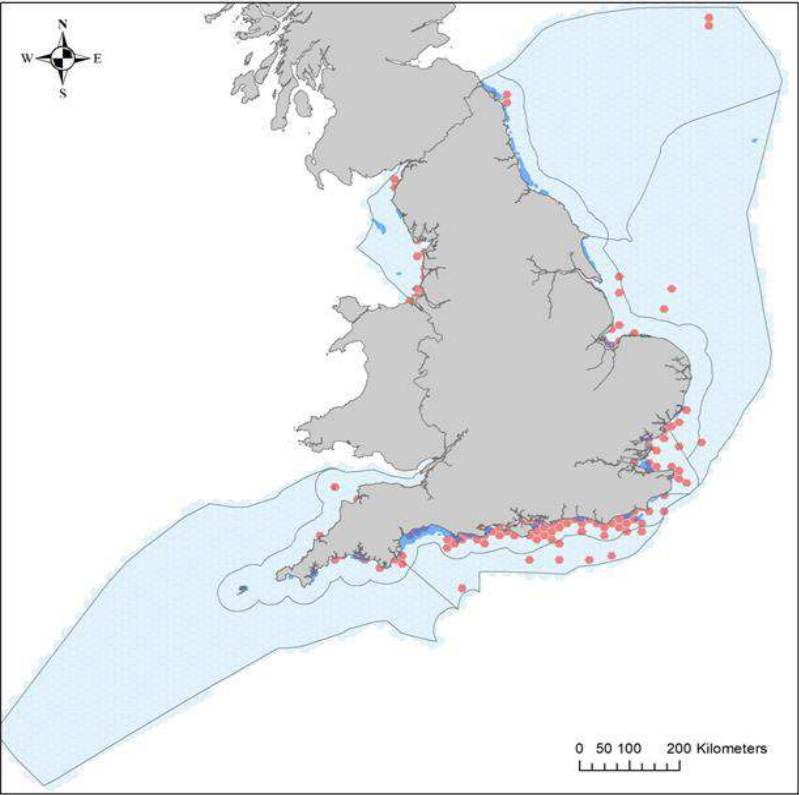
- Absent
- Present

The models presented include English waters and areas of infralittoral rock.

Habitat restoration potential for *Laminaria hyperborea* and *Saccharina latissima* was predicted by adapting model outputs produced by Burrows et al., (in press).

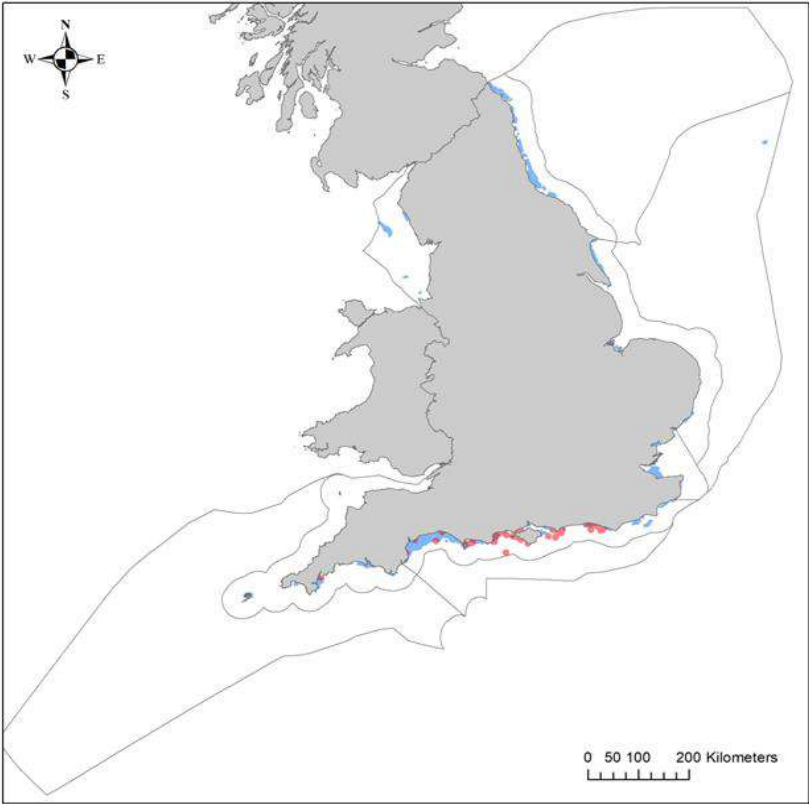


Native Oyster



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- Oyster**
- MMO_Marine_Plan_Areas
 - Land
 - Oyster potential restoration areas
- Historic distribution**
- Absent
 - Present



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- Oyster**
- Land
 - MMO_Marine_Plan_Areas
 - MMO1135 Ostrea edulis records - Current
 - NE MEDB Ostrea edulis records - Current
 - Oyster potential restoration areas

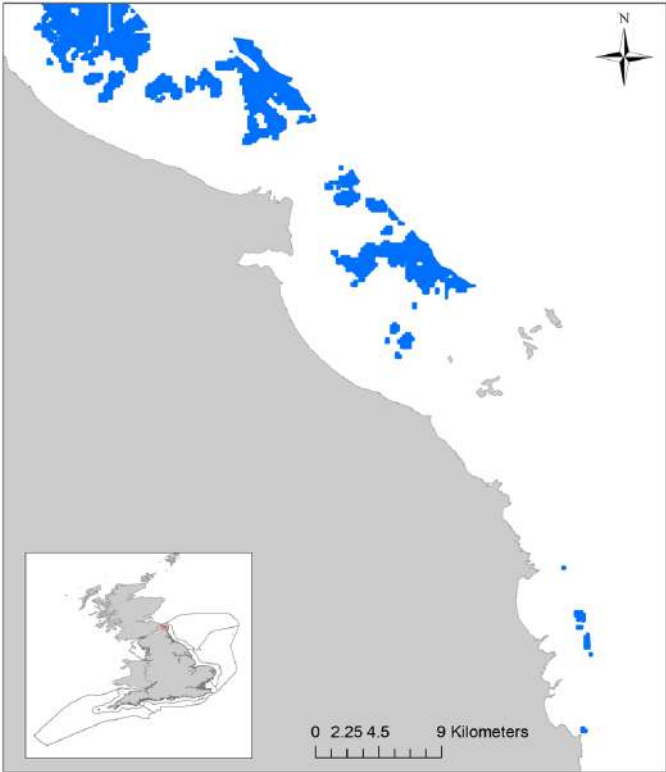
Habitat restoration potential of *Ostrea edulis* in English waters with historic (left) and current (right) records (overlaid).

These maps expand on the existing layer produced by the Environment Agency and ReMeMaRe joint initiative that extended to 1nm offshore.








Native Oyster



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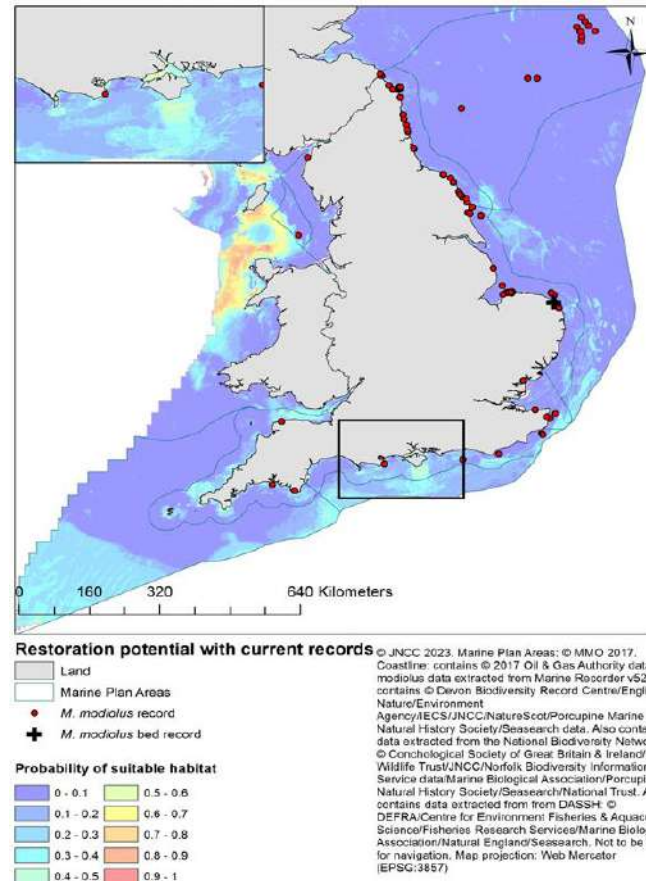
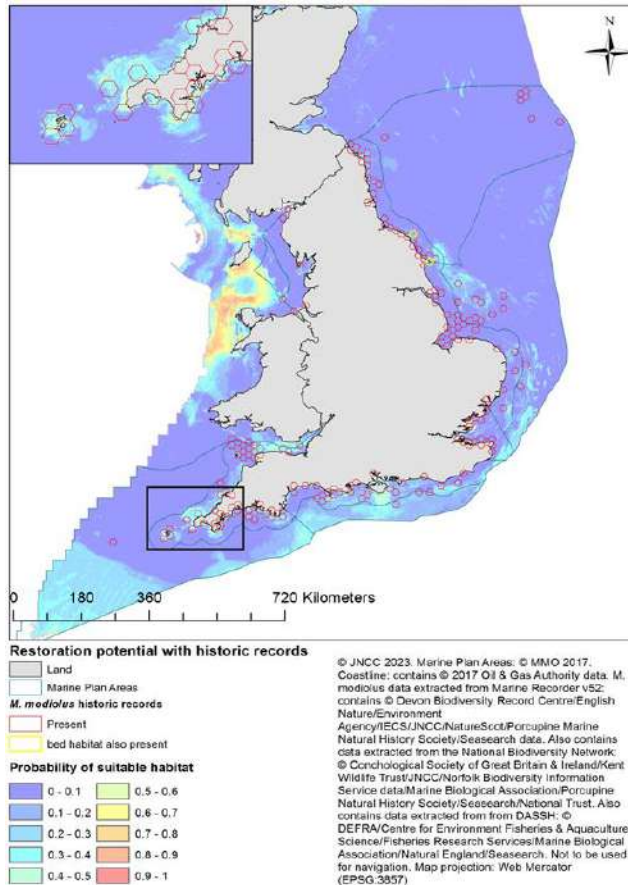
Restoration potential

-  Oyster potential restoration areas
-  MMO Marine Plan Areas
-  Land

Detailed view of modelled habitat restoration potential areas of *Ostrea edulis* on the Northumbrian coast



Horse mussel beds



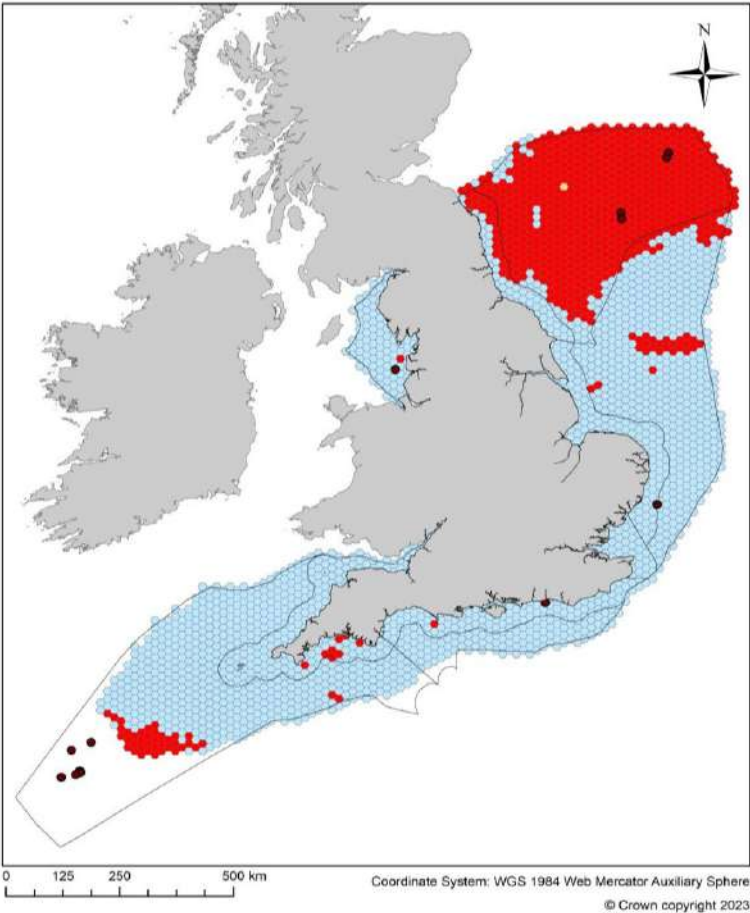
Habitat suitability models using abiotic factors

The habitat suitability model identified some small areas with a higher potential, such as around the Isle of Wight.

These areas overlap with locations of both historic *M. modiolus* bed presence and a records of individuals.



Seapen and Burrowing Megafauna



Funiculina quadrangularis

Observations

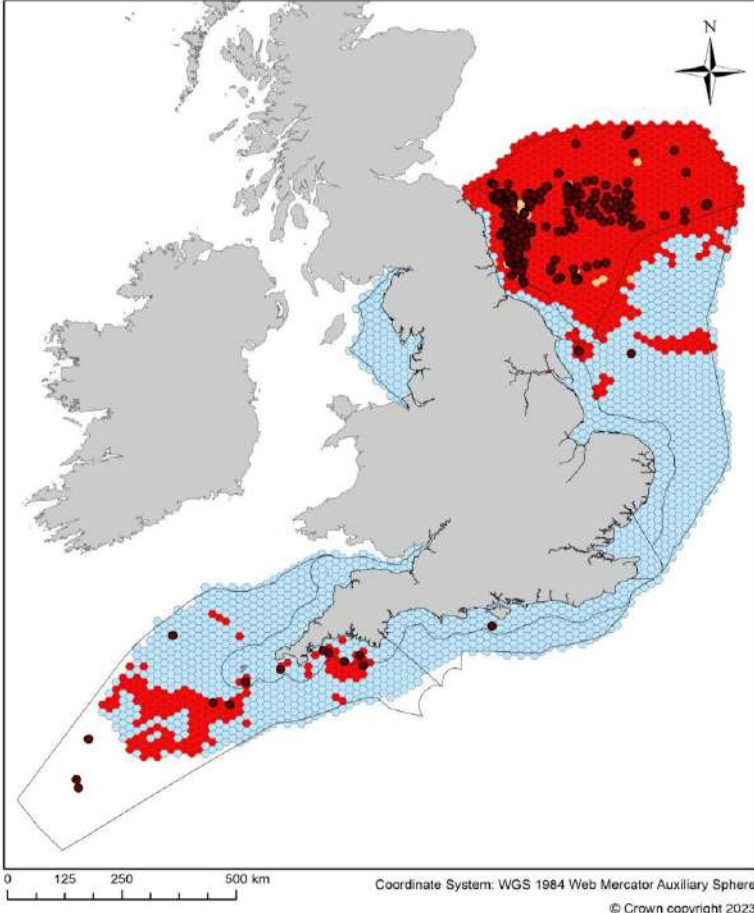
Historic presence (1996)

Presences (2004 - 2020)

Modelled distribution

Presence

Absence



Pennatula phosphorea

Observations

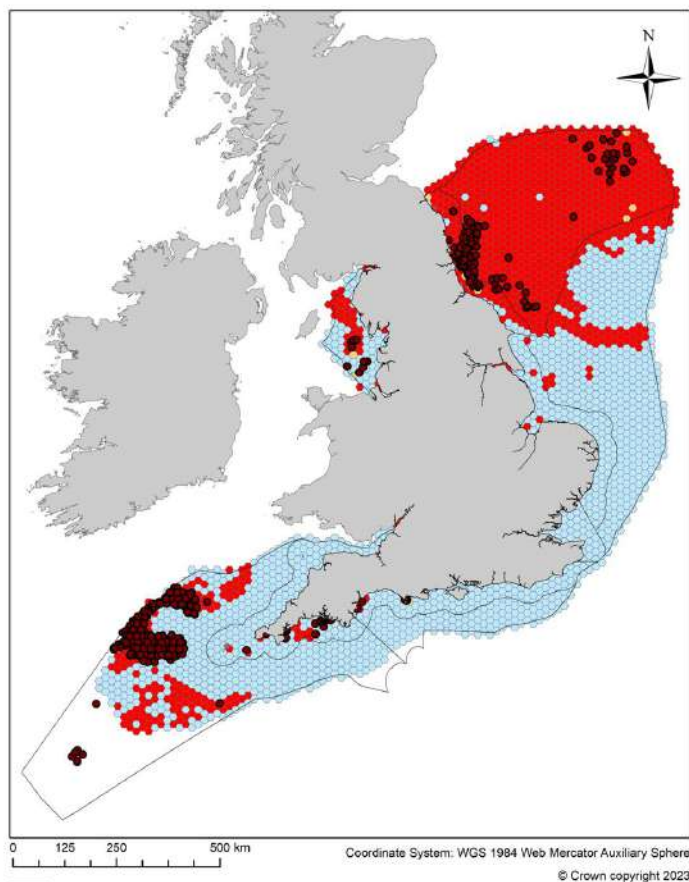
Historic presence (1974-1999)

Presences (2001 - 2022)

Modelled distribution

Presence

Apparent absence



Virgularia mirabilis

Observations

Historic presence (1952-1999)

Presences (2000 - 2022)

Modelled distribution

Presence

Apparent absence

Next Steps

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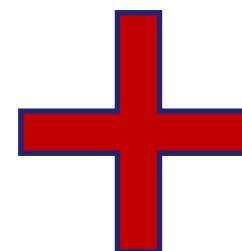
Historic assessment of
habitats

Refining and improving
habitat models used in
MaRePo

Mapping hard and soft
restoration constraints

Climate
Change

MaRePo



MaRePo for Species (birds,
mammals, fish)

Marine restoration
Information Hub

Develop pilot restoration
handbooks/factsheets

Thank You!

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THE CROWN
ESTATE



Offshore
Wind Evidence
+ Change
Programme



Environment
Agency



Joint Nature Conservation Committee



Cefas



Department
for Environment
Food & Rural Affairs



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Session Five

Restoration Prioritisation

Lily Pauls, Natural Resources Wales

Building resilience of Welsh marine
ecosystems through Nature
Networks

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**Cyfoeth
Naturiol
Cymru
Natural
Resources
Wales**



Building Resilience of Welsh Marine Ecosystems through Nature Networks

**Lily Pauls
Marine Projects Team Leader
Natural Resources Wales**

Marine Protected Areas in Wales

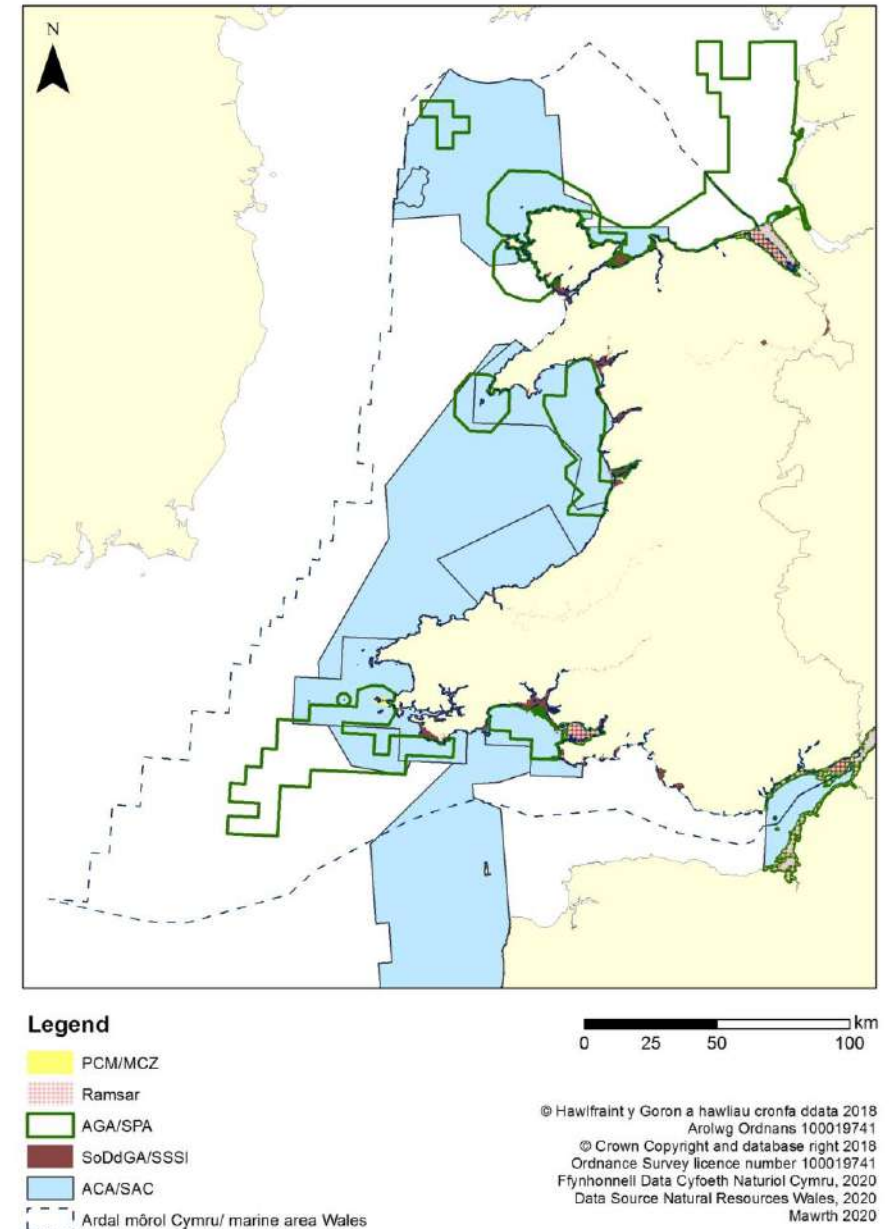
MPAs cover 69% of the inshore area and 50% of the whole of Welsh waters.

Knowledge of pressures and threats to MPA network from a variety of sources:

- Monitoring: SAC, WFD, research, ad hoc surveys
- NRW site managers, public bodies and eNGOs etc.
- Plans and projects

All helping inform site condition assessments.

Majority of features currently in unfavourable condition.



Building resilience in the MPA network

Large MPA extent in Wales – how do we prioritise action?

➔ Bringing MPAs into favourable condition proxy for building wider seas resilience

NRW priority to build resilience across the MPA network by addressing key pressures and threats.



Proactive approach needed but constrained by....

- Lack of shovel ready projects
- Funding
- Staff resources
- Short term programmes

Nature Networks Programme

Welsh Government funded Nature Networks programme, reflecting commitment to address the nature emergency:

- Aims to bring protected sites into favourable condition, increase biodiversity and enhance the resilience and connectivity of our habitats and species.
- Terrestrial, freshwater and marine
- Three-year programme (2022-25) - £45 Million
- Delivery through NRW Nature Networks programme and grants administered by Heritage Lottery Fund.



Nature Networks NRW Marine Programme

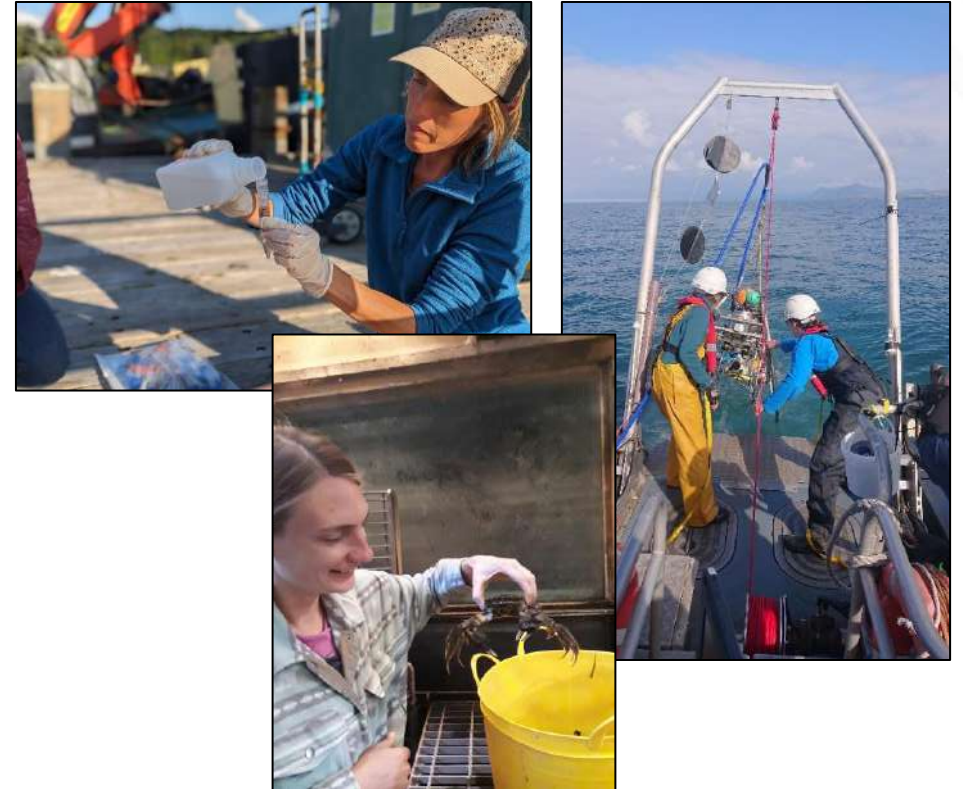
Three-year projects developed and prioritised from main pressures and threats to MPA network.

Also prioritised using:

- Ability of NRW to lead and deliver
- Feasibility (permissions, funding, time etc.)

13 dedicated officers delivering 8 main projects:

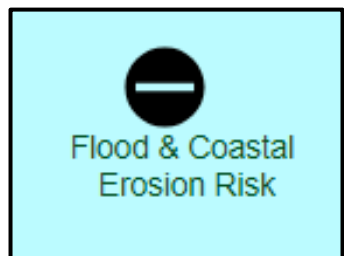
- Technical expertise in their field
- Project management and procurement skills – mix of in-house and contracted work



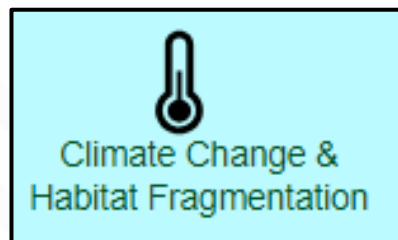
Nature Networks Marine Projects



Biosecurity planning and implementation for all Welsh SACs, including novel methods of eradication (Carpet sea squirt, Chinese Mitten Crab)



Saltmarsh restoration using polders – 2km frontage in Cardiff



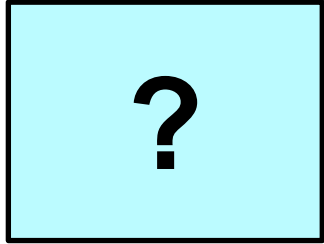
Coastal squeeze impacts on MPA habitat features – losses, gains and accommodation space



Bait collection impacts and management in MPAs: digging, boulder turning, crab shelters.



Nature Networks Marine Projects



Investigations into declines of habitats and species:
Horse mussels, maerl, sponges, sandbanks and herring
to inform future management



Derelict vessel prevention and management
across the MPA network: guidance, recycling
options and prevention



Understanding the effects of anthropogenic
noise on marine mammals



Last but not least...

Improving Marine Conservation Advice:

Producing a full set of condition assessments for 88 features of our wholly Welsh marine sites and developing 12 new conservation advice packages.



To conclude...

- **Nature Networks: long term programme of marine projects to build resilience in Welsh MPAs, supported by dedicated project staff and resources.**
- **Future Nature Networks post 2025? Nature emergency not going away!**
- **Being prepared with shovel ready projects - development of post 2025 plans underway**

For further information on any of the projects:

lily.pauls@cyfoethnaturiolcymru.gov.uk



Thanks for listening!





Q&A

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Session Five Restoration Prioritisation

Annika Clements, DAERA
Northern Ireland

Coastal mapping and new
initiatives to prioritise habitat
restoration

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Coastal mapping and new initiatives to prioritise habitat restoration

Dr Annika Clements
Marine & Fisheries Division, DAERA

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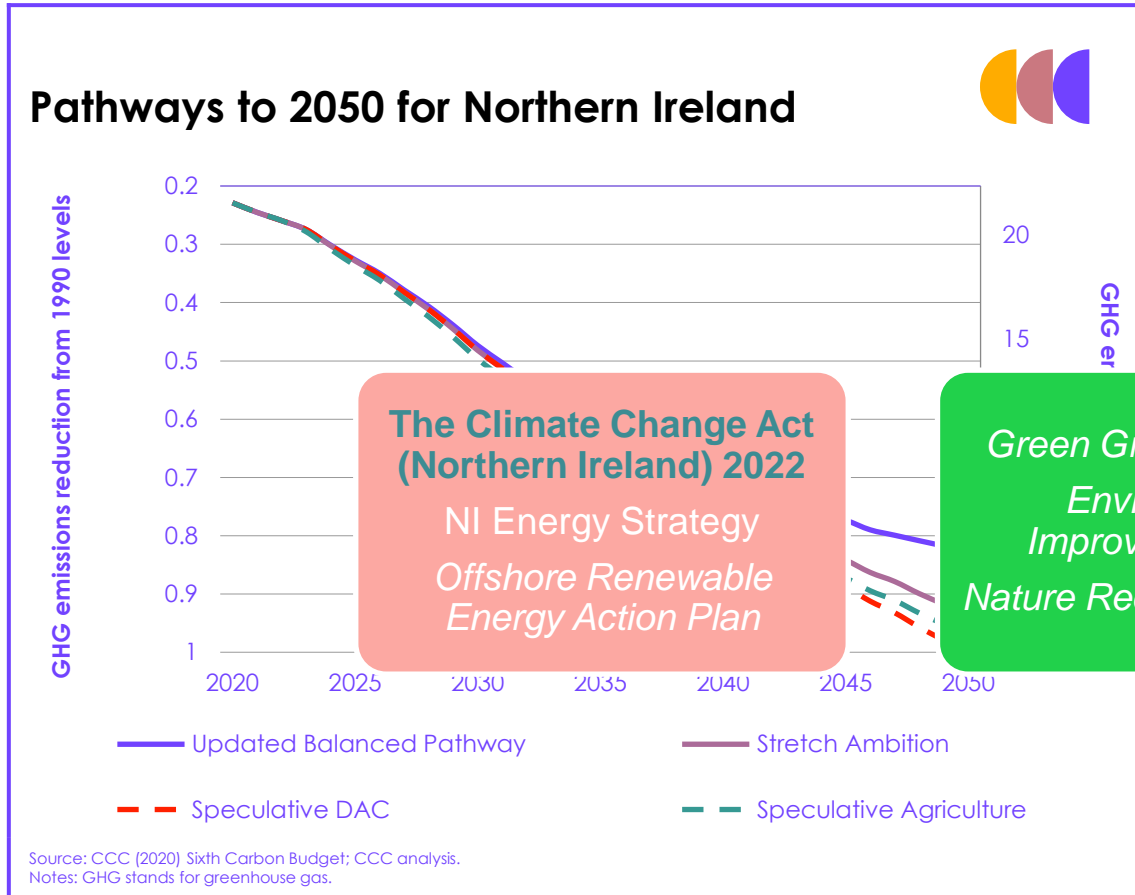


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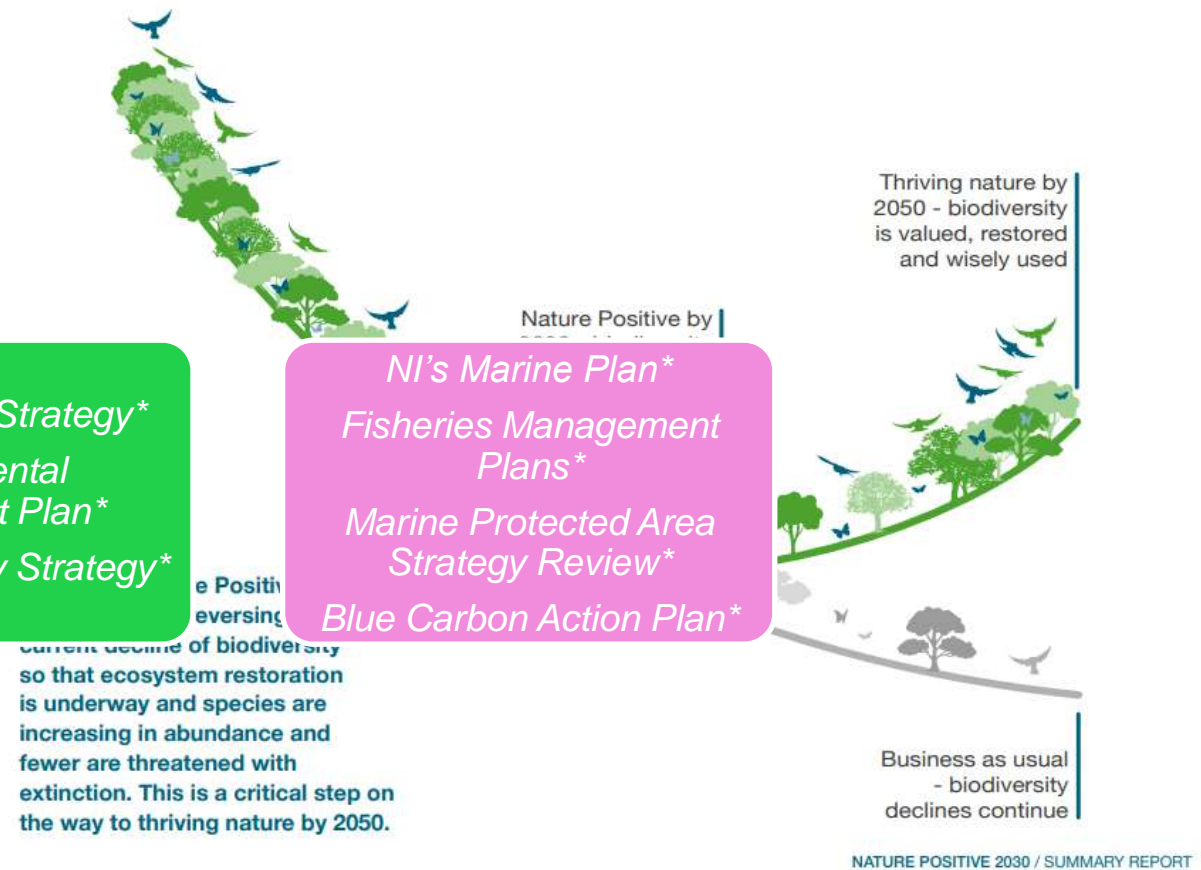
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Net zero



Nature Recovery



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Co-designed draft Blue Carbon Action Plan

Vision:

*“By 2050, Northern Ireland has protected, well managed and enhanced blue carbon habitats, providing us with increased carbon storage alongside **wider ecosystem service benefits**, which help address the challenges presented by **climate change and biodiversity loss**.”*



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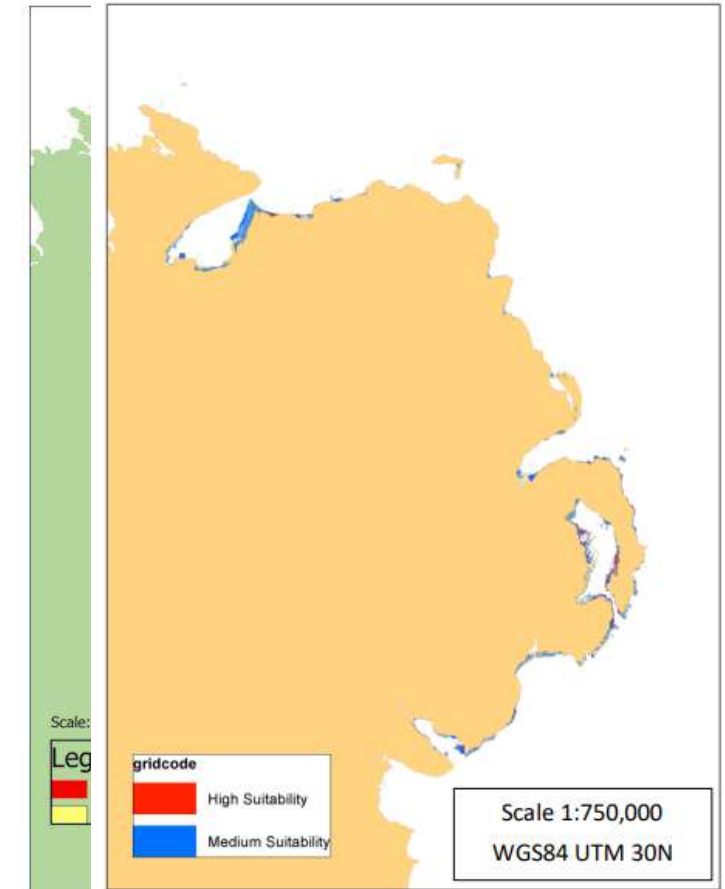
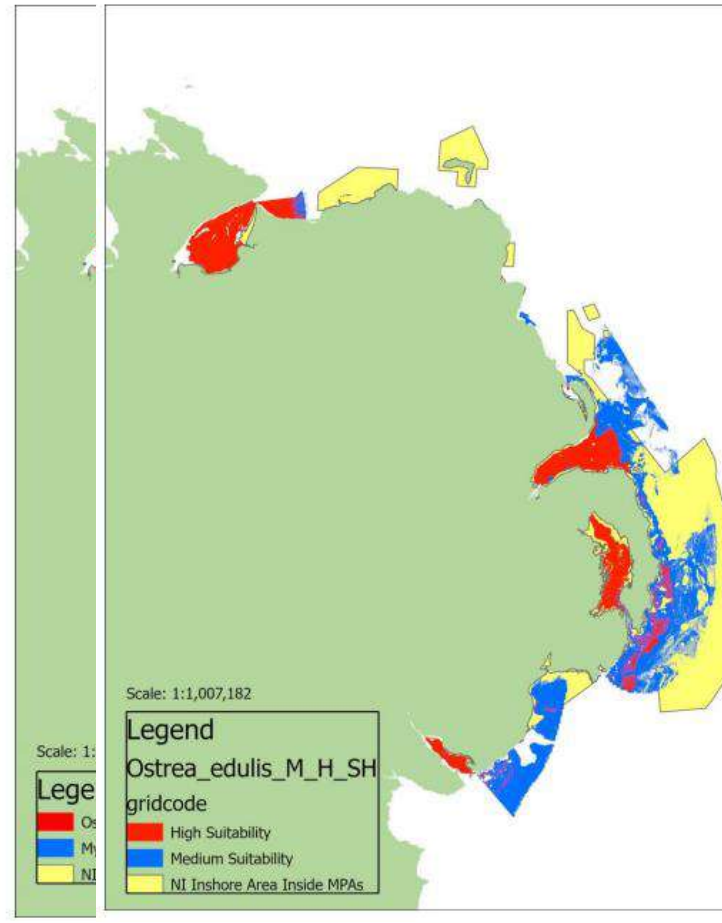
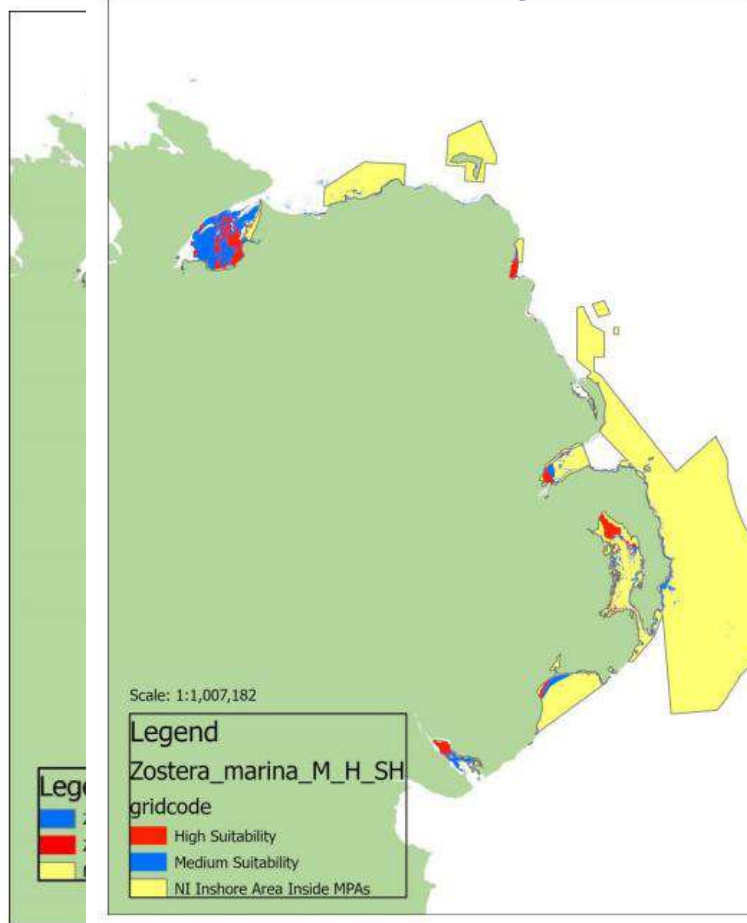
What have we started...?



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The local evidence base: Initial feasibility study for coastal blue carbon habitats (predictive modelling)



The local evidence base: Coastal Mapping

Complete

- 3D Coastal Survey
- Historical Shoreline Analysis
- Coastal bedrock geology
- Post-storm LiDAR surveys - North coast

Ongoing

- Coastal superficial geology
- Nearshore seabed mapping
- North coast beach monitoring
- Coastal change info tool



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Northern Ireland Coastal Observatory



Welcome to the Northern Ireland Coastal Observatory

The Northern Ireland Coastal Observatory is a platform that has been created to collate, store, display and share coastal data.

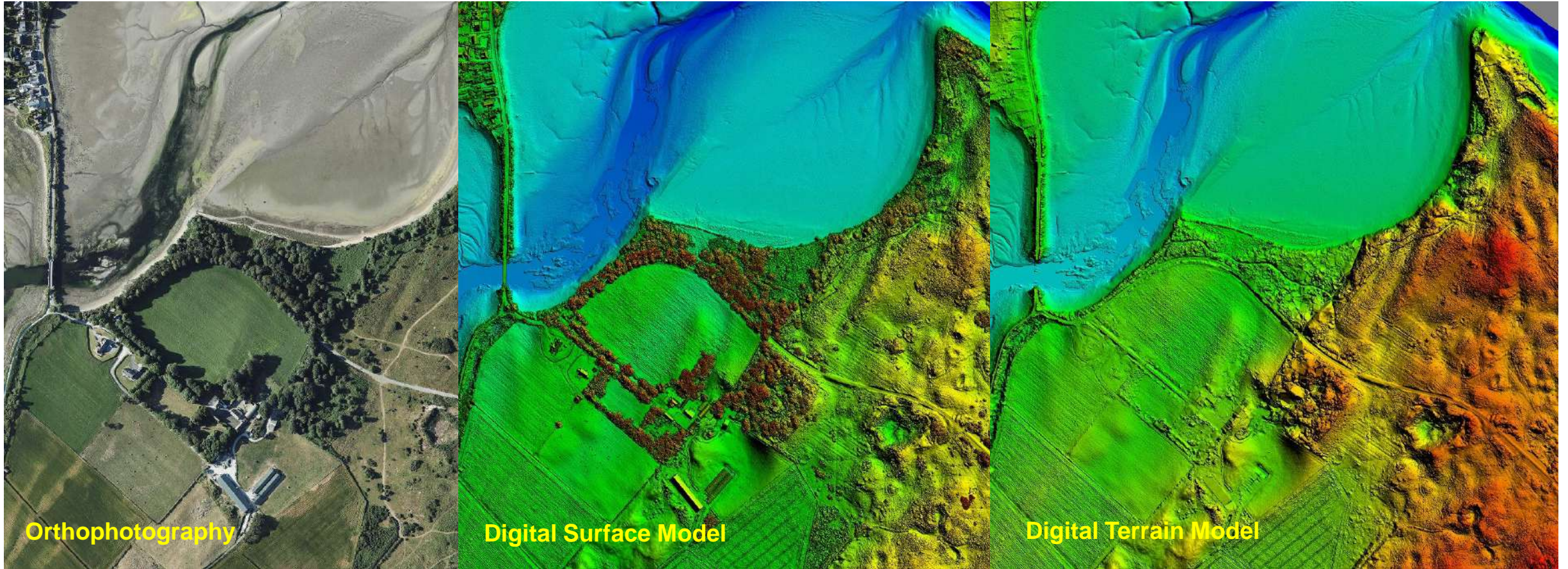
The Northern Ireland Coastal Observatory aims to:

- Improve the evidence base of change along the Northern Ireland coastline
- Improve the awareness of coastal change in Northern Ireland and the impacts of our changing climate
- Empower stakeholders with information to help improve the management of coastal change in Northern Ireland

To access the Northern Ireland Coastal Viewer directly, please click on the map



Topographic LiDAR and Orthophotography

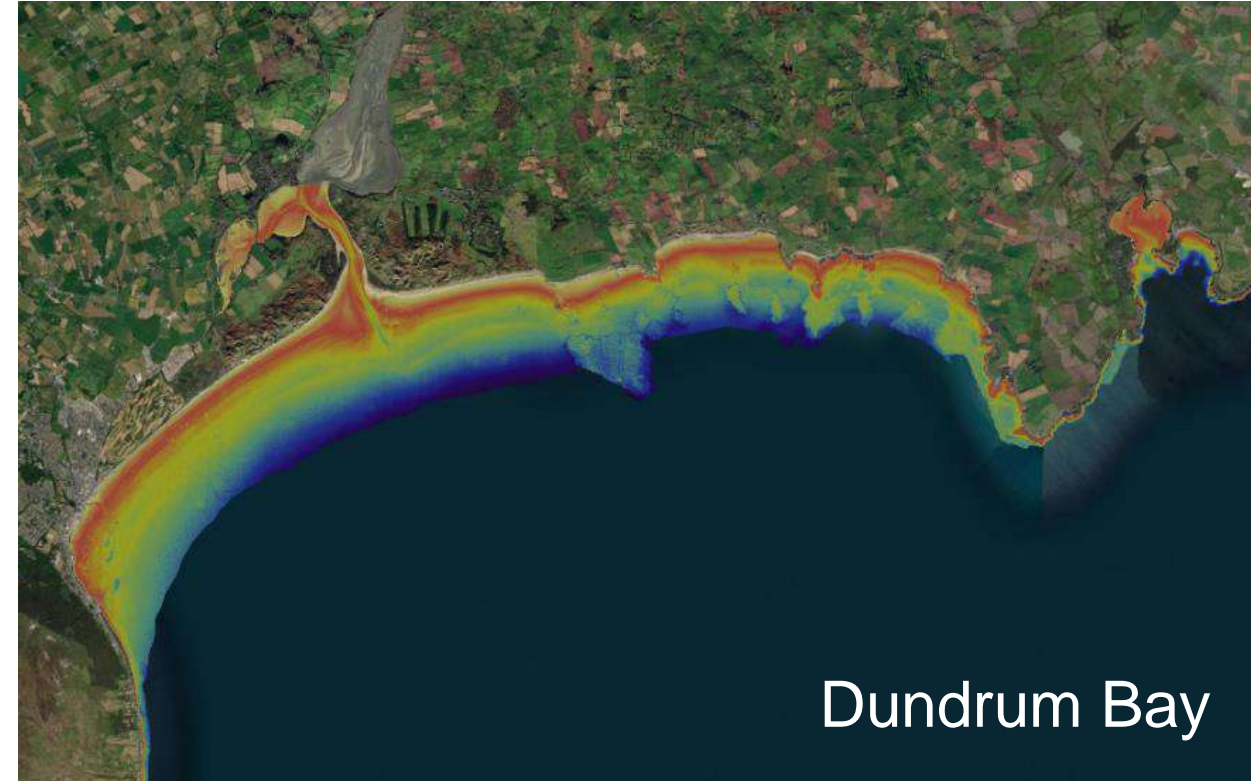
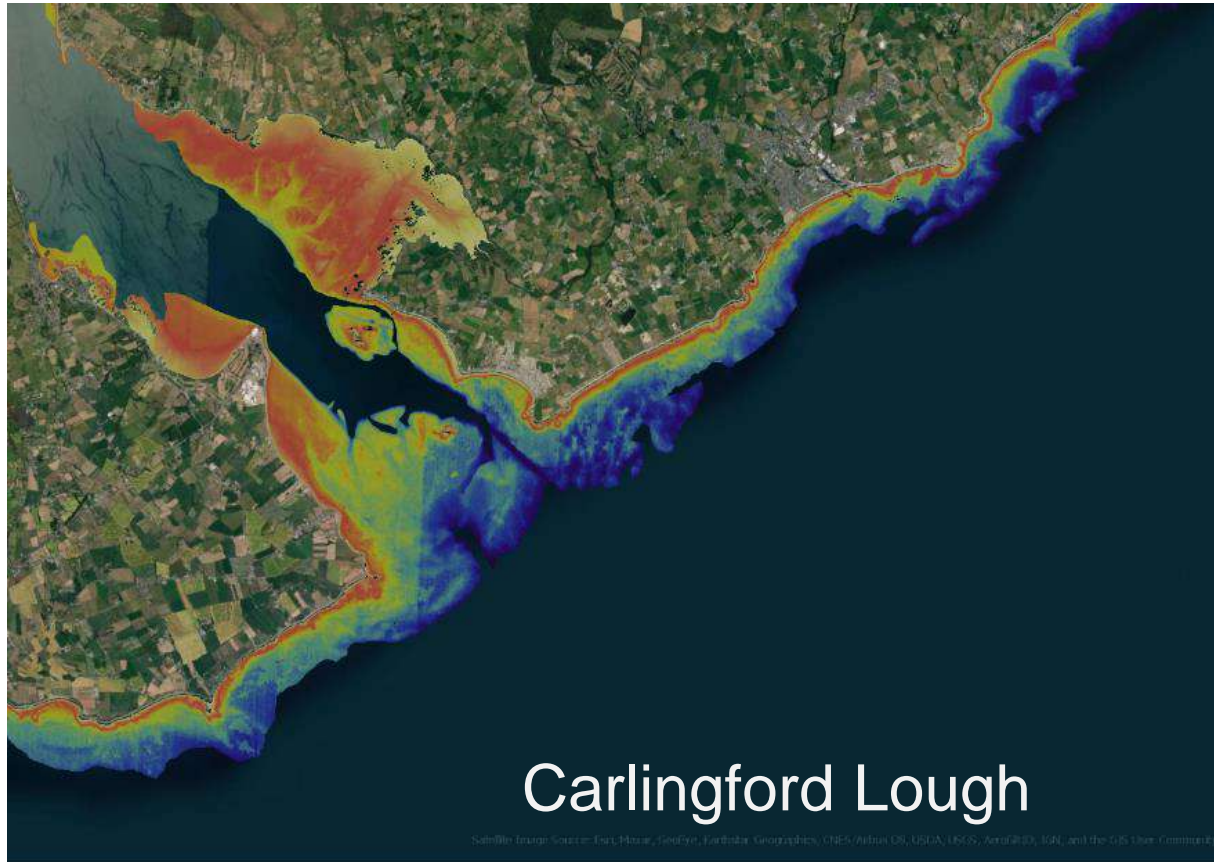


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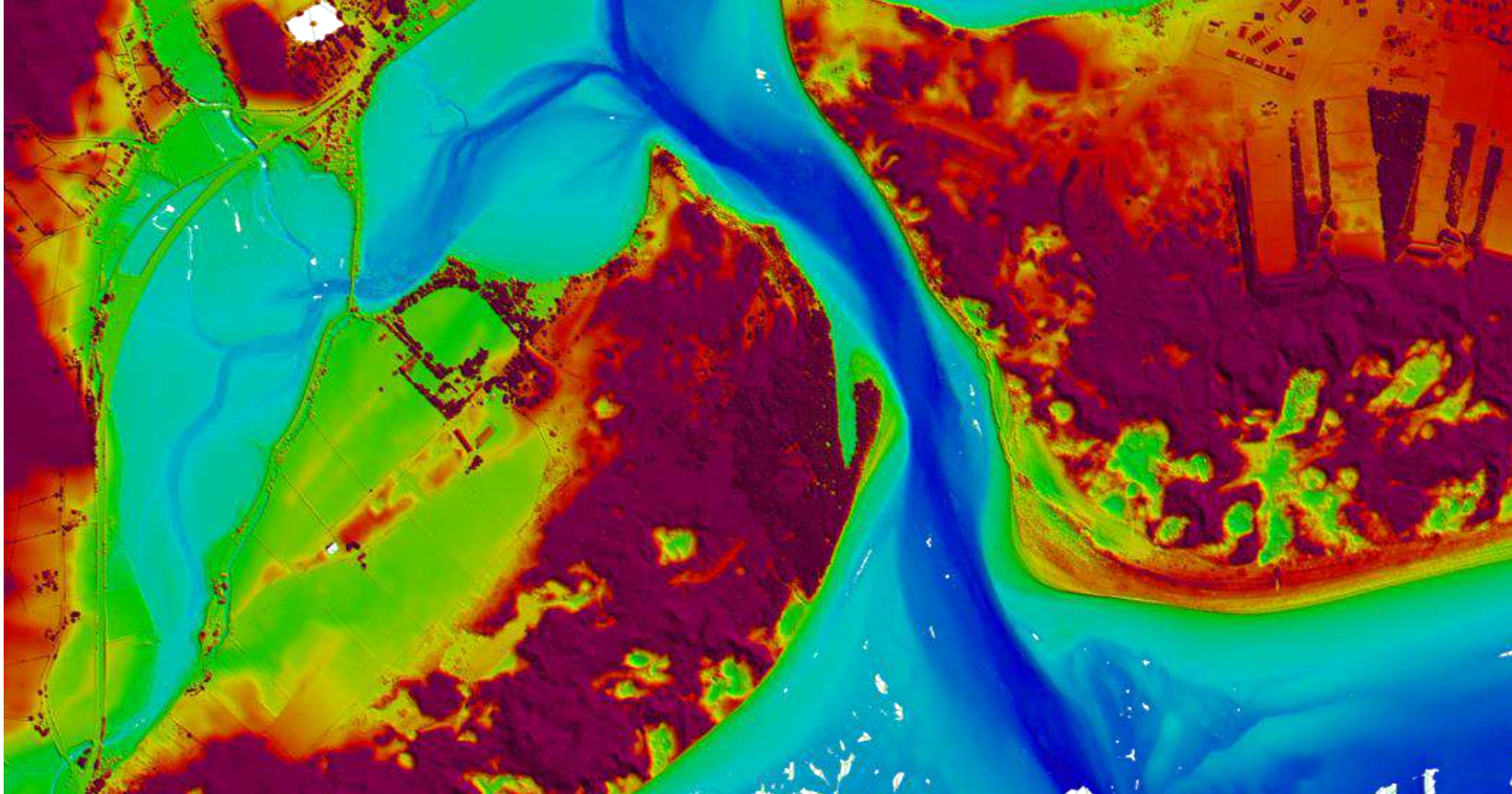
Satellite-Derived Bathymetry Data



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Bathymetric LiDAR

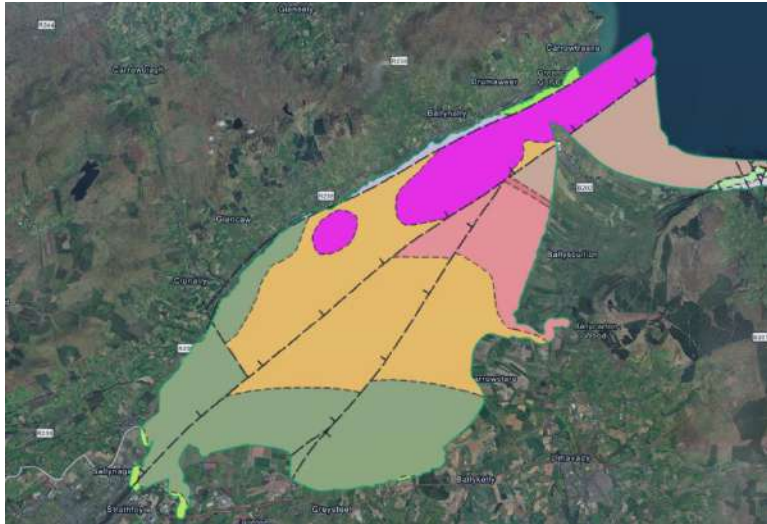


Dundrum Bay
Airborne LiDAR Bathymetry



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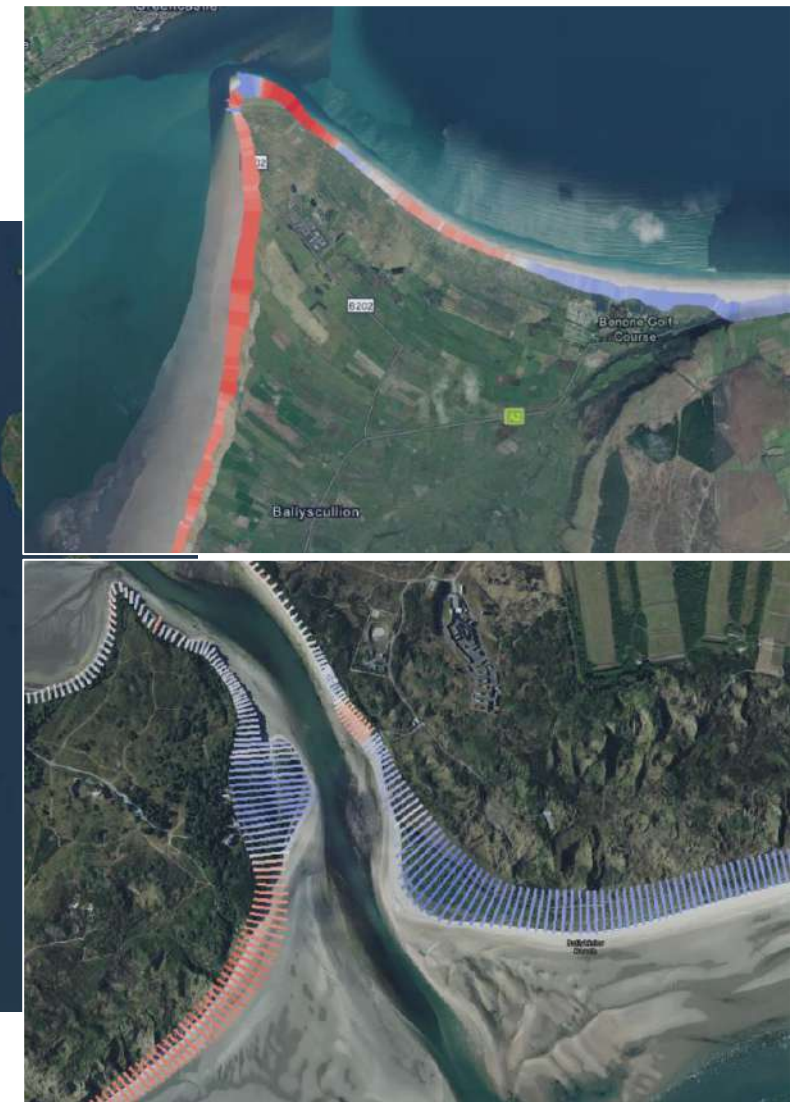
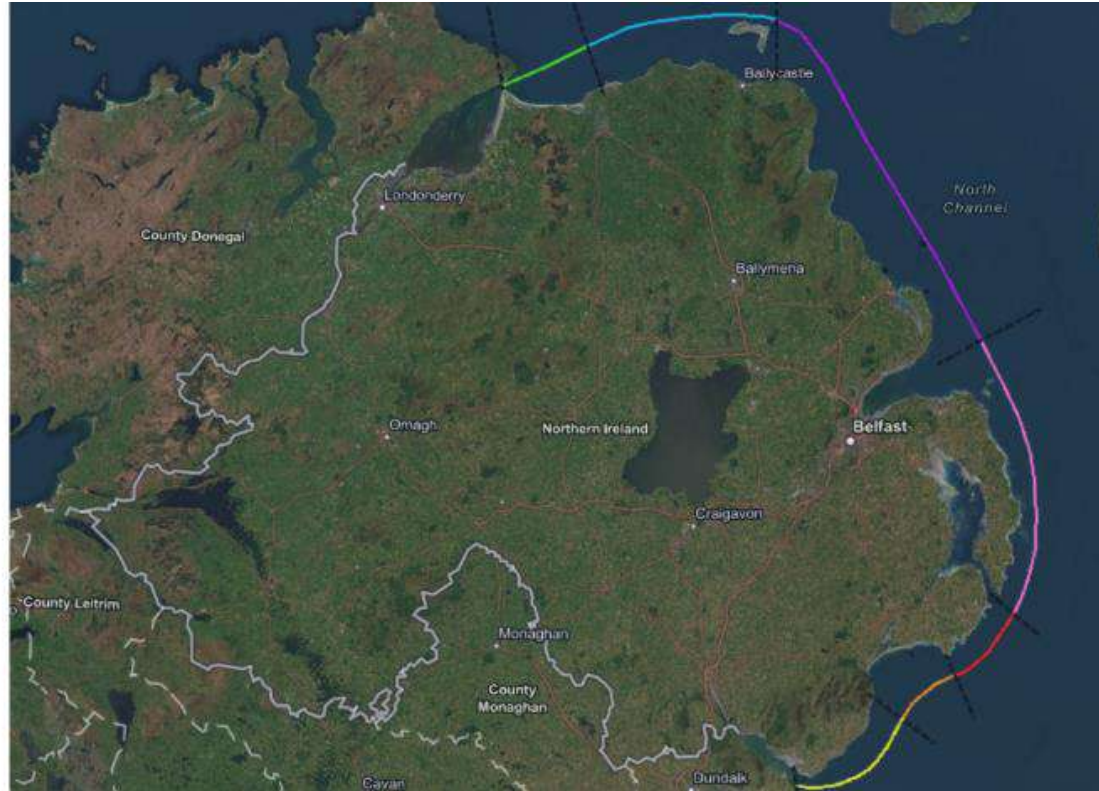
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Historical Shoreline Analysis

NI First Order Coastal Cell Delineation

Coastal Cells

- Greencastle (Carlingford Lough) to Bloody Bridge
- Dundrum Outer Bay (Newcastle Harbour to St John's Point)
- Lecale (St John's Point to Strangford)
- Cluter Ards (Barr Hall to Ballymacormick Point)
- East Antrim (Whitehead to Fair Head)
- North Coast (Fair Head to Portstewart, including Rathlin Island)
- Portstewart to Magilligan



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Next steps

- Public consultation of draft Blue Carbon Action Plan
- Publish further datasets via the Coastal Observatory web viewer
- Progress legislation for coastal erosion management
- Habitat restoration & nature-based solutions funding opportunities – demonstration projects
- Development of strategic guidance & spatial prioritisation
- Collaboration and transboundary considerations





Q&A

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Session Five **Restoration Prioritisation**

Tara Hooper, Natural England

Marine Natural Capital Ecosystem
Assessment: Marine extensions to
Local Nature Recovery Strategies

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Extending Local Nature Recovery Strategies into Marine Areas

A first look at ambitions, issues and opportunities for a
natural capital approach

Tara Hooper, Principal Specialist Marine Natural Capital
Natural England

January 2024



Nature recovery in action: Sussex kelp



The logo for the Sussex Inshore Fisheries and Conservation Authority (IFCA) features the word 'Sussex' in a small blue box above 'IFCA' in large, bold, white letters, with the full name 'Inshore Fisheries and Conservation Authority' in smaller text below.

KELP

A large, vibrant underwater photograph of a kelp forest, showing long, flowing kelp fronds in shades of green and yellow against a blue background.

Sussex Kelp Forest Restoration: Enhancing Essential Fish Biodiversity

A Sussex marine environment enhancement and monitoring program

Our natural environment is our most precious inheritance. It is this Government's ambition to leave our environment in a better state than we found it. In the inshore marine environment, protecting and enhancing essential fish habitats will ensure important fish stocks. By fishing appropriately we will help to protect the wider marine ecosystems that underpin the fish species that we rely on. Working together to enhance the sites of historic dense kelp forest from Bognor Regis to Brighton, these habitats have disappeared since the 1980s. The reasons implicated in their loss include changes in fisheries practices, water quality and climate change.

The logo for Sussex Wildlife Trust features a stylized bird icon above the words 'Sussex Wildlife Trust' in a serif font.

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Donate | Join

Home > What we do > Living Seas > Sussex Kelp

The logo for the Sussex Kelp Restoration Project features a stylized kelp frond icon above the text 'Sussex Kelp Restoration Project'.

The logo for BigWaveTV features a camera icon and the text 'BigWaveTV'.

Sussex Kelp Restoration

The logo for the Blue Marine Foundation features a stylized blue wave icon above the text 'BLUE MARINE FOUNDATION'.

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OUR PROJECTS

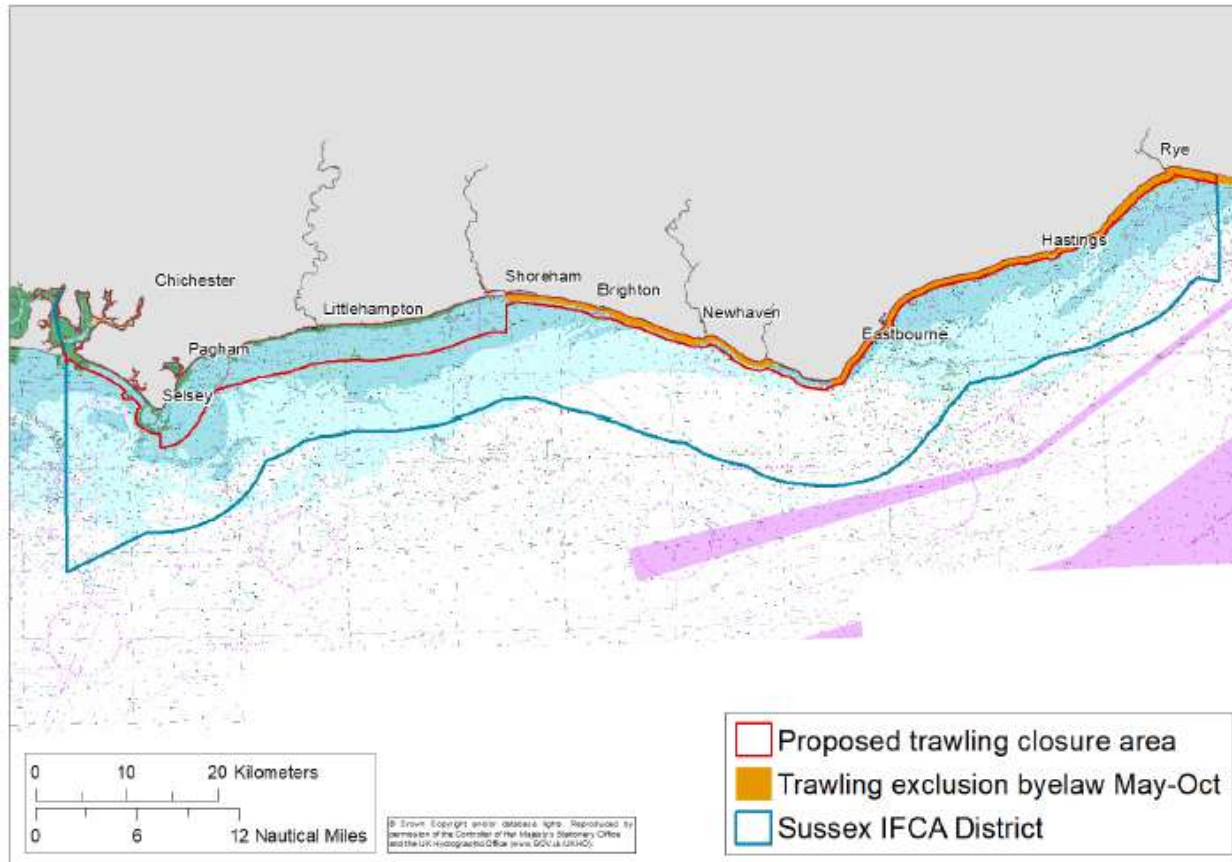
SUSSEX KELP

Historically, a vast kelp forest teeming with life stretched along the Sussex coast, providing a highly productive and biodiverse habitat for marine life.

A large underwater photograph of a seal swimming through a dense kelp forest. The seal is in the foreground, looking towards the camera, with its head and whiskers clearly visible. The background is filled with the green and yellow fronds of the kelp forest.

A circular inset portrait of an older man with white hair, smiling. He is wearing a light-colored shirt. The background of the portrait is a blurred underwater scene with green kelp.

Nature recovery in action: Sussex kelp



West Sussex seabed to be leased from the Queen for kelp forest

9 June



Researchers launch annual survey to monitor the health of Sussex seabed following trawler ban

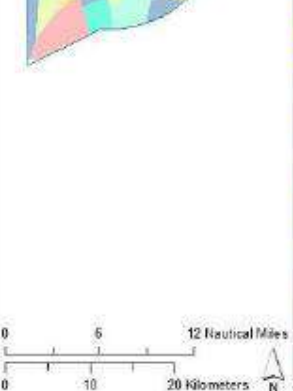
University staff and students have begun an in-depth study of underwater habitats off the Sussex coast as part of a Sir David Attenborough-backed project to restore some of the most biodiverse habitat in the world, and recover a vital carbon sink.

Led by [Dr Mika Peck](#) and [Dr Valentina Scarponi](#), the team have begun conducting the first baseline survey of Sussex coastline, to explore the recovery of kelp forests following the recently implemented trawling ban.

Funded by the HEIF (Higher Education Innovation Fund) as part of the University of Sussex's Covid Recovery Programme, in partnership with the Greater Brighton Economic Board, the team will be gathering data at 34 sites between Shoreham and Selsey using three techniques:





																													
		A2.1 Littor	A2.2 Littor	A2.3 Littor	A2.4 Littor	A3 Infralitt	A3.1 High	A3.2 Mode	A3.3 Low i	A3.7 Feath	A4 Circalit	A4.1 High																	
															Habitat name	EUNIS code	Food	Raw material	Air quality & climate regulation	Disturbance & natural hazard prevention	Photosynthesis and primary production	Nutrient cycling	Reproduction/ nursery	Biodiversity maintenance	Water quality	Cognitive value	Leisure, recreation, cultural	Feel good/ warm glow	AVERAGE score
															Intertidal sediment	A2	5.0	2.5	4.0	5.0	4.0	4.0	5.0	4.5	2.5	4.5	5.0	4.5	4.2
															Infralittoral rock (rock with seaweed)	A3	4.5	4.0	4.0	3.0	4.5	4.0	4.5	4.3	4.8	5.0	4.5	3.5	4.2
															Circalittoral rock (rock with attached animals)	A4	3.5	3.0	3.0	2.0	1.5	4.0	4.5	5.0	4.0	5.0	4.0	3.0	3.5
															Subtidal sediment	A5	4.9	2.8	1.7	2.0	1.8	3.7	4.0	3.5	2.8	1.7	2.3	2.3	2.8

NEF CONSULTING

Valuing the ecosystem service benefits of kelp bed recovery off West Sussex



Marine recovery and restoration practice: Financing options, stakeholder perspective and measuring gains

NC44 Place Based Decision Making

Date: June 2023

www.gov.uk/natural-england

Across England, at least **31 active, stakeholder-led marine nature recovery projects**:

- Led by eNGOs, ALBs/IFCAs, Local Authorities
- Saltmarsh, seagrass, native oyster, kelp
- Mud, reefs, sand dunes, sea birds



*“idea that we’ve **lost something that was a real value** and we would like to get it back again.”*

*“People need to put a value on something, that’s **not always about monetary value**. So it’s making that connection with the whole kind of value ... **providing that evidence that these habitats are valued, they have benefits to people and also nature.**”*

*“There’s **no way we can** restore the whole of the marine habitat or even the parts of it that we truly need to **just rely in on funders**. We just can’t do that. And so I see natural capital, so developing stack credit schemes, for example, as being **a way to create a self-financing circle** so that restoration can continue”*

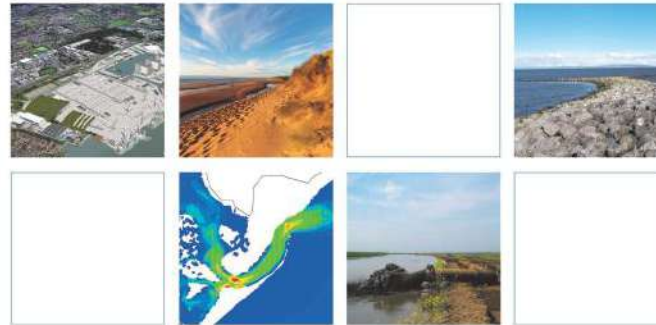


Defra Offshore Wind Enabling Actions Programme

Marine Net Gain

Sector Analysis

April 2022



Innovative Thinking - Sustainable Solutions

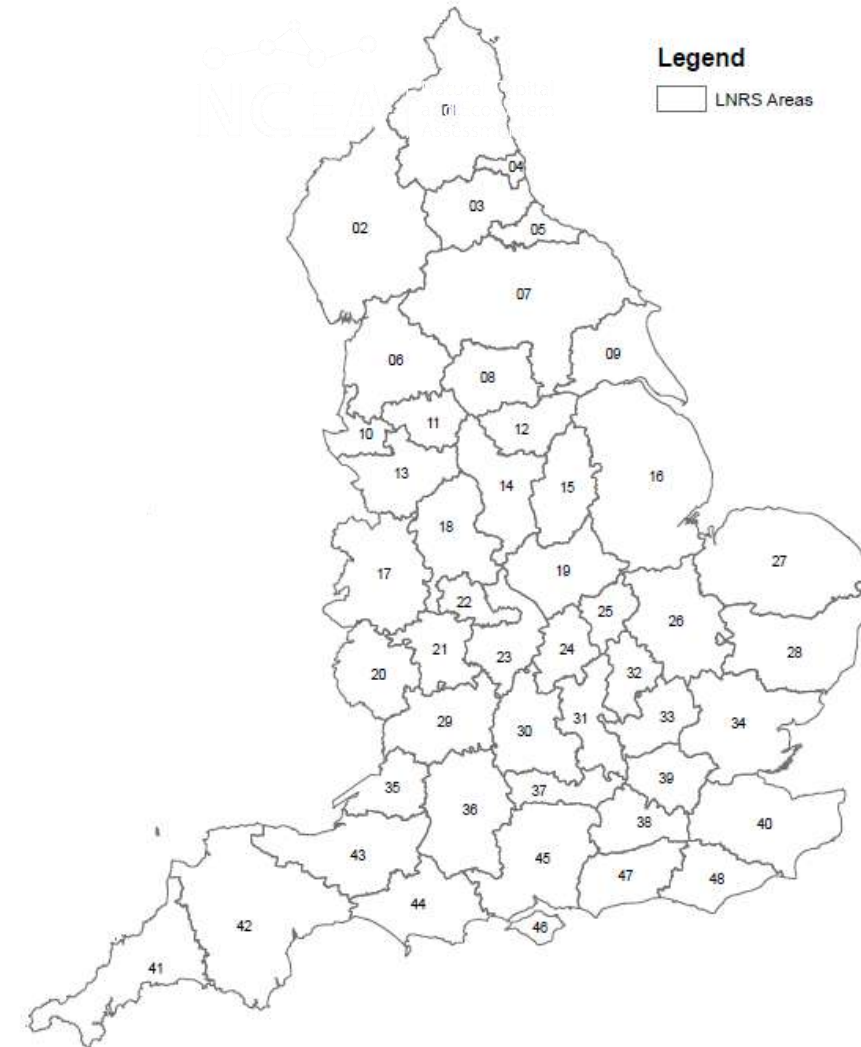
eftec
economics for
the environment

ABP mer

*“for 1% capital expenditure contributions for works below Mean Low Water could potentially raise around **£50m p.a. for Marine Net Gain projects** over the period to 2050”*

Lacking a single unifying strategy to bring together nature recovery in marine areas.

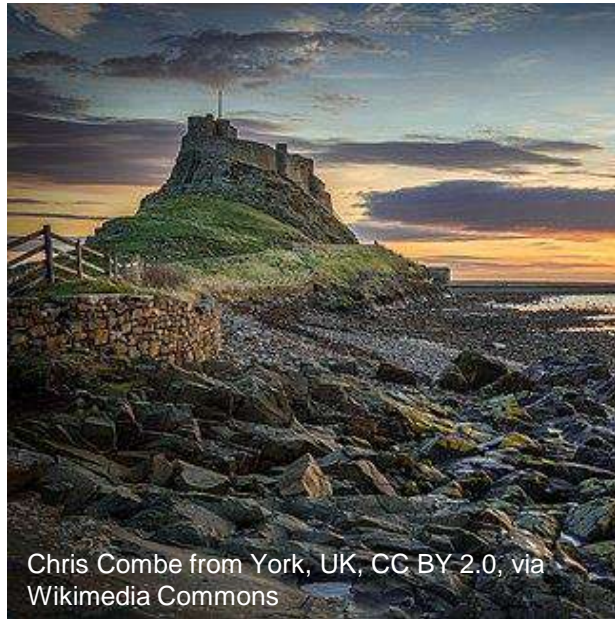
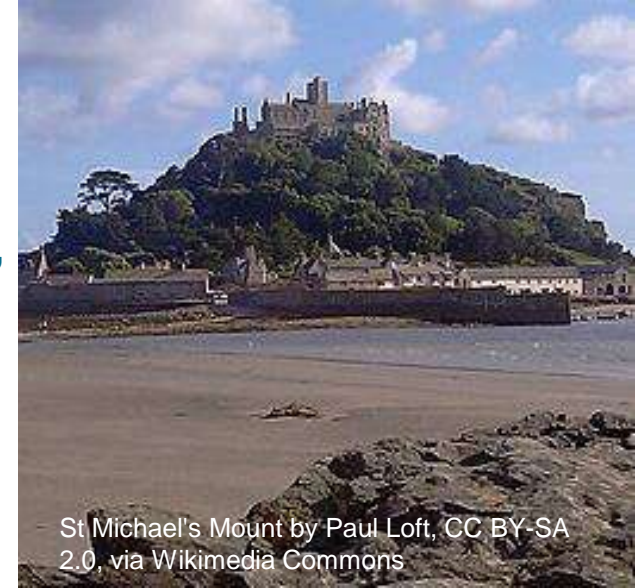
- **National, joined-up** system of **spatial strategies** for nature and environmental improvement
- The purpose of an LNRS is to:
 - agree **priorities** for nature's recovery
 - map the **most valuable existing areas** for nature
 - map **specific proposals** for creating or improving habitat for nature and wider environmental goals
- There is also a requirement to work with partners, to
 - provide a **single vision** for nature recovery
 - build and **strengthen local partnerships**
- Bringing benefits from **local knowledge** and partner support to **help achieve successful delivery**
- Coastal local nature recovery strategies are required to **follow the relevant local authorities' boundaries**. This usually means **extending into the inter tidal zone as far as low water**,



*“We should be having a **holistic approach** when thinking about nature recovery across a range of habitats. This is an **opportunity to really make a difference for biodiversity in both terrestrial and marine environments**”*

The **Cornwall** LNRS pilot:

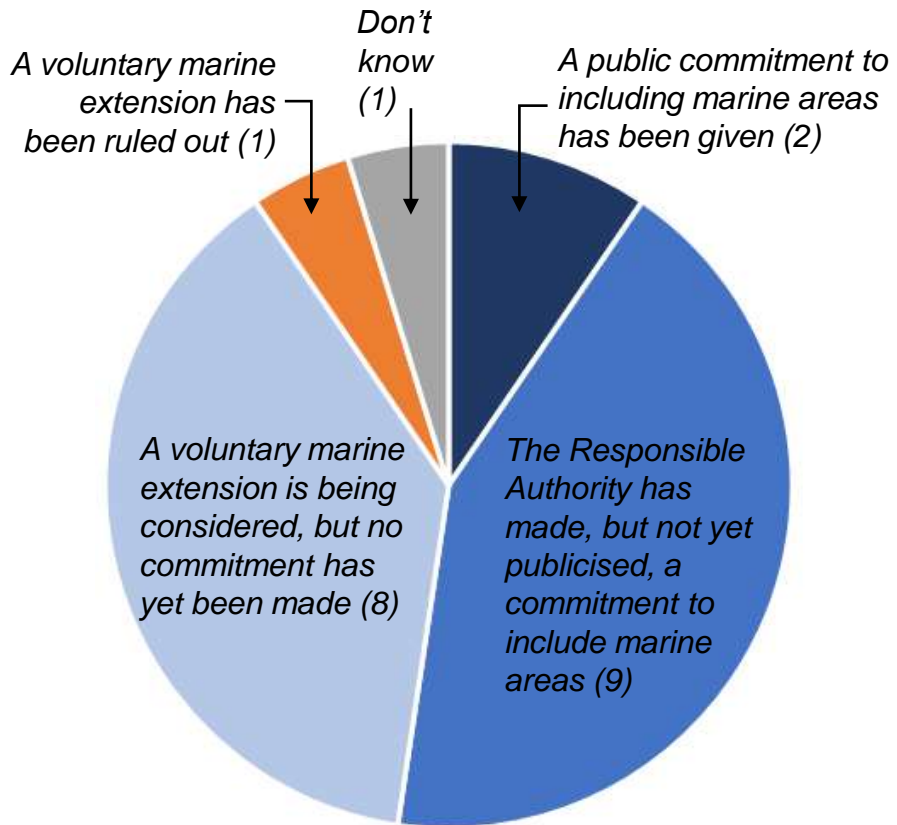
1. Protect, restore and extend our **Marine Protected Areas**
2. Protect, restore and join up our **inshore habitats**
3. Boost marine biodiversity, including by enhancing and restoring **nursery habitats**, **limiting disturbance** and **preventing bycatch**
4. Enhance biosecurity by tackling **invasive species**
5. Support ecosystem-based, strategic and spatial **fisheries management**
6. Explore opportunities for **sustainable mariculture**



The **Northumberland** LNRS pilot:

1. Improving the **condition and quality** of existing coastal and marine habitats
2. Increasing the **size** of existing coastal and marine habitats
3. Increasing the extent of coastal and marine habitats in **response to predicted future coastal change**
 - *Outcomes:* **Creation and restoration of subtidal habitats** such as native oyster, mussel, seagrass and kelp beds
 - *Other key features:* **Subtidal sands and gravels, rocky reefs, sea caves, migratory and commercial fish, shellfish, seals**

Is a voluntary marine extension being considered?



*“The **coastal system** is so **interlinked** in terms of habitats, species, processes, pressures etc. that it’s difficult and nonsensical to separate out the terrestrial, intertidal and marine zones.”*

*“We are a coastal area, and **marine** plays a huge role in the nature and economics of the area.”*

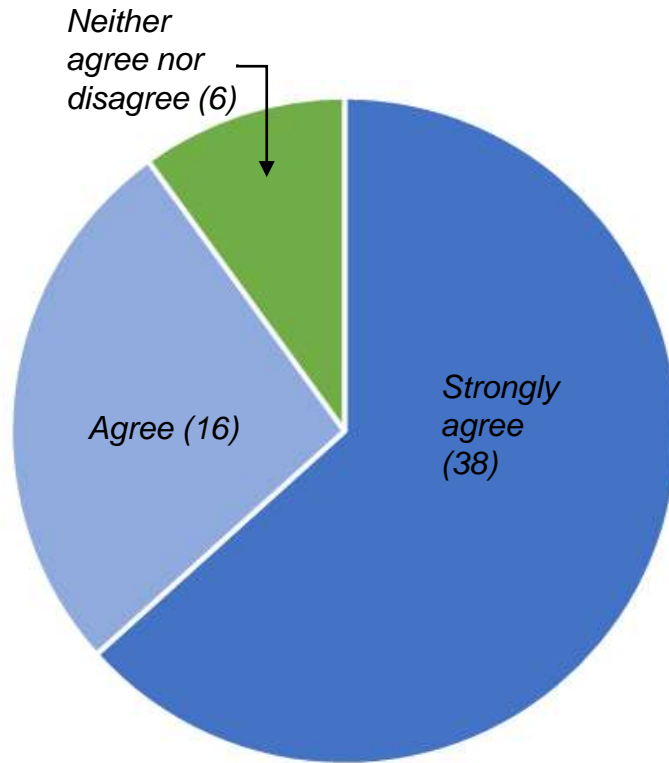
*“As this is the **first time** of undertaking ... [the RA] will **prioritise** and focus its resources on delivering **the statutory parts** of the LNRS only, ensuring we fulfil the statutory requirements.”*

Some challenges

*“However, the practicalities of **data/evidence** use, stakeholder **engagement**, long-term **investment** and **governance** do not fit within the current LNRS model.”*

Limited time, manpower, and budgets

Should locally-led, strategic, spatial planning for marine nature recovery be statutory in future?



- “Failure to treat marine nature recovery with the same level of statutory responsibility serves not only to **undermine its importance** but also to create a **false perception that they are separate** from one another when in fact they are co-dependent”
- "Without these policy's being statutory there is **no teeth** to the plan developed and **no incentives** to realise the marine aspects to the plan, **rendering them mostly useless.**”

- Developing methods for a 'standard' **natural capital approach, using case studies** in Cornwall and Yorkshire
- Lead a **community of practice** to share lessons at the national level
- **Engagement** with MMO, Crown Estate, AIFCA and other partners
- Develop **preliminary advice/recommendations**
- Evaluate interaction with existing/emerging marine policies (**Marine plans, Marine Net Gain and strategic compensation**)
- Review published strategies to determine **actual scope of marine extensions**



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Thank you

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Session Five Restoration Prioritisation

Will Melhuish, Operations
Manager, Exo Engineering

Achieving Biodiversity Net
Gain for Coastal Infrastructure

24th & 25th January, 2024 | London & online

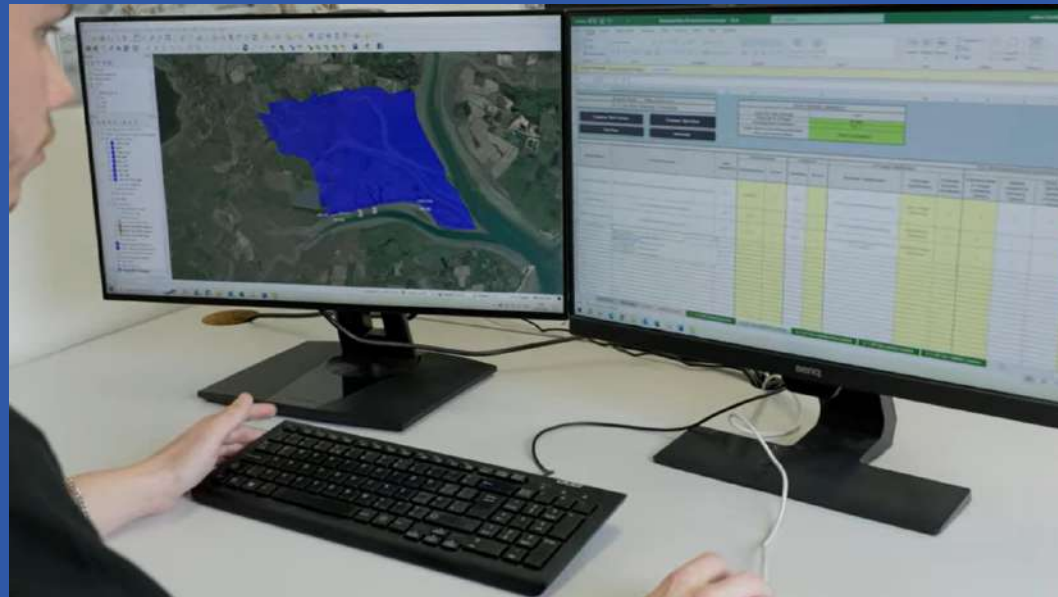
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Achieving Biodiversity Net Gain for Coastal Infrastructure



Will Melhuish

Ocean sprawl



- Ocean sprawl** - as coastal urban centres spread
- Climate change adaptation means more hard defences replacing natural habitats

- Sheer, smooth surfaces** of artificial defences
- Poor replacement habitat for intertidal species

- Coastal squeeze**, sea level rise, erosion
- Represents an **opportunity** to integrate biodiversity-inclusive design

Hybrid Nature Based Solutions (HNBS)



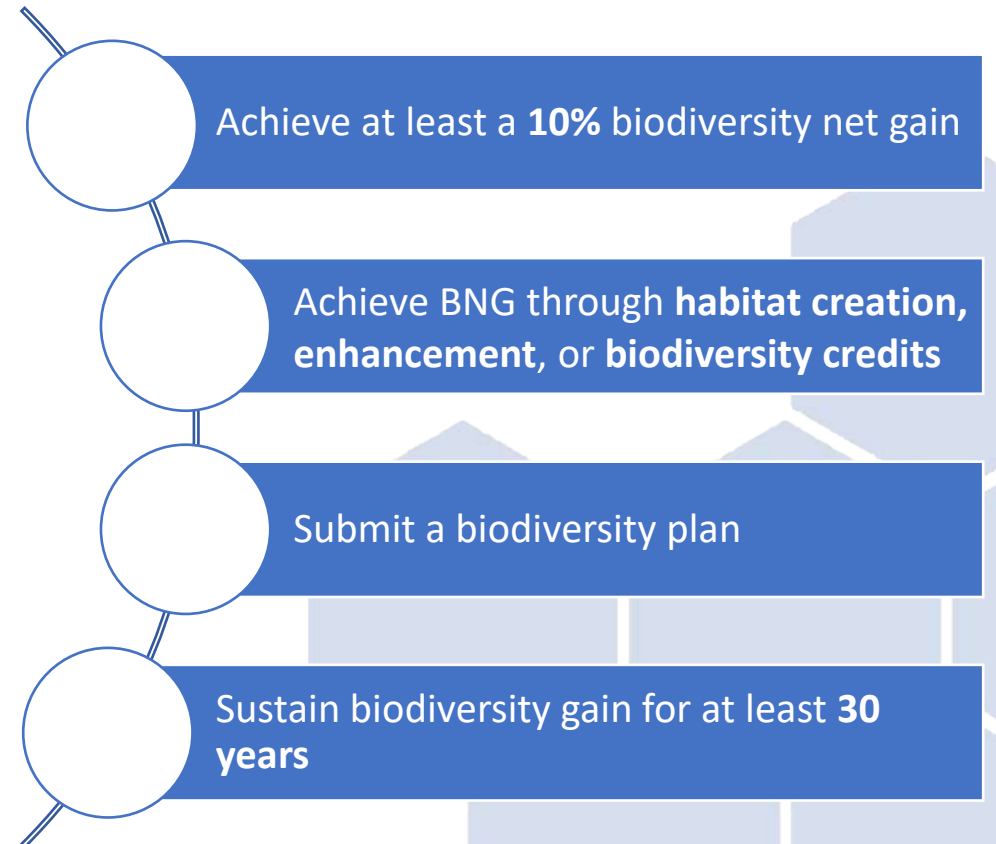
BNG legislation

Biodiversity Net Gain (BNG) is being introduced from **January 2024** under the **Environment Act 2021**.

BNG development criteria:

- Located in England.
- Development is taking place above the mean low water level.
- Greater than 25m² in size.

Developments must:



BNG Metric

Size of habitat (measured in Hectares)

Distinctiveness

Low

Medium

High

Very high

2

4

6

8

Condition*

Poor

Fairly poor

Moderate

Fairly good

Good

1

1.5

2

2.5

3

Pre-development
biodiversity value

Post-development
biodiversity value

Strategic significance*

Low

Medium

High

1

1.1

1.5

Time to target condition (measured in years)

Difficulty

Low

Medium

High

1

0.67

0.33

Spatial risk (offsite)

Low risk

Medium risk

High risk

1

0.75

0.5

*Values manually
entered by assessor

Trading rules



Baseline distinctiveness	Example	Rules
Very high	Rocky shore – Low energy littoral rock on peat, clay or chalk	Priority should be given to replacing losses with units of the same habitat type
High	Rocky shore – High energy	Losses must be replaced with area habitat units of the same habitat type
Medium	Intertidal Sediment - Littoral coarse sediment	Losses must be replaced by area habitat units of either medium band habitats within the same broad habitat type or, any habitat from a higher band from any broad habitat type
Low	Intertidal hard structures – Artificial hard structures	Losses must be replaced with area habitat units of the same or higher band

Newlyn breakwater BNG example

- In autumn 2022, 88 “Eco-Blocks” installed on and around Newlyn breakwater
- 5t rock armour units provided by 4 suppliers
- Award winning use of sustainable concrete – Devon & Cornwall Concrete Society
- Average total of 13 Taxa observed for each Eco-Block type one year after installation



Baseline

Multiplier	Description		Multiplier value
Habitat type	Broad habitat: Intertidal hard structures	Habitat type: Artificial hard structures	see distinctiveness
Area	Footprint of breakwater		0.1 ha
Distinctiveness	Low	Trading Rules: Same distinctiveness or better required	2
Strategic significance	Low	Not identified in local strategy	1
Condition	Moderate		2



Coastal Processes	Abundance of invasive species	Water quality	Litter prevalence	Amount of colonisation
-------------------	-------------------------------	---------------	-------------------	------------------------

Calculation assumptions:

0.1 ha of conventional rock armour is fully replaced by “Eco-Block” rock armour.

Total units lost: **0.40**

Habitat creation

Multiplier	Description		Multiplier value
Habitat type	Broad habitat: Intertidal hard structures	Habitat type: Integrated Greening of Grey Infrastructure (IGGI)	see distinctiveness
Area	Footprint of breakwater		0.1ha
Distinctiveness	Medium	Meets trading rules	4
Strategic significance	Low	Not identified in local strategy	1
Condition	Moderate	Intervention doesn't significantly impact score	2
Time to target condition	4 years	Standard time applied	0.867
Difficulty	Medium	Standard difficulty applied	0.67

Total units lost: **0.40**

Total units gained: **0.46**

Percentage net gain: **15%**

Impact of multipliers



Colonisation on pilot ExoRock unit

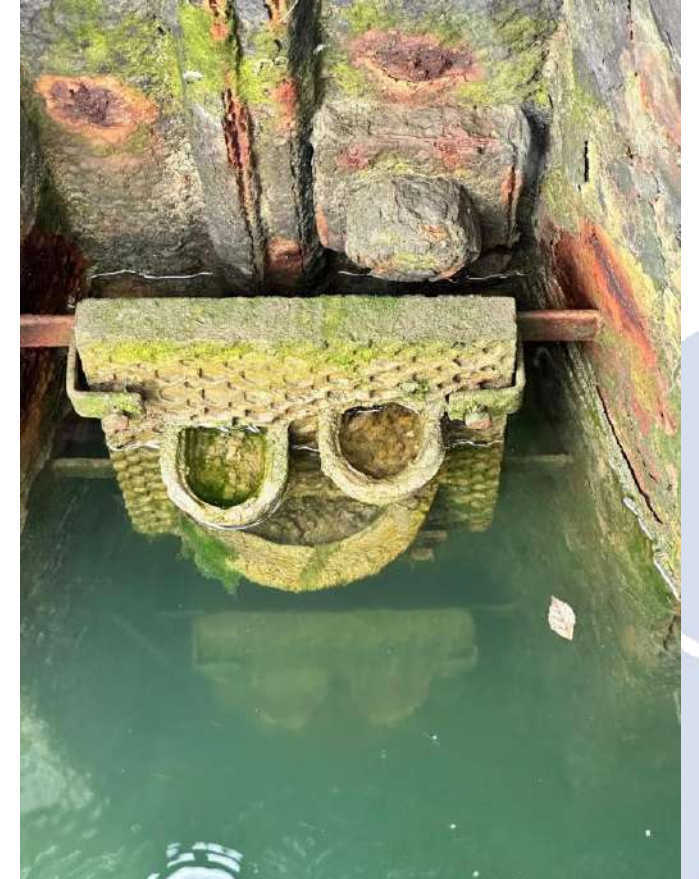
Multiplier	Description	BNG Result
Condition	Increased from “moderate” to “good”	25%
Locally strategy	Formally identified in local strategy	32.5%
Time to target condition	3-year delay in starting habitat creation	- 5%

Examples of changes to single multiplier values and the resulting BNG score for Newlyn example

Opportunities for coastal HNBS

HNBS can:

- Be incentivised through **local strategy**
- Facilitate net gain **on-site**
- Be **retrofitted** to existing structures to deliver net gain
- Be integrated into planned defence **repairs, maintenance** and upgrades
- Be made **bespoke** to the **environment** and target species to meet the requirements of **IGGI**



ExoHabitats retrofitted to sheet piling

Challenges for coastal HNBS

Are HNBS competitive?

- Is there a risk that **BNG requirements** can be **by-passed** by “permitted works” or “emergency repairs”?
- Are HNBS applications limited due to strict **trading rules**?
- Are the maximum units too severely capped by fixed **multiplier values**?
- Should **condition assessment** factors include greater weighting for “biodiversity”?
- Does the **scale** used in the metric and condition assessments match the scale of likely interventions?

What's the cost?

Newlyn breakwater: offsetting cost vs on-site cost



Average market cost per biodiversity unit predicted to be £20,000 (Eftec 2021).
Newlyn project cost to offset lost units: £5,400

Eftec (2021) Biodiversity Net Gain: Market Analysis Study, NR0171
Gov.uk (2023) <https://www.gov.uk/guidance/statutory-biodiversity-credit-prices>



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Session Five Restoration Prioritisation

Eve Leegwater, Environment
Agency

Scaling up estuarine and coastal
habitat restoration – from policy to
practical action

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Scaling up estuarine and coastal habitat restoration – from policy to practical action

Eve Leegwater

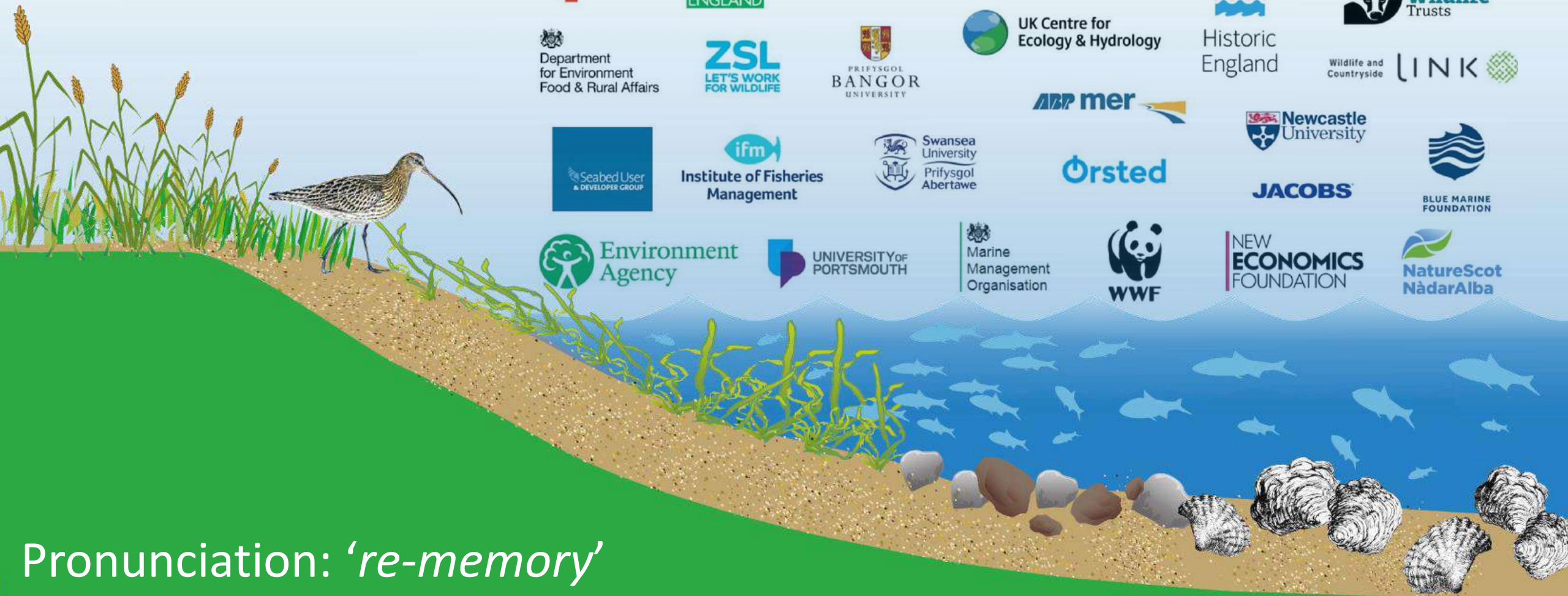
Environment Agency Estuaries & Coasts Planning Team

Eve.leegwater@environment-agency.gov.uk



Lower Otter Restoration Project, Devon. Photo: Lydia Burgess-Gamble

ReMeMaRe



Pronunciation: 're-memory'

Timeline

2018

ReMeMaRe first explored within EA



2019

First ReMeMaRe Steering Group Meeting

1st REACH (Restoring Estuarine and Coastal Habitats) conference at the Natural History Museum



2020

First Partnership Group Meeting

2021

Restoration potential maps published



2022

Environmental Improvement Plan 2023

First revision of the 25 Year Environment Plan

ReMeMaRe target included in EIP

Joint EA / NE Restoration Principles published



3 restoration handbooks launched at COP26



Native oyster restoration handbook published

2023

2024

ReMeMaRe Conference in Scarborough



ReMeMaRe Programme Office launched

ReMeMaRe



sustainable
development
improvement
resilience
wellbeing
biological
areas
goals
year
adaptation
zero
water
quality
net
plan
environmental
diversity
targets
strategy
fisheries
protected
ospar
environment
health
convention
climate



COMPLEXITY
TIME
COST

[illegible]



Photo: Angie Gall

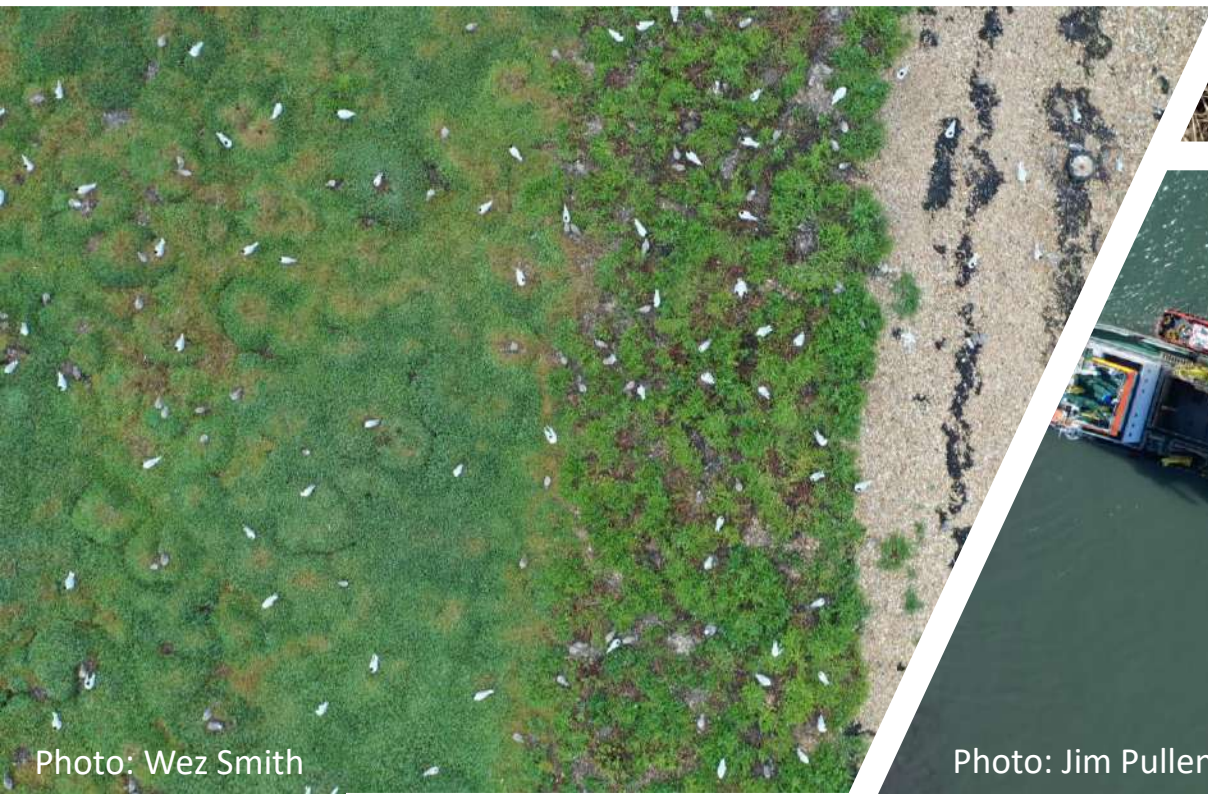


Photo: Wez Smith

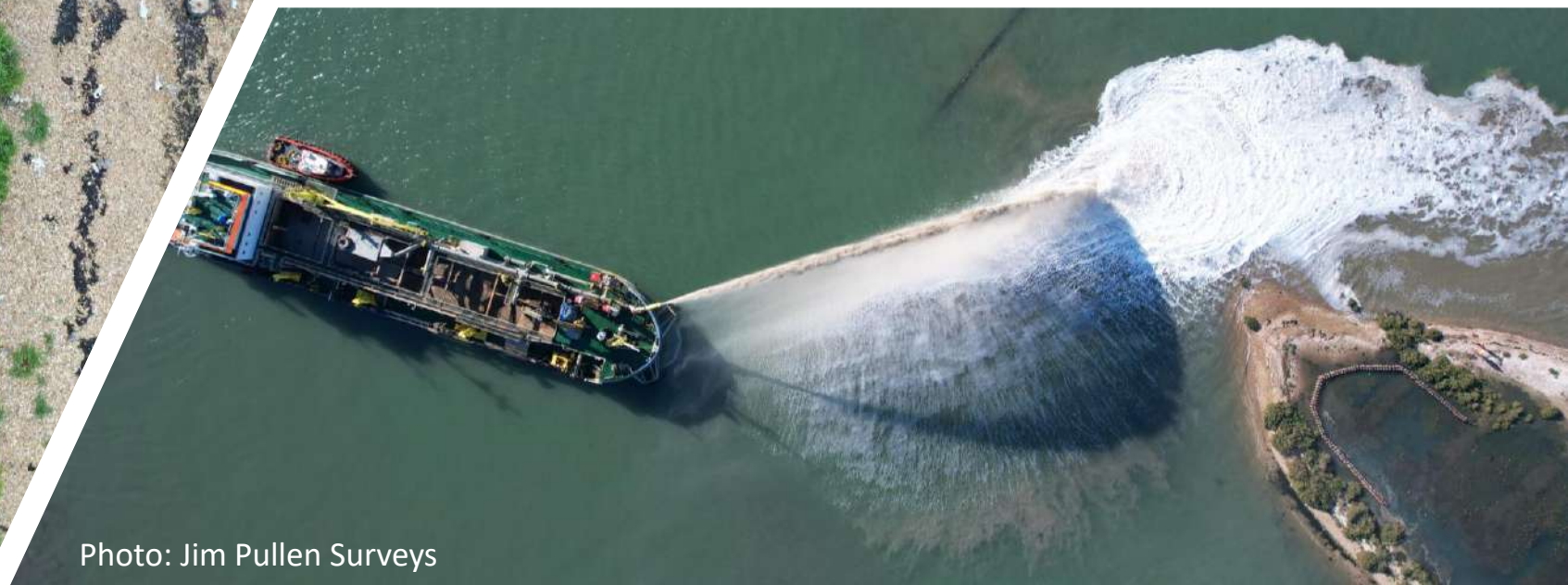


Photo: Jim Pullen Surveys

Exploring solutions

- Marine licensing study to identify and evidence the barriers
- Separate determination process
- Subsidies
- Upskilling
- Potential self-service activities





Photo: Clare Maynard



Programme Office

- Develop 5-year plan and local restoration action plans
- Provide governance, advice, and support
- Seek funding opportunities
- Maintain an overview and seek join-up



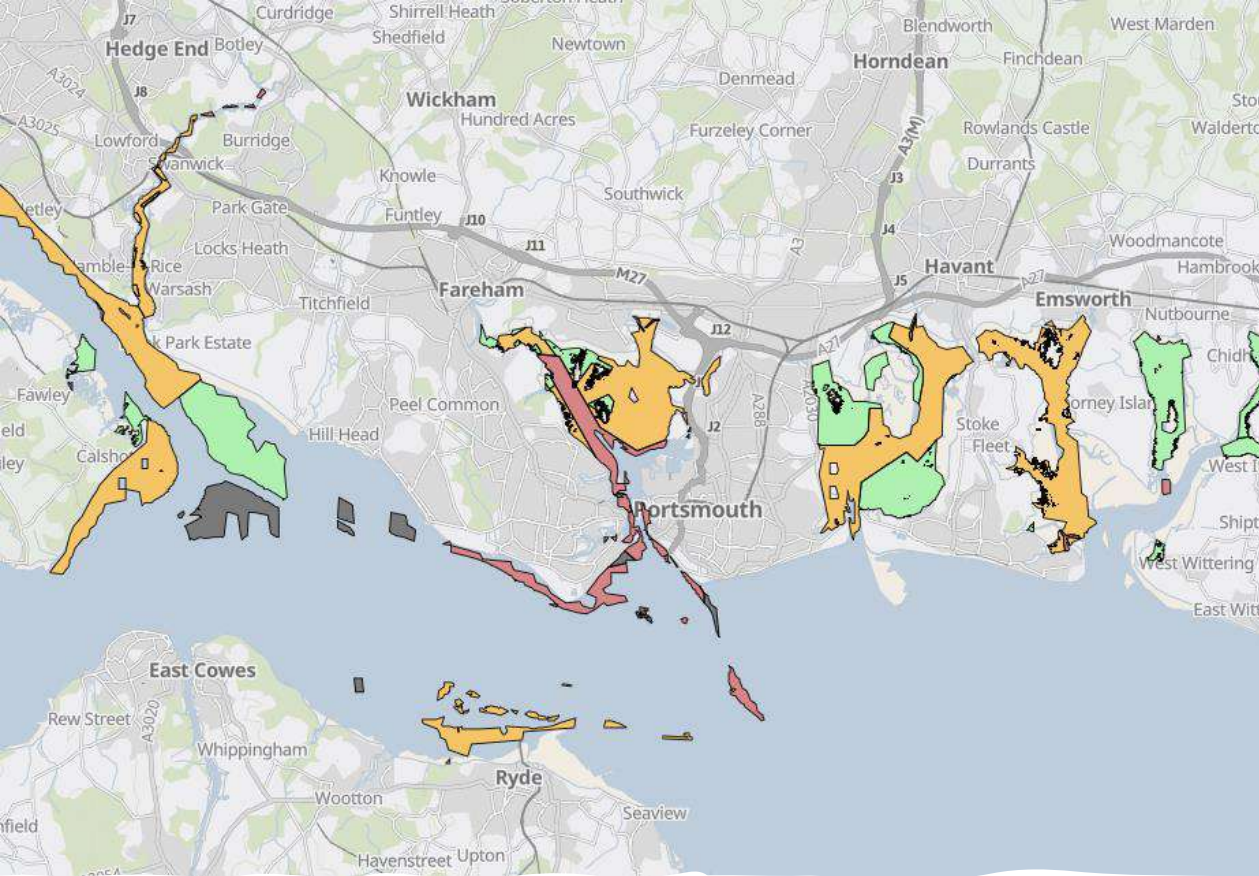


Photo: Boskalis

Key Tools

- Refined Restoration Potential Maps
- Restoration Project Platform
- UK Sediment Resource Database
- Updating Enhanced Estuaries Database & Estuary-Guide Website

Restoration
warriors!





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Session Five Panel Debate

Restoration Prioritisation

Are we evolving the right solutions to deliver marine restoration and a nature-positive approach to decision-making?

Chair: Roger Proudfoot, Environment Agency

Charlotte Johnson, Natural England

Lily Pauls, Natural Resources Wales

Annika Clements, DAERA Northern Ireland

Tara Hooper, Natural England

Will Melhuish, Operations Manager, Exo Engineering

Eve Leegwater, Environment Agency

Jenny Murray, Blue Marine Foundation





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Cambridge
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Initiative



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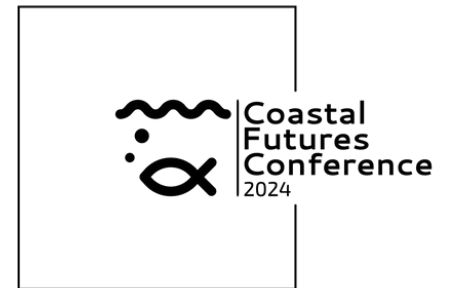


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Refreshments

15:00 – 16:00



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