



3: Empowering Communities

Chair - Diana Pound,
Managing Director,
Dialogue Matters



Ocean
and Coastal
Futures



Environment
Agency

THE CROWN
ESTATE



Its all about power!

Diana Pound BSc MSc CEnv FCIEEM

Dialogue Matters Ltd

Specialists in designing, facilitating
training and advising on co-operative
decision making in policy and practice

A STORY TO INSPIRE

Summit to Sea

- Rewilding project
- Environmentalists made decisions in advance on area and vision
- Engage and consult to persuade others
- Massive push back
- Farmers feared collapse of their way of life and communities
- Project collapse
- **POWER OVER**



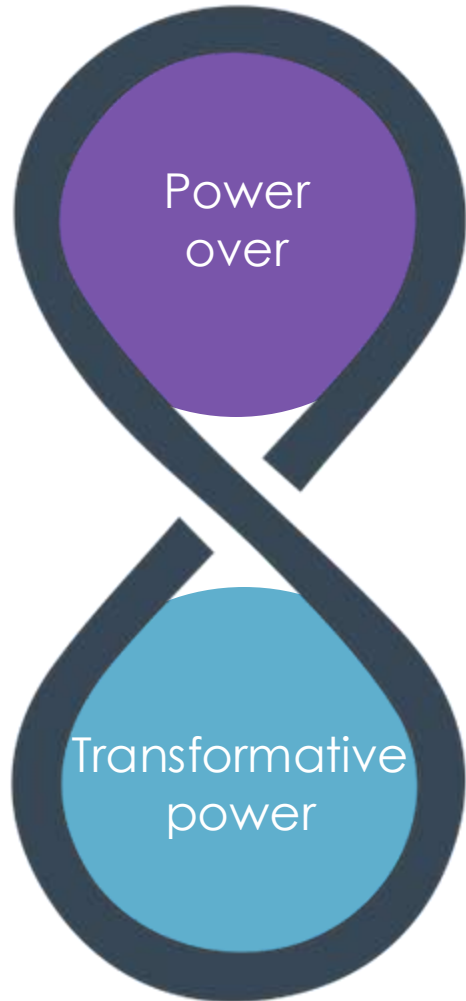
TIR CANOL

Tir Canol (Middle Ground)

- Two years of co-design – ‘designing with not for’
- Sheep farmers heavily involved
- Humility, listening, learning together, self-reflection
- No fixed goals
- What works will emerge from process of experimentation and learning together
- **POWER WITH -TRANSFORMATIVE POWER**

UNDERSTANDING POWER

Power – not what we think



- Power is not fixed - its not zero sum
- It can be cumulative
- It can be held, shared, given away, or used to block or enable
- Power is good and bad – and which can depend on purpose and context
- **Power affects the nature and quality of decisions**

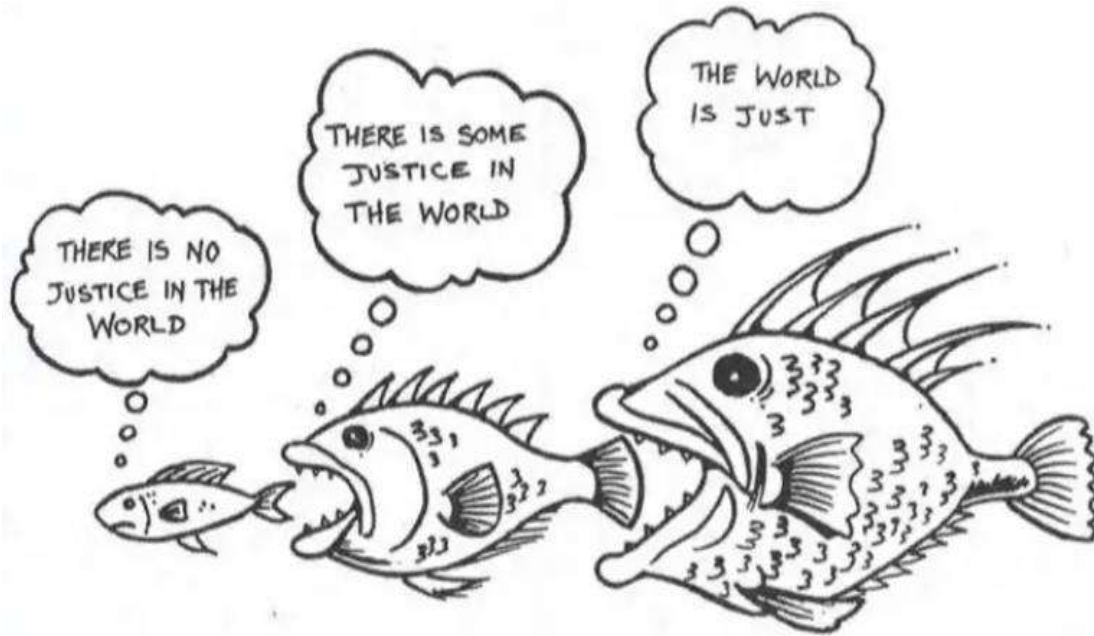
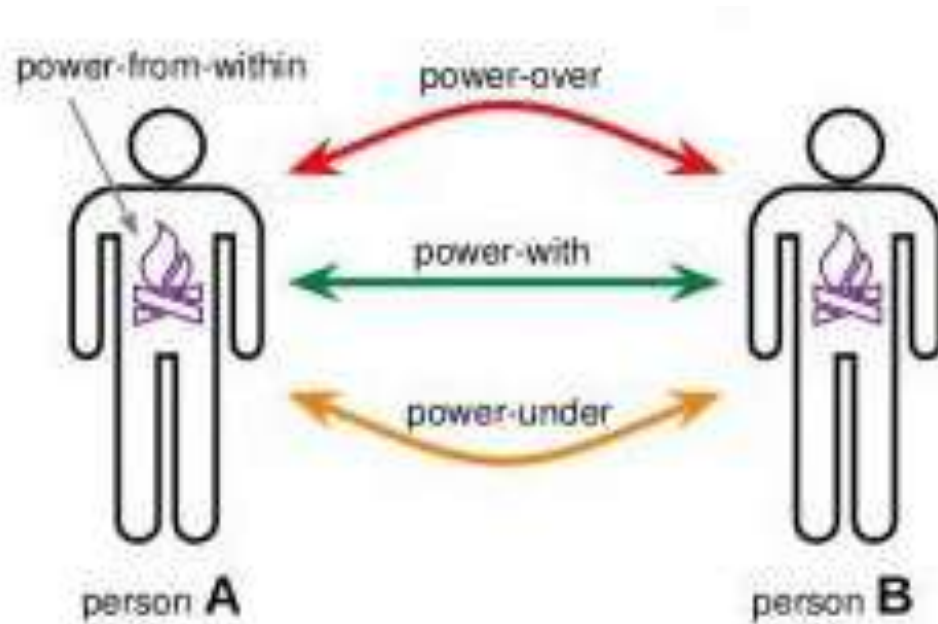


Image: Robert Mankoff, The New Yorker Collection/The Cartoon Bank

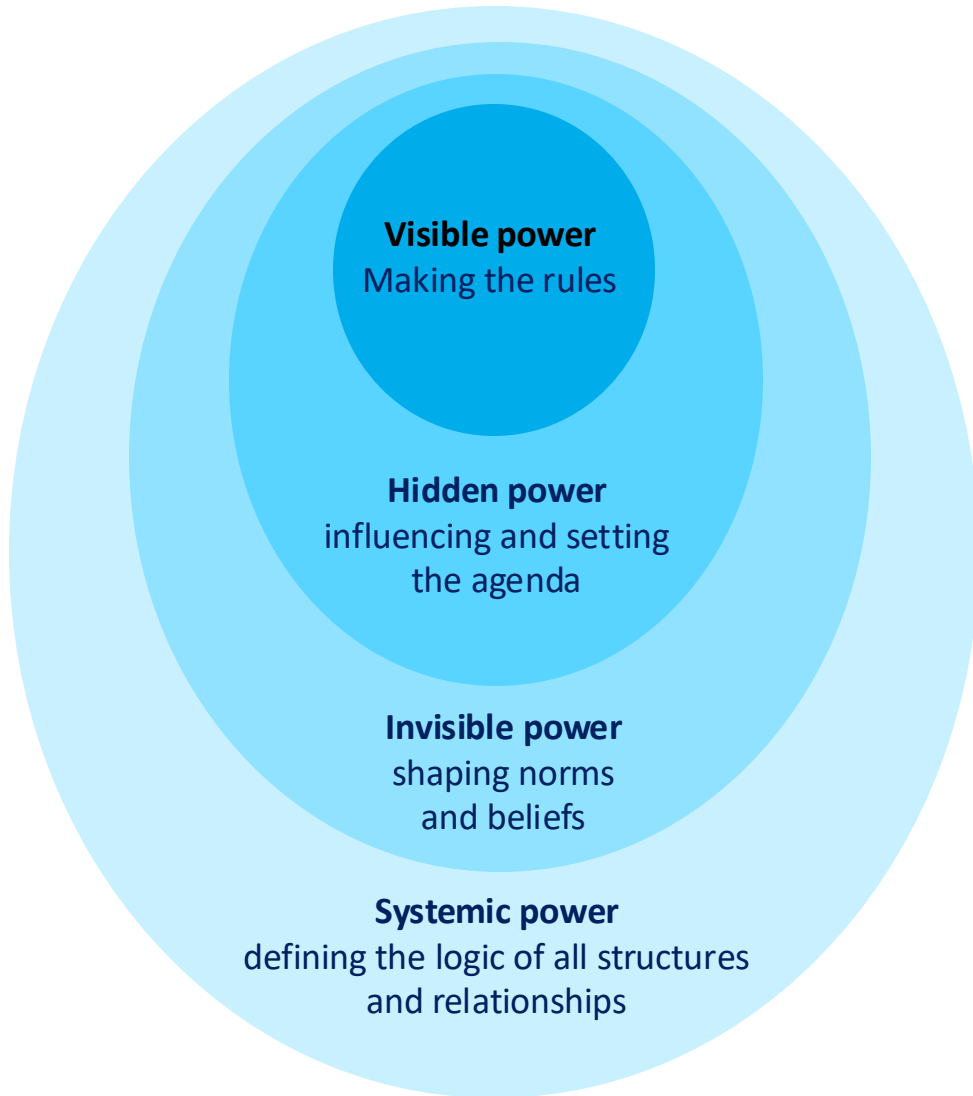
- Held by groups, individuals and nature
- Dependent on context and moments
- Relational, dynamic, not binary, messy
- Ever changing, contested and contradictory
- Intersectional – gender, race, ethnicity, cast, class, sexuality, history, location



Models of power-interactions between people...

Image: <https://www.slideshare.net/tetradian/bridging-enterprisearchitecture-and-systemsthinking>

- **Power over** – exerting control and influence over others
- **Power with** – social power, capacity for collective action
- **Power to** – ability to create change and take action
- **Power within** – self worth, agency in one's ability to act



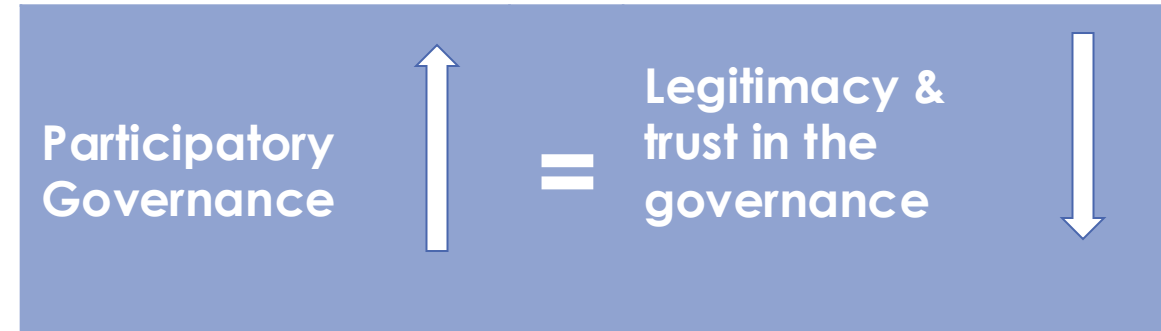
Visible power	Deciding: e.g. geographic focus, time frames, project budget, overall purpose, that change is needed
Hidden power	Behind the scenes: creating allies and alliances, lobbying, bribing, including or excluding certain voices
Invisible power	Beliefs, social norms, culture of bias or favour to particular perspectives. E.g. in environment world there is a bias towards science and technical knowledge
Systemic power	Embedded social and economic context e.g. colonialism, capitalism, patriarchy, structural racism, sexism

WHY POWER AWARENESS MATTERS

BUT.... the Legitimacy Paradox



Marine governance research shows:

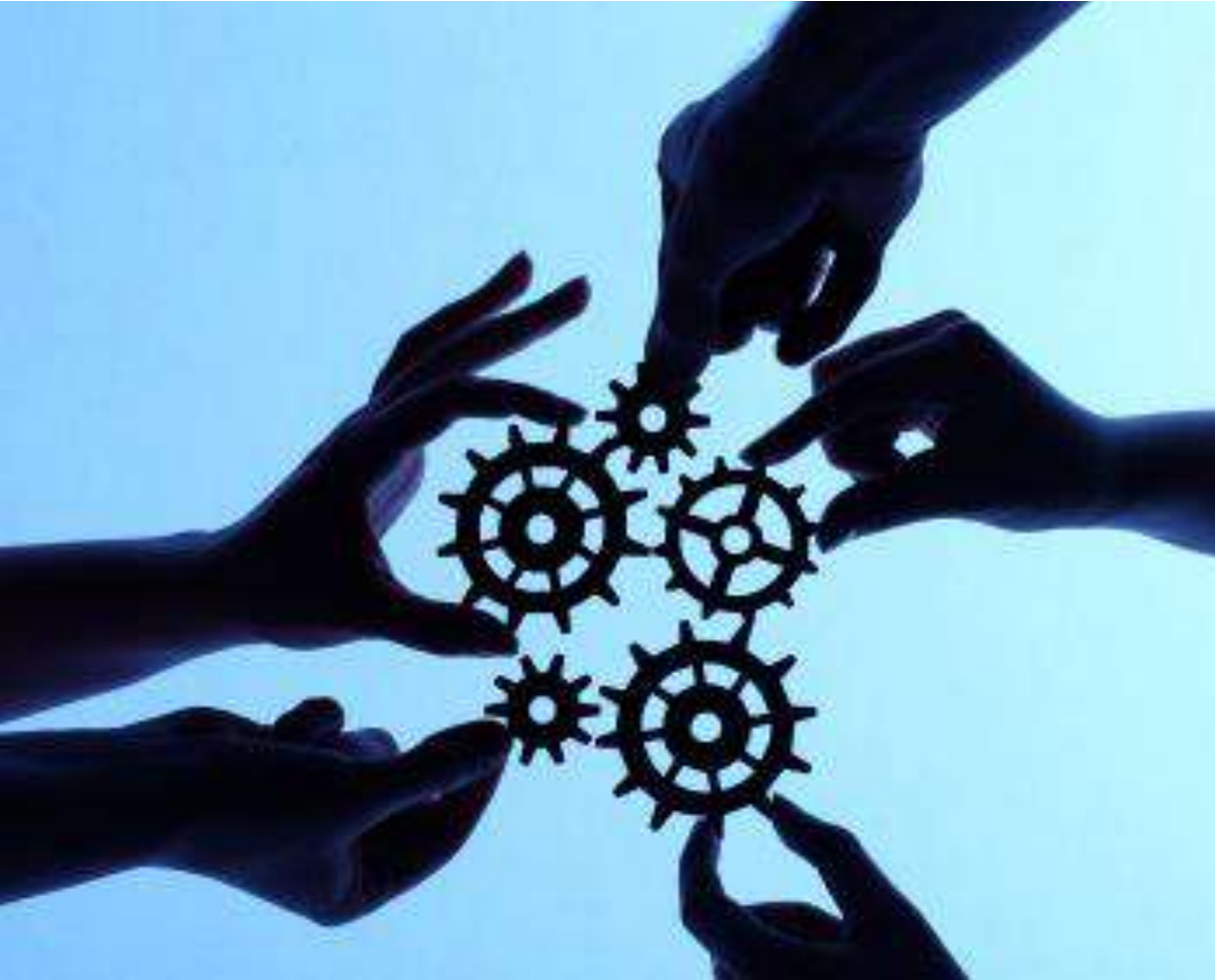


(Fudge 2018)

But also....

People are more willing to accept outcomes that are not their own first preference if they think the process has been legitimate. (Dietz et al. 2008)

The answer....



- The benefits claimed around engagement and involving others are dependent on:
 - The power shared in decision making
 - The diversity of knowledge participants hold
 - The quality of the participatory decision-making processes.
- Power shared through high quality, inclusive and participatory processes result in better outputs in terms of '**ambition, agreement and stringency**' – which leads to better outcomes.

Reed 2008, Reed et al 2018,
Newig et al 2016, Newig et al 2018,
Newig et al 2019, Newig et al 2023

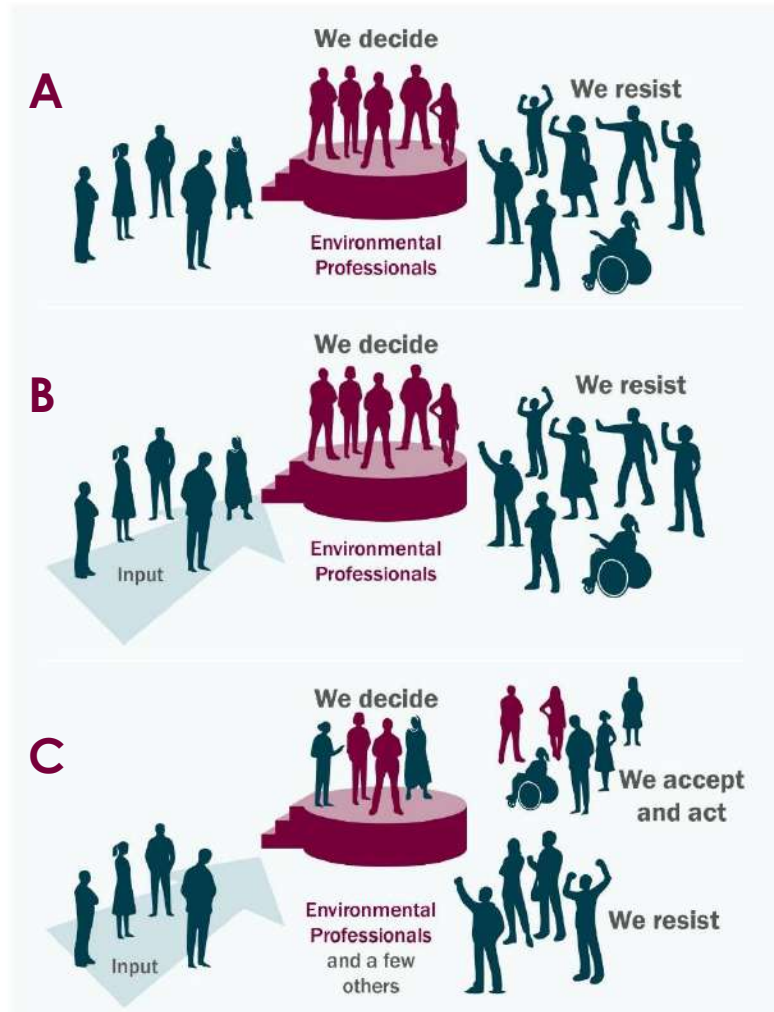
SHIFT TO TRANSFORMATIVE POWER

Ask key questions:



- Who is creating the space?
- Who is included and excluded?
- Who sets the agenda?
- For what purpose?
- Whose voices are heard?
- Whose knowledge counts?
- Who decides what?
- Who defines the meaning of involvement of others?
- What kind of transparency is there?
- What dimensions of power are at play?

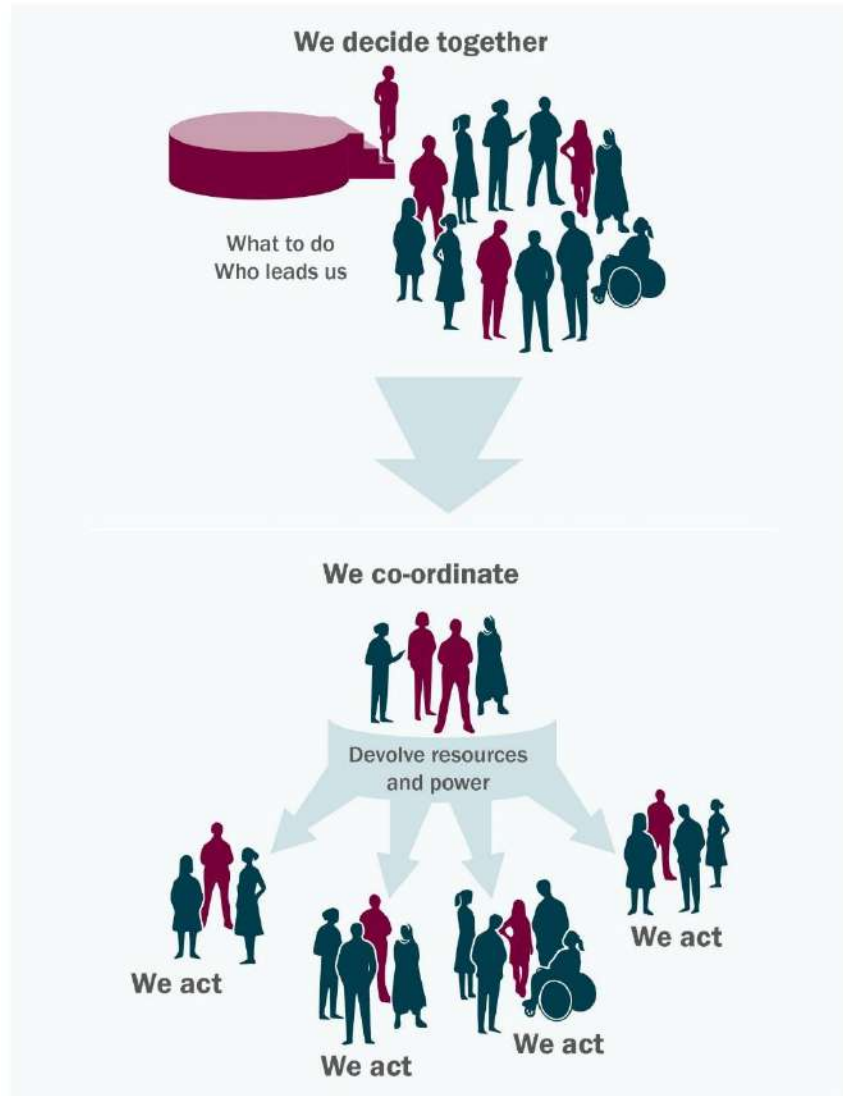
Shift from these forms of power over...



- A. Environmentalists make all the decisions on their own
- B. Environmentalists carry out engagement to gather input and opinions to inform their own decisions
- C. Environmentalists involve a few other perspectives in the decision making

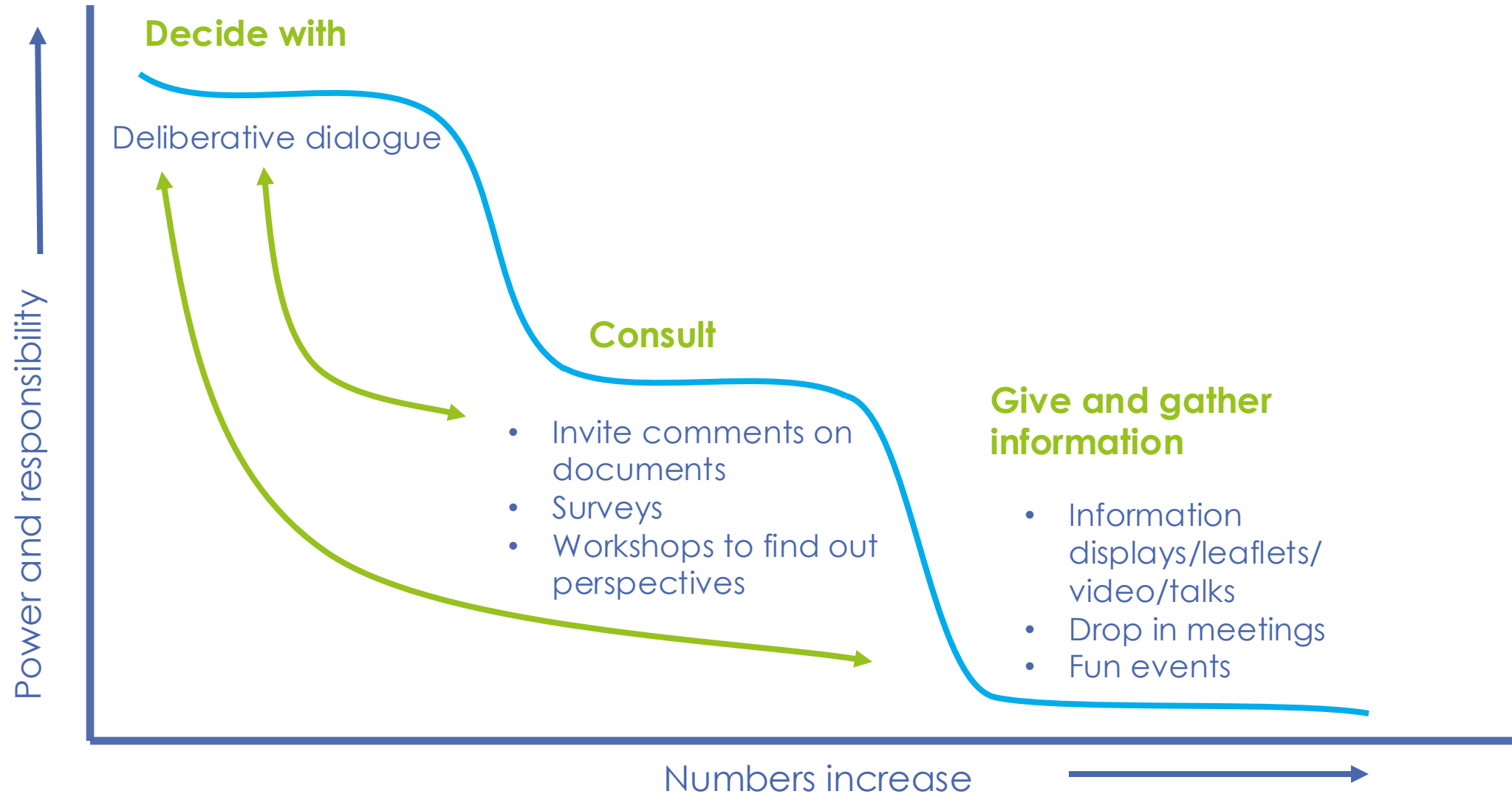
Pound, D. et al. (2025)

To power with



Work as equals with a rich mix of people with different values, ways of knowing, concerns, hopes, and aspirations.

Reap the dividends in better outcomes for nature, people and social justice.



Co-production: co-design, co-create, co-delivery, co benefits



Working together as equals
to share resources, power
and responsibility to both
plan and implement
change.... and share and
enjoy the benefits

(D. Pound, 2016)

Apply procedural justice



- Transparent and just decision making
- Balanced inclusion for legitimacy and to integrate knowledge systems
- Unbiased neutral process design & facilitation
- Deliberative & principled negotiation (seeking win/wins)
- Organisation, stakeholders and communities work together as equals to:
 - Share knowledge and understanding
 - Agree priorities.
 - Resolve differences
 - Co-produce ideas
 - Agree governance
 - Implement change

To find out more



- To get a copy of recent research
- To sign up for our occasional resource update
- To hear about training or conferences we do (new course on partnership working in design)



Flood and coastal resilience innovation programme

Part of the £200m
Flood and coastal innovation programmes

Protecting Our Coasts: Collaborative Approaches in the Stronger Shores Project

Emily Ross, Project Delivery Officer



South Tyneside Council

Innovation

£200m Flood & coastal innovation programmes

3 

Unique programmes

324 

Organisations

~500

Project staff

35 projects

30 local authorities



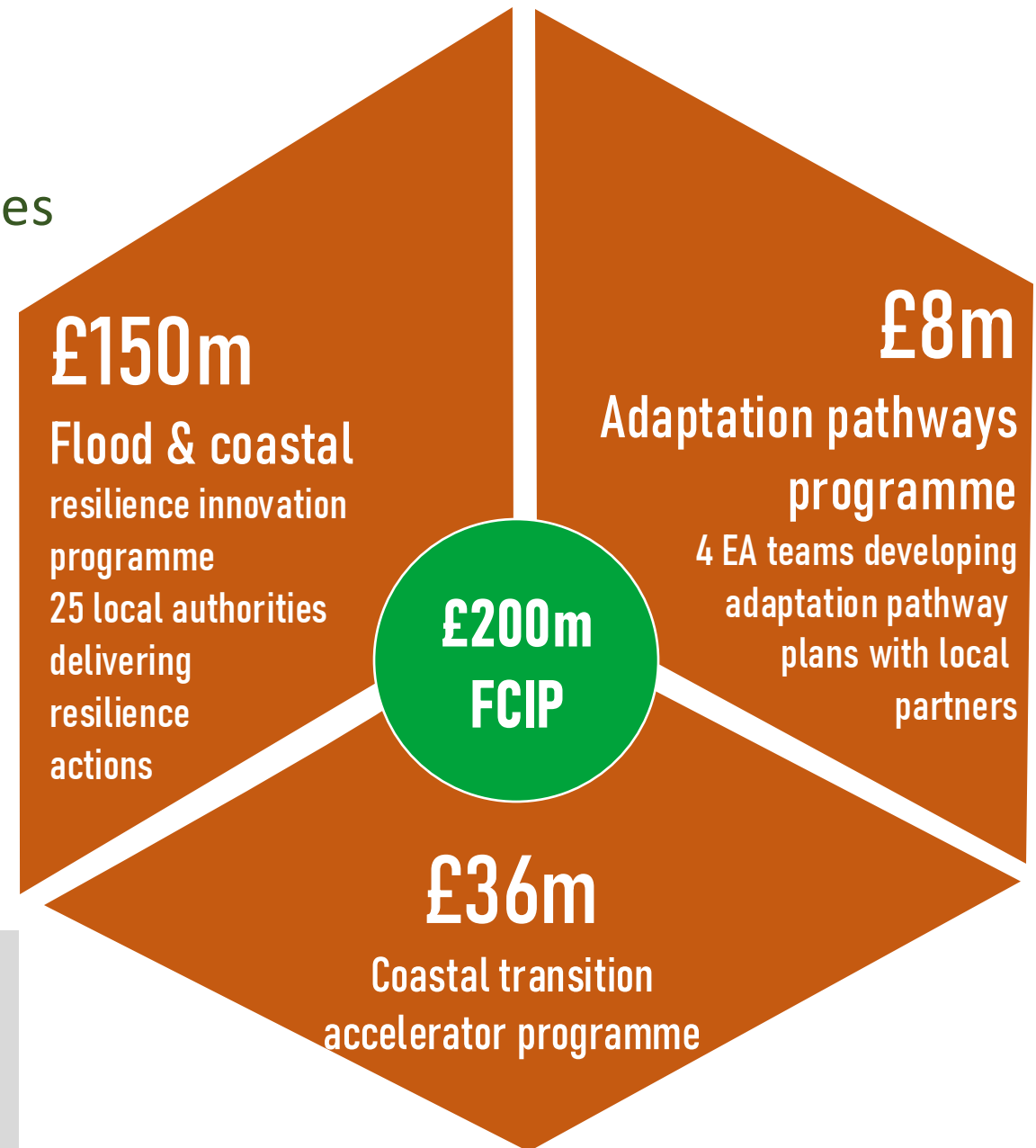
£200m

6 YEARS

2021-
2027



We will drive innovation in flood and coastal resilience and adaptation to a changing climate. We're investing £200 million to test and develop new ways to create a nation resilient to flooding and coastal change.





Improve understanding of the coastal protection qualities of marine habitats (**seagrass, kelp, native oyster reefs**) and their wider benefits to climate change, biodiversity, and society.



Photo credit:
Project Seagrass

Pippa Moore, Newcastle

Richard Lilley /

COMMUNITY ENGAGEMENT

ENGAGED
WITH OVER

14,500
PEOPLE



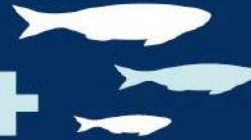
4,000+
PEOPLE
PRESENTED TO.



3000+
conversations started
in 52 sessions using 5
innovative engagement
resources.



2700+
YOUNG PEOPLE
ENGAGED IN CLASSROOM
AND OUTDOOR-BASED
SESSIONS.



£56,000
awarded to 13 grassroots
community groups and
organisations.



270+
**ENGAGEMENT
SESSIONS**



500+
PEOPLE CONNECTED TO
THEIR LOCAL COASTLINE
THROUGH ART.

6

**DELIVERY
PARTNERS:**

South Tyneside Council;
North Sea Wildlife Trusts; Wild
Oysters Project; Tees Rivers
Trust; Newcastle University;
University of Plymouth.

ENGAGED
WITH A
VARIETY OF
PEOPLE:
Community
Members;
Decision Makers;
Businesses and
Investors; and
Researchers and
Academics.



750+
pupils engaged using
our education packs.



**Stronger
Shores**



**PEOPLE CONNECTED TO
THEIR LOCAL COASTLINE
THROUGH ART.**



£56,000
**awarded to 13 grassroots
community groups
and organisations.**





3000+

**conversations
started in 52
sessions using 5
innovative engagement
resources.**





6

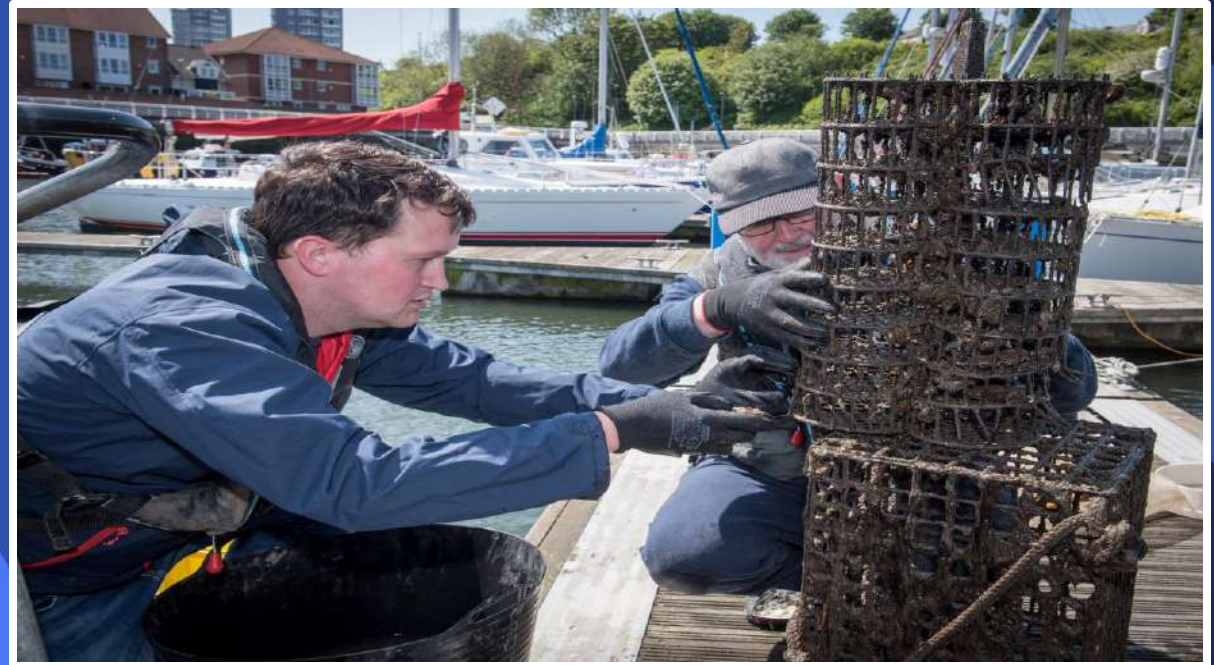
DELIVERY PARTNERS:

**South Tyneside Council;
North Sea Wildlife Trusts; Wild
Oysters Project; Tees Rivers
Trust; Newcastle University;
University of Plymouth.**



Restoration Realities:

- **Challenges**
 - Access limitations to sensitive habitats
 - Environmental constraints
 - Technical complexity of restoration work
 - Capacity and time constraints
 - Health and safety





Empowering Coastal Communities: Local Action, Lasting Impact

- Case study examples – showcasing best practice for empowering, engaging and building local capacity.
- Evidence the



Thank you for listening

emily.ross@southtyneside.gov.uk



 **Stronger
Shores**



Department
for Environment
Food & Rural Affairs



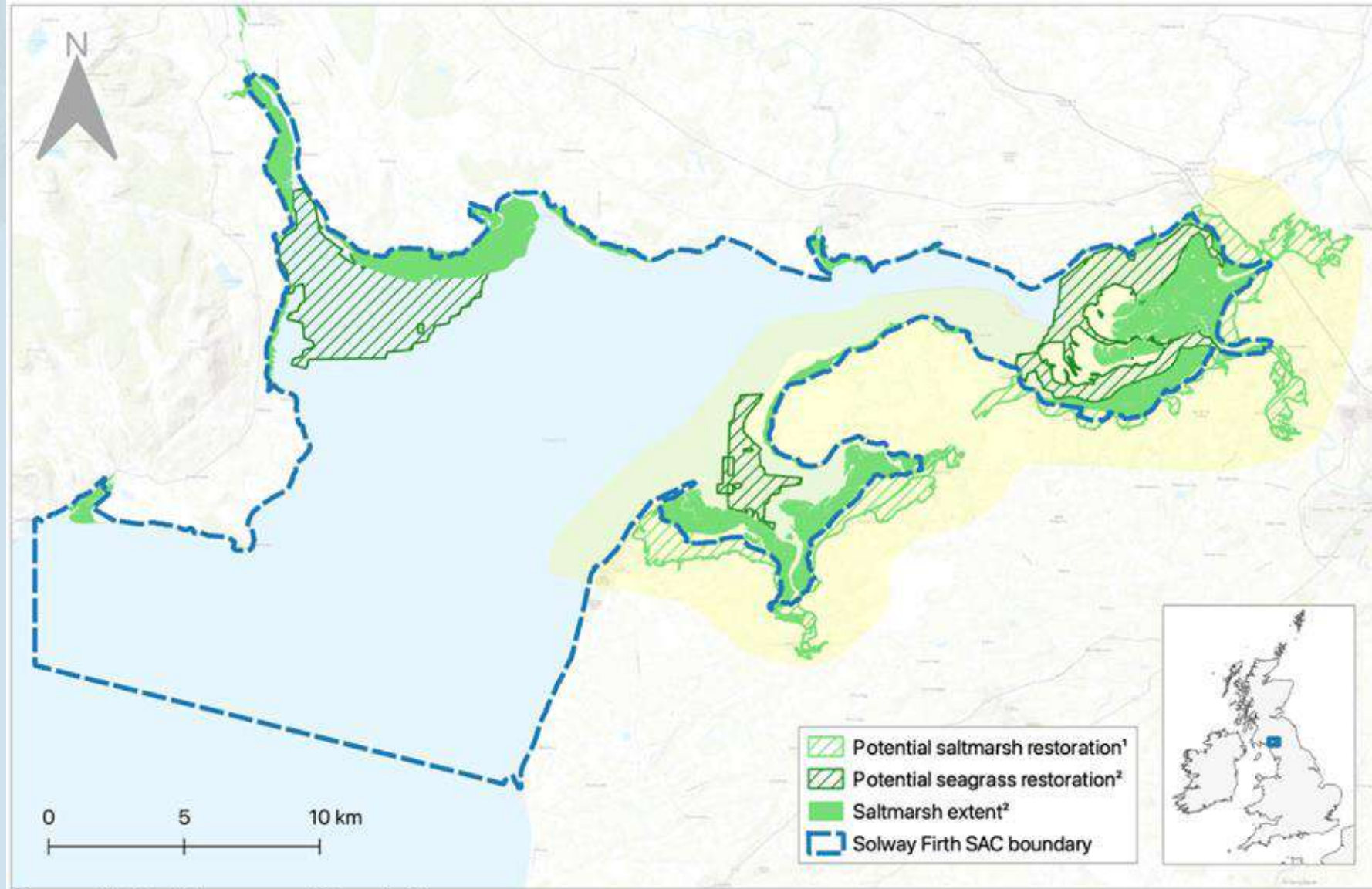
**Environment
Agency**

Flood and coastal resilience innovation programme

Part of the £200m
Flood and coastal innovation programmes



CLEAR coasts



¹Source: Marine Management Organisation

²Source: Environment Agency

The Mission

“

to combine local knowledge with field surveys to enhance and restore saltmarsh, seagrass and reef habitat in the Cumbrian Solway Firth.

”

**Phase 1:
SCOPING
Jan-Mar 2023**

- Stakeholder focus groups formed
- Field sites scoped
- Equipment procured

**Phase 2: MONITORING
& CITIZEN SCIENCE
Oct 2023-Mar 2024**

- Hydrodynamic surveys/habitat suitability assessments
- Citizen science workshops

**Phase 3:
RESTORATION
Oct 2024-Mar 2025**

- BESE-elements® matting installed at 3 sites
- Landowner permissions secured
- Monitoring ongoing

The Mini Buoy

The low-cost and home-made tides, currents, and waves sensor

Data Logger
Detects movement.

Floral Foam Keeps it secure.

Steel Shot
Increases sensitivity.

Wire Loops
For free movement.

Get Your Mini Buoy Ready:

- Place the logger in the tube, held firm with floral foam.
- Seal the lid of the tube using silicone sealant.

Programming the Data Logger:

Use the MSR software to set the logger to record data every few seconds along the y-axis.

Data Collection and Analysis:

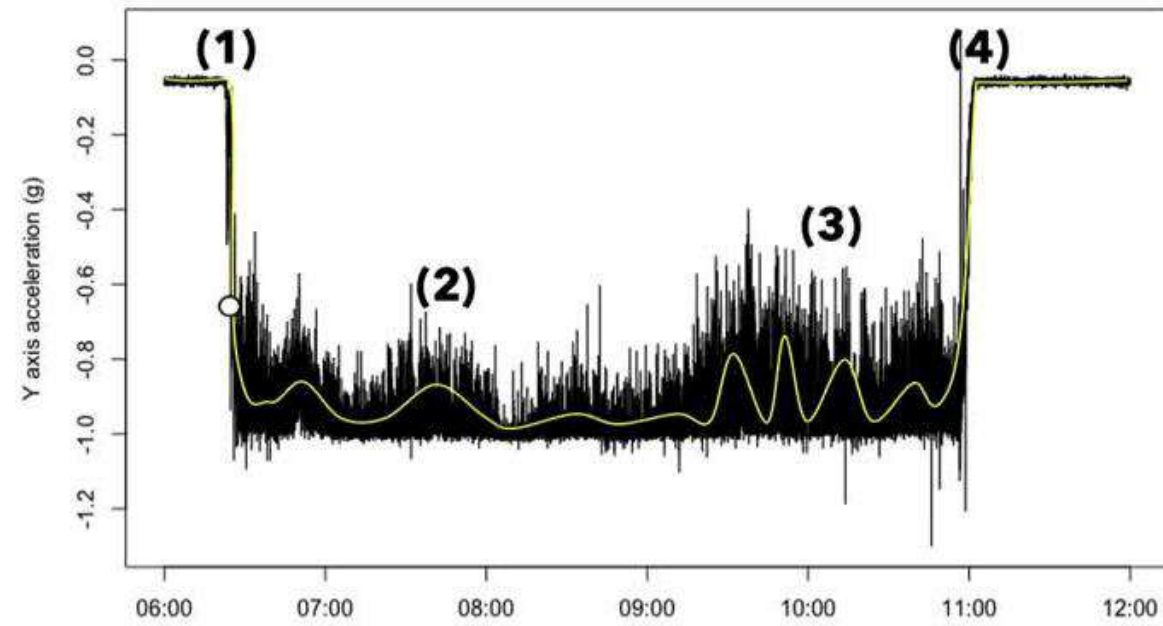
Download the data using the MSR software and analyse it using the Mini Buoy App.

Deploy in the Field:

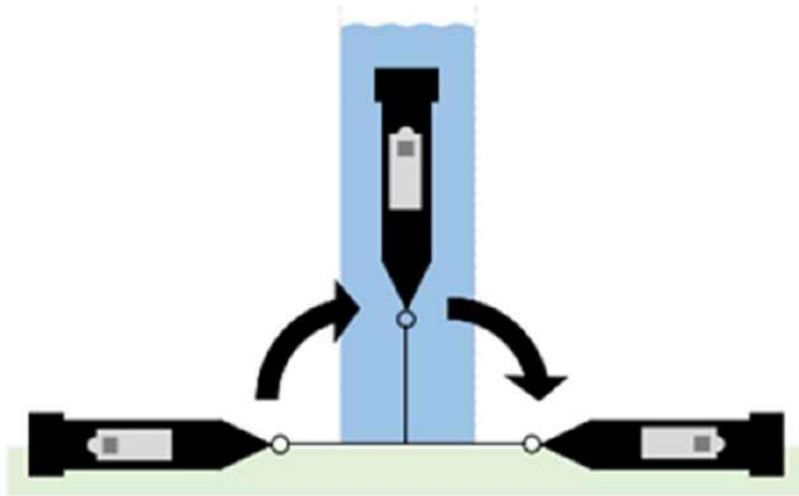
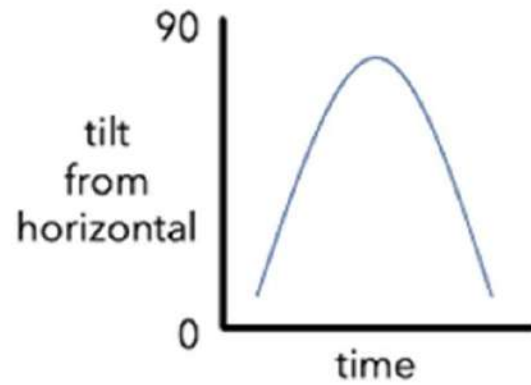
- Place a stake in the ground, attach the Mini Buoy using cable ties, and ensure the swivels can move freely.
- Retrieve the Mini Buoy ideally after 15 days or more to capture a full Spring-Neap cycle.



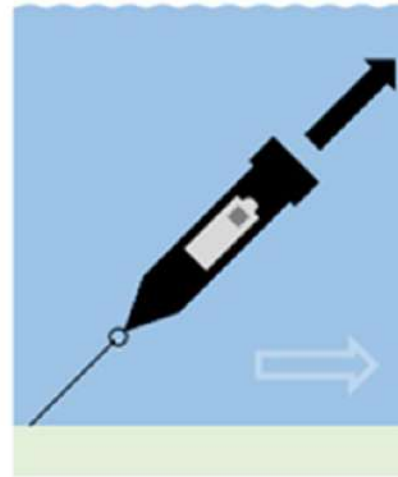
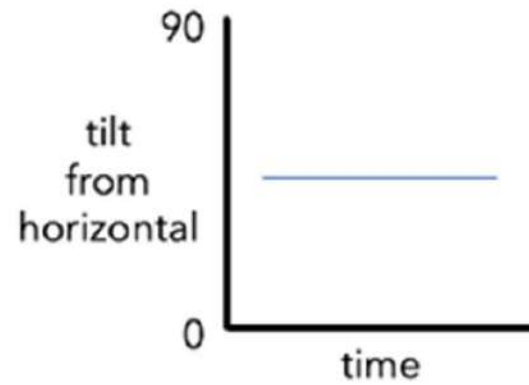
By monitoring potential sites for coastal habitat restoration, the Mini Buoy supports healthier, more resilient coastal ecosystems.



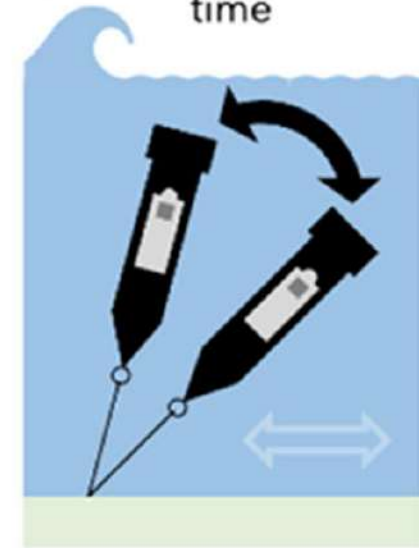
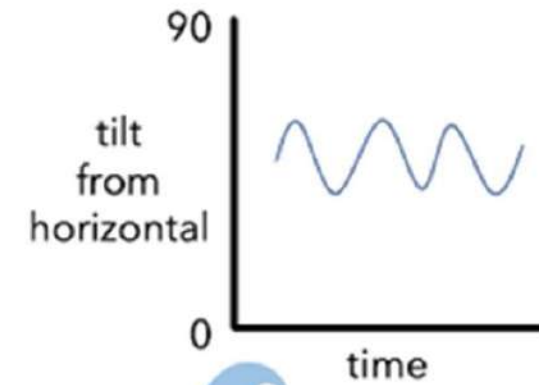
Inundation duration



Current velocity

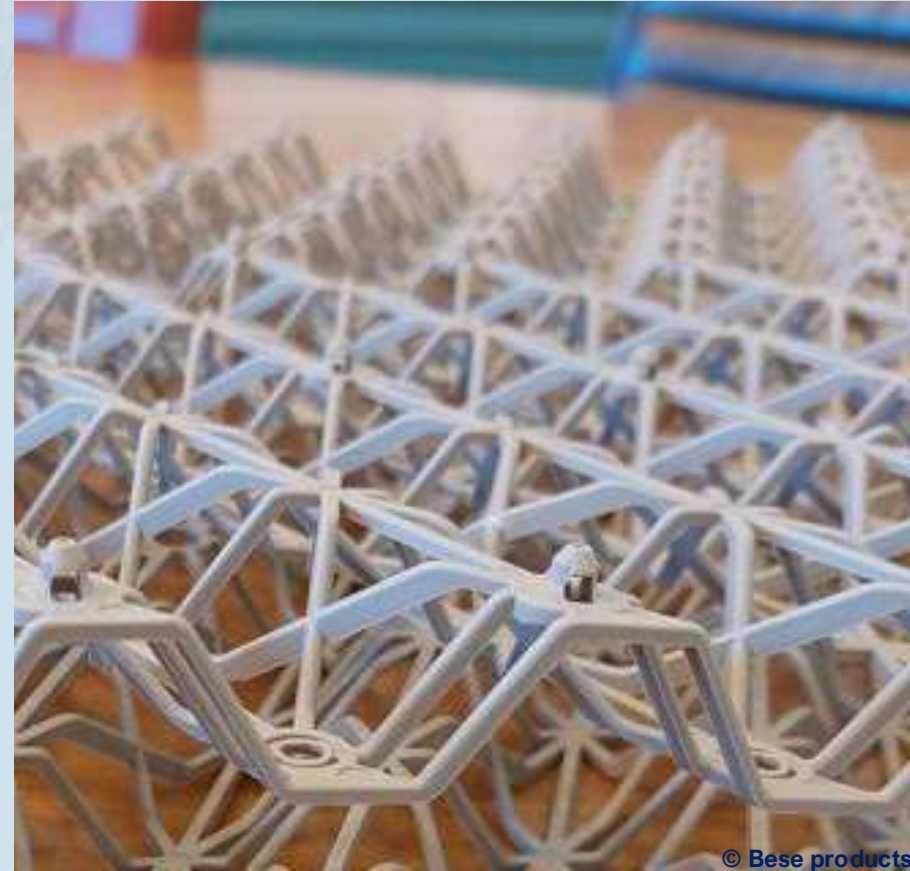


Wave orbital velocity



Parameter	Unit	<u>Anthorn</u>	<u>Cardurnock</u>	Campfield	Glasson	Burgh (middle)	Burgh (inner)	Rockcliffe
Rate of lateral change	[m/yr]	-0.14 ± 0.30	-0.40 ± 0.00	0.01 ± 0.05	1.09 ± 1.34	-0.92 ± 0.95	-0.21 ± 0.37	0.17 ± 2.70
Replicates	[n]	1	2	2	1	2	2	2
Survey period	[days]	49.02	49.02	24.51	49.02	49.02	49.02	24.55
Inundation frequency	[n/day]	1.53	0.59	1.31	1.20	1.31	0.41	0.45
Inundation duration	[%]	17.91	3.86 ± 0.42	10.43 ± 0.31	10.92	12.29 ± 0.04	2.35 ± 0.39	2.10 ± 0.72
Longest emersion period	[days]	4.7	9.8	8.8	7.7	7.7	13.4	10.6
Median current velocity	[m/s]	0.27	0.08 ± 0.08	0.09 ± 0.09	0.24	0.10 ± 0.11	0.06 ± 0.06	0.11 ± 0.12
Upper current velocity	[m/s]	0.58	0.42 ± 0.05	0.38 ± 0.05	0.49	0.22 ± 0.07	0.31 ± 0.01	0.45 ± 0.11
Median wave orbital velocity	[m/s]	0.08	0.06 ± 0.01	0.05 ± 0.01	0.04	0.03 ± 0.01	0.05 ± 0.01	0.07 ± 0.02
Upper wave orbital velocity	[m/s]	0.17	0.17 ± 0.01	0.23 ± 0.04	0.12	0.09 ± 0.00	0.13 ± 0.01	0.19 ± 0.07

BESE-elements® are made from a starch biopolymer derived from potato waste and are designed to reduce local currents and waves, provide stability, and create shelter for organisms.



© Bese products



Positionality

‘...where one is located in relation to their various social identities (gender, race, class, ethnicity, ability, geographical location etc.); the combination of these identities and their intersections shape how we understand and engage with the world’

(Alcoff, 1988)

Alcoff, Linda. Cultural Feminism Versus Post-Structuralism: The Identity Crisis in Feminist Theory. Signs: Journal of Women in Culture and Society Vol.13, no.3 (1988).

Post-political

‘Political contradictions are reduced to policy problems to be managed by experts and legitimated through participatory processes in which the scope of possible outcomes is narrowly defined in advance’

(Wilson & Swyngedouw, 2014)

Wilson, J. & Swyngedouw, E. (eds.) (2014). *The Post-Political and Its Discontents*. Edinburgh University Press.



Find out more:



Restoring Reefs, Engaging Communities: How Citizen Science is Supporting European Flat Oyster Restoration

A. Pilsbury, A. Inman, W. Sanderson, N. Kennon, C. Godfrey,
E. Cooper-Young, C. Walker, H. Bester, A. Hughes



Restoration Forth

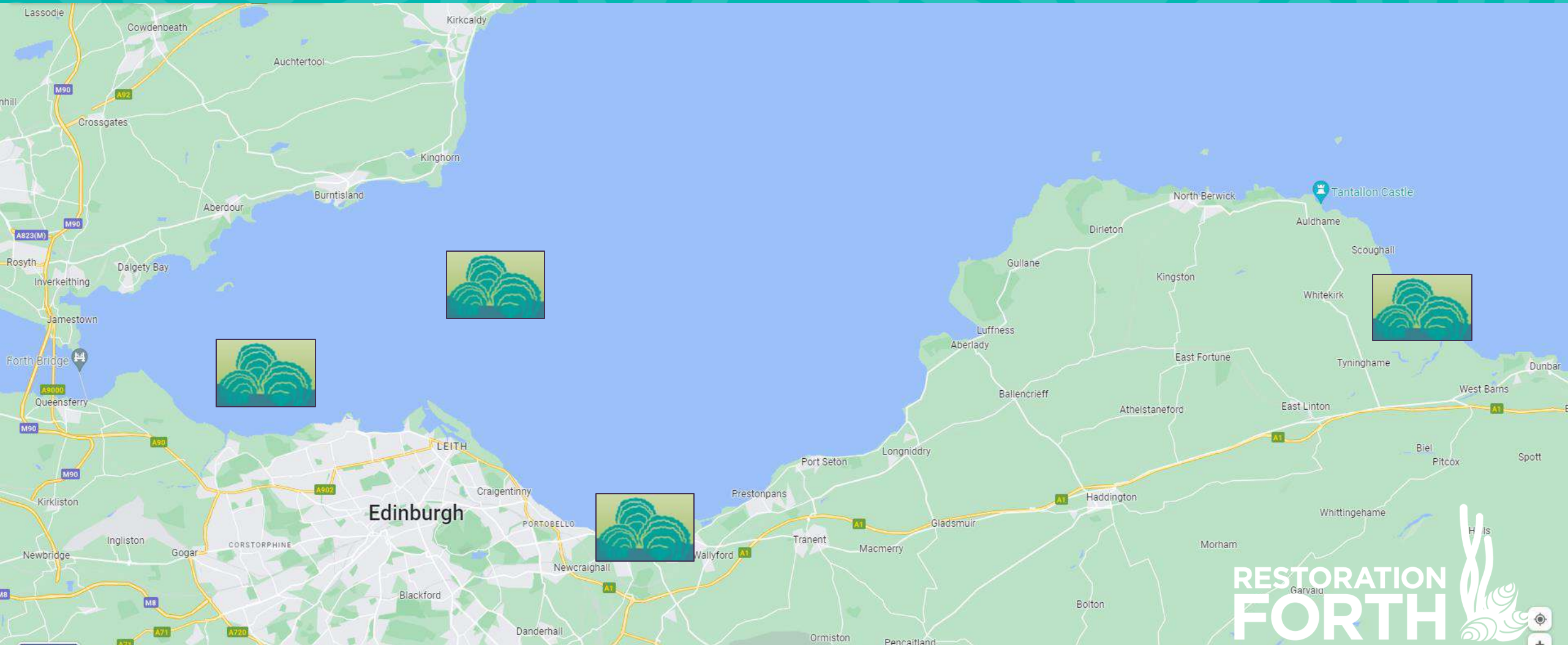
- Working with communities around the Firth of Forth, Scotland. Launched in 2022.
- The aim is to restore and enhance European flat oyster beds and seagrass meadows.



Partnership



Oyster restoration sites



Community involvement



Raising awareness: community briefed about the project through a range of events (festivals, lectures, stalls)



Training: new skills developed through biosecurity and deployments



Citizen science: new surveys developed – oyster observer, habitat assessment, biodiversity monitoring

Developing new citizen science activities for Restoration Forth

Valuable data to:

- Identify suitable oyster deployment sites
- Determine the impact that oysters have on biodiversity
- Designed a series of citizen science activities
- Held community focus groups to discuss ideas and gather feedback



Developing new citizen science activities for Restoration Forth






Community feedback:

- Most interest in ad hoc, staff-led events.
- Local concerns raised e.g. flooding/wildlife disturbance etc.
- Consensus that the community would like to prioritise data that can be used to influence policy and have the highest impact.

Oyster observer & habitat assessment



- Site selection – identify historic sites where oysters once thrived & identify areas of shell or gravel material
- Broad engagement potential and good accessibility
- Any beach, anywhere around the Firth of Forth coastline
- Option for self-led or learn skills at training events

OYSTER OBSERVER RECORDING FORM

About you and your location

Your postcode:

Your age:

Date of survey:

Time of survey:

Beach name:

Map co-ordinates or what3words of your location:

How would you describe the beach type in your survey? (please tick)


☐ Mostly mud
 ☐ Mostly sand
 ☐ Mostly gravel
 ☐ Mostly pebble

Shell recording

Keep a running tally (## II) as you survey and record the total

Shells to look for	tally	total
European flat oyster		
Pacific oyster		
Saddle oyster		
Horse mussel		

Thanks so much for taking part in an oyster observer survey! Your data helps us find the best places to restore oysters. Scan the QR code to submit your survey results:



Monitoring of intertidal oysters



- Measuring growth & survivability of intertidal oysters
- Monitoring biodiversity
- Led activities with project staff
- Some marine species ID required
- Locations limited – intertidal sites only

Results so

- **213 people** joined a citizen science train
- Confidence in ability to identify oysters was higher after training
- **385 people** conducted the different activities
- Participants recorded various suitable sites around the Firth of Forth
- One annual data review

Oyster Observer Guide

Finding European flat oyster shells on beaches can indicate where historical oyster beds once thrived and could identify suitable habitats for restoration efforts.

A huge **3910** shells were counted. 73% of those (2845 shells) were identified as European flat oysters, the species we're restoring to the Firth of Forth. The project team are now investigating what the shell locations tell us about historical oyster sites.

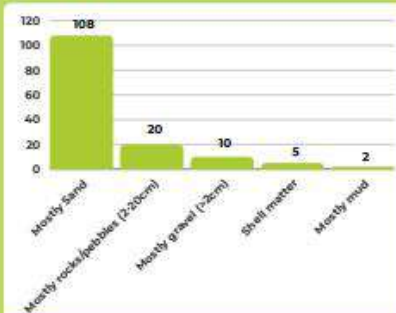
Shell fish species can be really difficult to tell apart, especially with older, worn shells. Based on your feedback, we're also working to improve our ID guides to support volunteers to identify them.



Habitat Assessments

Oysters prefer to settle on other shell material or gravel sea beds. Surveying beaches around the Firth and Forth can help identify areas with suitable sea bed types which might sustain oysters.

15 beaches which might offer suitable habitat types were identified.



Monitoring oysters

We deployed oysters at two sites close to shore. Volunteers monitored the oysters and recorded a summer survival rate of **85%**.



What happens to the data?

Project partners, Heriot Watt University, have been conducting in depth modelling of the Firth of Forth. They have been looking at different parameters like water temperature, seabed type, depth, currents and boat activity to map the most suitable sites to restore and sustain oysters. The data collected by the community can be added to the models and help build the map of suitable sites. This helps to make decisions on the best sites to return European flat oysters.



Results so far...



Next steps...

- Launch the new Restoration Forth monitoring guide
- Launch pre & post activity survey to gather feedback
- Deliver a variety of staff-led training events around the Forth
- Create & share annual data report with volunteers



Thank you for listening!

caitlin.godfrey@mcsuk.org





2021 United Nations Decade
2030 of Ocean Science
for Sustainable Development

COMMUNITY IDENTIFICATION OF CHALLENGES AND OPPORTUNITIES FOR MARINE RESTORATION AND ENHANCEMENT

Tanya Riley,
Rebecca Geisler,
Kathryn Allan,
Rachel Shucksmith

background

- Shaped by unique natural influences
 - Tidal systems
 - Seasonal variations
- Species
 - At the limits of their natural range
 - Stopping point for migratory species
 - Commercial and conservation important species and habitats
- Local livelihoods
 - Aquaculture
 - Fishing
 - Tourism



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The project

Community
Councils

Government
Agencies

Challenges &
Opportunities

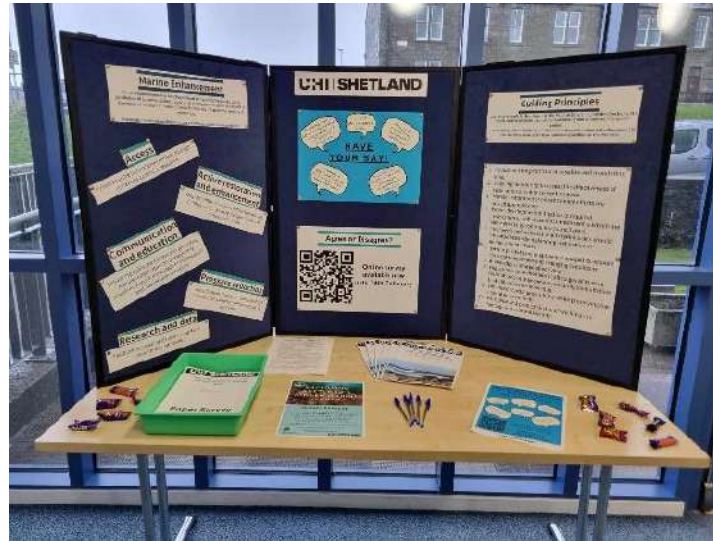
Agreeability

Environmental
NGOs

**434 people
engaged**

Marine Industry
Representatives

Members of
the Public



Key findings

- **Challenges and opportunities** identified
 - Measures spanned the **land, coast, and marine** environments
- Strong stakeholder agreement from early engagement on key issues:
 - **Marine litter** as a shared concern
 - **Need for baseline data** and ongoing **monitoring**
- Stakeholders recognised **both positive efforts** and **ongoing barriers**



Gathering Community Voices: Initial Findings on Marine Restoration Challenges and Opportunities in Shetland

Tanya G Riley, Rebecca J Giesler, Kathryn Allan & Rachel Shucksmith

2024



© Tanya Riley

Guiding Principles for Marine Restoration and Enhancement in the Shetland Islands: Insights from Community Feedback

Tanya G Riley, Rebecca J Giesler, Kathryn Allan & Rachel Shucksmith

2025

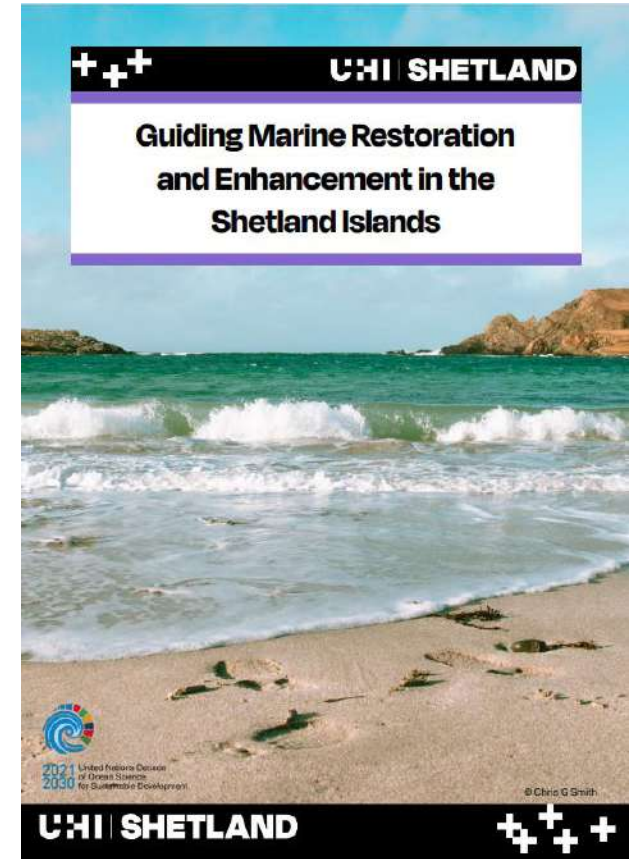


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Guiding Marine Restoration and Enhancement in the Shetland Islands



2021-2030 United Nations Decade
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for Sustainable Development



What did we do with the information



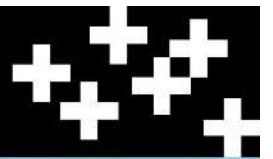
Guiding principles

Codeveloped with the
Shetland community



2021 United Nations Decade
of Ocean Science
2030 for Sustainable Development

Guiding Principles for Marine Restoration and Enhancement



Marine restoration and enhancement initiatives in the Shetland Islands should:

1. Be appropriate to Shetland's unique marine environment.
2. Recognise the value of local knowledge and robust long-term data gathering to understand natural and anthropogenic change.
3. Recognise and safeguard Shetland's rich marine cultural heritage and identity.
4. Consider the current and future needs of other marine users and activity.
5. Consider how scale and location affect the delivery of meaningful action.
6. Consider opportunities for coordinated and innovative action.
7. Engage local stakeholders at all stages through planning, delivery and monitoring.
8. Be adaptively managed to account for changing conditions.
9. Include ongoing monitoring to assess long-term effectiveness.
10. Ensure data, knowledge and learning are effectively shared and publicly available.
11. Where development mitigation is required, consider opportunities for investment close to the area of impact.

© Chris G Smith



2021 United Nations Decade
of Ocean Science
2030 for Sustainable Development



Scottish Government
Riaghaltas na h-Alba

UHI SHETLAND

Potential opportunities for action



Access



Active Restoration



Communication, Education and Awareness



Pressure Management




Research, Knowledge and Innovation



2021 United Nations Decade
of Ocean Science
2030 for Sustainable Development

24 Guiding Marine Restoration and Enhancement in the Shetland Islands



Research, Innovation and Knowledge

Tanya Riley © Shetland UHI



Shetland Surveys

A variety of marine surveys are conducted in Shetland to monitor and assess its diverse ecosystems. These surveys have been conducted across varying timeframes, from annual or biennial studies, to more frequent monitoring that may occur almost daily.

These efforts involve contributions from UHI Shetland, the Shetland Oil Terminal Environmental Advisory Group, Shetland Amenity Trust, Shorewatch (Whale and Dolphin Conservation), RSPB, NatureScot and citizen science initiatives. The surveys focus on a range of species and habitats including; cetaceans, seabirds, seals, fisheries, invasive non-native species monitoring, and rocky shore ecosystems.

These efforts have, and continue to support, the sustainable management of Shetland's seas.

Baseline data, continuous monitoring, and innovative solutions are key to ensuring Shetland's marine restoration and enhancement initiatives are effective, enabling informed decision-making and management strategies.

Long-term data collection across multiple years and seasons is key for understanding natural variability, tracking trends, and assessing the health of marine species and habitats in Shetland's ecosystems.

This foundation of robust data can enable the identification of key areas where intervention may be needed, ensuring that restoration and enhancement initiatives are targeted and effective.



Tanya Riley © Shetland UHI

UHI SHETLAND

UHI | SHETLAND

Local case studies

- Shetlands Lost Seagrass
- Hermaness Boardwalk
- SSMO Closed Areas
- Loch of Strom Clearance
- Minis

- Noss Predator Management
- Fishing For Litter
- Da Voar Redd Up
- Shetland Surveys
- INNS Monitoring

CASE STUDY

Clearance at the Loch of Strom

Project Lead: Seafood Shetland
Funding: Supported by Seafood Shetland and Salmon Scotland.
Aim:
 • Remove long-redundant aquaculture equipment from the Loch of Strom

West Side Clearance
 In 2016, Seafood Shetland and Shetland Aquaculture recognised the need to clear redundant aquaculture equipment from the west side of the Loch of Strom, located in the Walsdale area of Shetland.

The plan followed a structured approach:
 1. Identify the equipment and its location.
 2. Engage suitable machinery and machinery.
 3. Organise collection, uplift, and appropriate disposal.

Harmer and Morrisons Limited, a local contractor, was appointed to carry out the clearance. Their work successfully restored the area to a clean and orderly condition.

East Side Clearance
 Additional equipment still remained on the loch's east side posing a greater logistical challenge due to limited access, requiring equipment to be floated down the loch to an accessible removal point on the west side. Progress on this phase was delayed by the Covid-19 pandemic, but with support from Salmon Scotland, a contract was awarded to Malakoff in mid-2022 to complete the removal and disposal. Work was completed in October 2023.

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CASE STUDY

Searching for Shetland's Lost Seagrass

Project Lead: UHI Shetland
Funding: Scottish Marine Environment Enhancement Fund (SMEEF) and Nature Restoration Fund
Aim:
 • Investigate the baseline distribution of seagrass in Shetland
 • Understand the potential for seagrass restoration in Shetland

Background
 Seagrass is the only aquatic flowering plant species, found in shallow soft and sandy sediments in coastal areas worldwide. In Shetland, seagrass (known as marle or marlo in Shetland dialect), used to be found in sheltered, shallow areas across the west Mainland where it was protected from the full force of the Atlantic waves. These seagrass beds are an important and diverse habitat, which help stabilise sediment, sequester carbon and provide habitat for juvenile fish. Unfortunately, most of the beds which were present in the early 1900s are now thought to have been lost from Shetland. The last surveys were conducted in the early 1990s so accurate data on the distribution of seagrass is needed to protect this important habitat and assess options for future enhancement and restoration.

Approach
 Researchers at UHI Shetland collated information on historic records of seagrass around Shetland from research reports and published texts. The areas identified were then surveyed using UAVs (drones) to take aerial photographs and look for the presence of subtidal *Zostera marina* beds. Members of the community aided in confirming the size and location of suspected seagrass beds by snorkelling, paddleboarding and swimming.

Outcome
 The project identified that seagrass beds have been lost from many of the areas with historic records. Remaining beds are now only found in two areas, Whiteness Voe (14 beds) and Walsdale Voe (1 bed). The total area covered by *Zostera marina* beds is 1.62 hectares, a small fraction of the historic coverage in Shetland.

The findings have led to a new UHI Shetland project, [Seagrass Meadows Made Manifest](#), funded by SMEEF as part of the Seagrass Meadows Scotland program, which aims to plant 1.2 ha of seagrass. The project will trial transplantation of seagrass shoots and work with volunteers and local organisations to increase the abundance of seagrass habitats, monitor the condition of existing beds, and raise awareness of this vital ecosystem.

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CASE STUDY

SSMO closed areas

Project Partners: Shetland Shellfish Management Organisation (SSMO) and UHI Shetland (formerly NAFC Marine Centre UHI)
Aim:
 • Protect sensitive inshore seabed habitats from damage by mechanical dredging by scallop fishing boats

The SSMO closed areas are widely distributed around Shetland, stretching from Uist in the north to Mousa in the south. The SSMO worked closely with local inshore fishermen and UHI marine scientists at UHI Shetland to identify and protect areas of seabed which supported sensitive species and habitats. The key protected species are horse mussel beds, seagrass meadows and maerl beds, all of which are sensitive to disturbance and increasingly recognised as important sources of carbon capture. These habitats also act as nursery grounds for fish and shellfish and help stabilise soft seabed sediments.

Approach
 This is an example of fishermen, scientists and managers in Shetland working together proactively for the benefit of a healthy and diverse marine environment. The areas were initially closed voluntarily to scallop dredging in 2011 prior to being surveyed by UHI marine scientists. This involved multi-beam acoustic surveys and use of drop-down camera equipment to verify the spatial extent and abundance of the habitats. Once the data were processed, the SSMO was able to refine the areas, then use its shellfish management powers delegated from the Scottish government to implement a formal ban on dredge fishing. Further surveys have taken place since 2011 when new reports of maerl and horse mussel beds have emerged, and these have been surveyed by UHI Shetland, and subsequently protected by the SSMO.

Outcome
 As of 2023 a total of 26 closed areas were identified covering 28 km² of inshore seabed. These closed areas sit among other statutory marine planning protections within the Shetland Islands Regional Marine Plan, helping safeguard against the full range of developments or activities. They are an extra layer of habitat protection for Shetland not widely replicated elsewhere in Scotland.

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CASE STUDY

Hermaness Boardwalk

Project Lead: NatureScot
Project Partners: Visit Scotland & Shetland Islands Council
Funding: Natural and Cultural Heritage Fund, Rural Tourism Infrastructure Fund, and NatureScot
Aims:
 • Protect sensitive peatland habitat from further erosion
 • Protect nesting seabirds by re-routing visitors away from sensitive areas
 • Enhance the visitor experience through new infrastructure, and increase awareness and understanding of the natural and cultural heritage

Background
 Hermaness National Nature Reserve is located at the northern tip of Uist. The reserve is known for its spectacular cliff scenery, internationally important seabird populations, and rich cultural heritage.

Increasing visitor numbers were causing erosion to the fragile peatland habitat and potential disturbance to nesting birds, which led to NatureScot (site manager) closing the path to the historic Muckle Flugga lighthouse signalling station.

Approach
 After a meeting with stakeholders, including NatureScot, Burnish Common Grazings Committee, Shetland Islands Council Access Officer, and Shetland Amenity Trust Peatland Action Officer it was identified that the installation of an upgraded boardwalk would be the ideal solution. The project utilised a recycled plastic boardwalk, offering a low maintenance, non-slip, long-lasting and recyclable solution suited to the boggy environment.

The project also included additional improvements: an information shelter for visitors, toilets and improved parking at the reserve entrance, enhanced trail signage to provide clear guidance for visitors.

Outcome
 The project was completed successfully with nearly 3km of new boardwalk installed. The path to Muckle Flugga lighthouse was reopened, allowing visitors to enjoy a circular route around the reserve while protecting the peatland and bird nest sites. The new interpretation and signage have also enhanced the visitor experience and provided opportunities to demonstrate the threats to marine ecosystems, such as climate change.

Since its opening in May 2022, the new facilities have attracted record numbers of visitors and ensuring the long-term preservation of the reserve's sensitive habitats and wildlife.

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Diving deeper: what comes next?

- Integrate with the implementation phase of Shetland Islands Regional Marine Plan
- Support sustainable development
- Further Publications
 - Policy brief on the local implementation of national objectives
 - **Riley, T. G.** & Shucksmith, R. Bridging the Gap: Coastal Governance and Marine Restoration Across the Land-Sea Interface. (*In Prep*)



Thanks for listening

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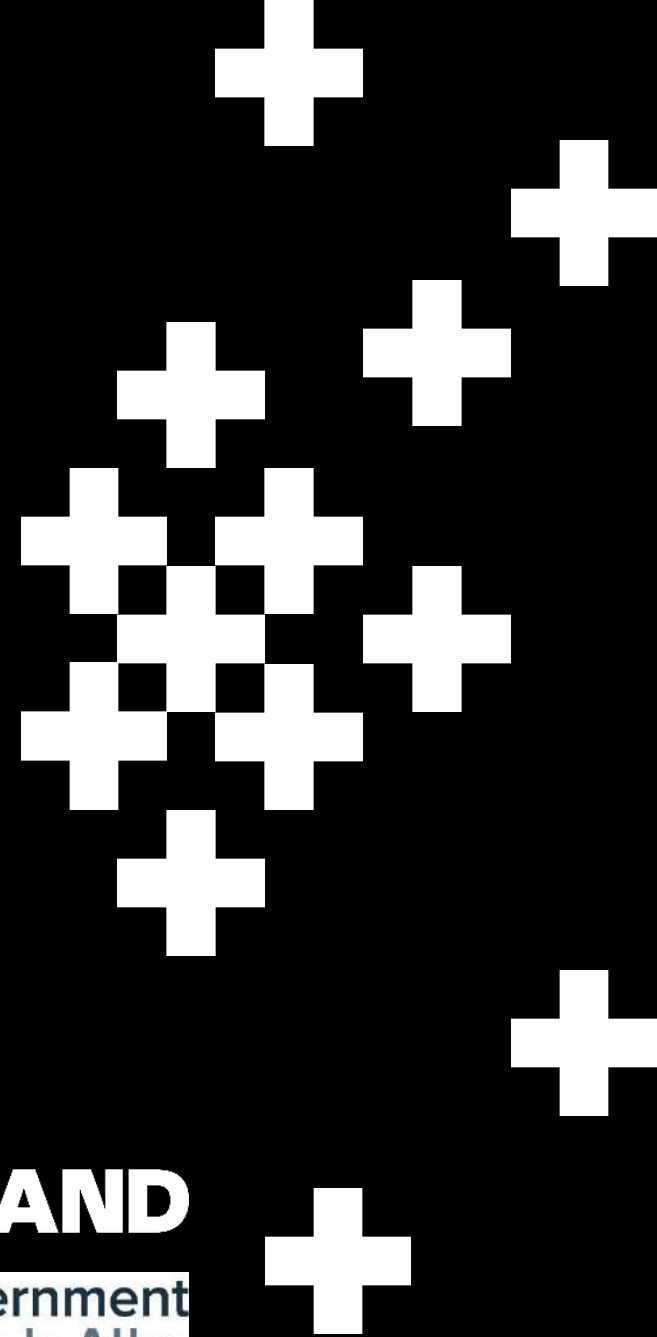


2021 United Nations Decade
2030 of Ocean Science
for Sustainable Development

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Scottish Government
Riaghaltas na h-Alba



IT'S NOT TOO LATE,
TOO HARD, OR TOO
EXPENSIVE TO
TURN THE TIDE
FOR THE OCEAN



Kat Bruce
Sea Change
Skipper



Aoife Luscombe
Sea Change
First Mate

Adventure + Science + Storytelling





Dr Kat Bruce



Founder of NatureMetrics
& specialist in eDNA
monitoring

Aoife Luscombe



Net Zero Consultant
at Accenture

Chrissy Durkin



Founder of WildMon, and
a specialist in acoustic
monitoring

Madeline Craig



Ecologist &
environmental
communications expert

Jessica McIver



Cultural Heritage
consultant at ERM
London

Lorena Nichols



Finance & ESG
professional



Solar
panels

Science
Equipment



Jess, Chrissy & Lorena
+
Water maker

3 rowing
seats

Kat, Aoife & Madeline
+
Nav, comms & safety kit,



Microplastics



Underwater sound



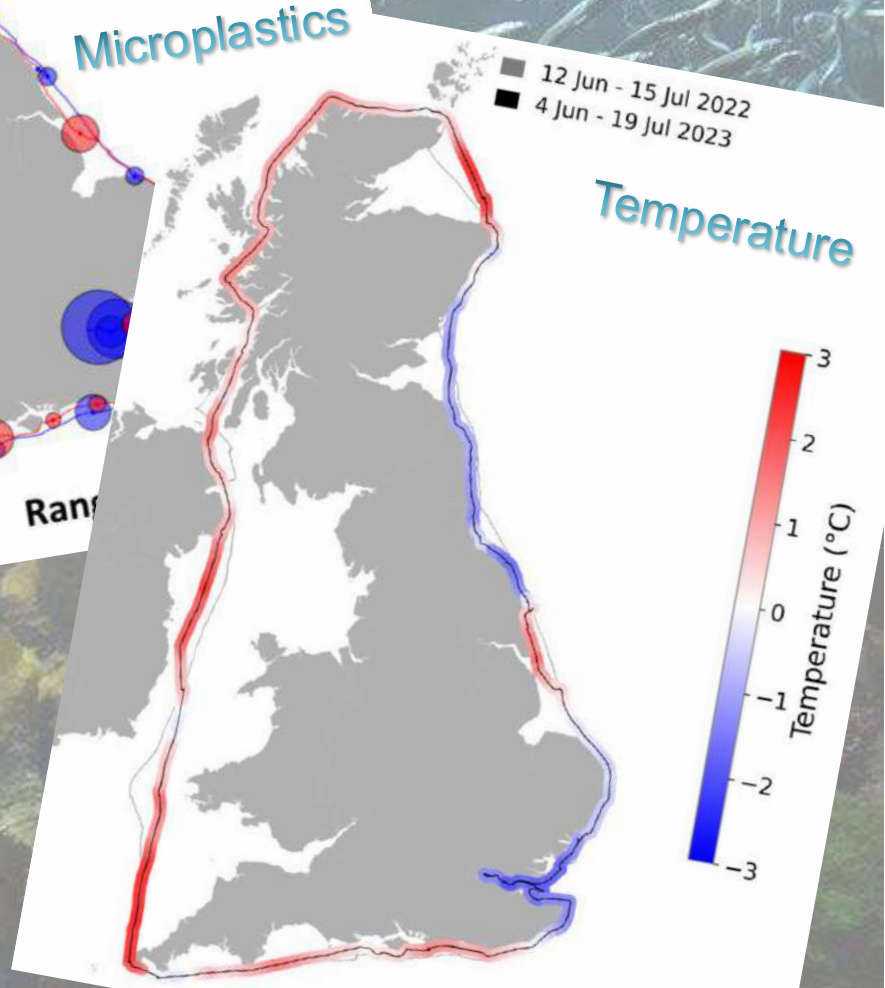
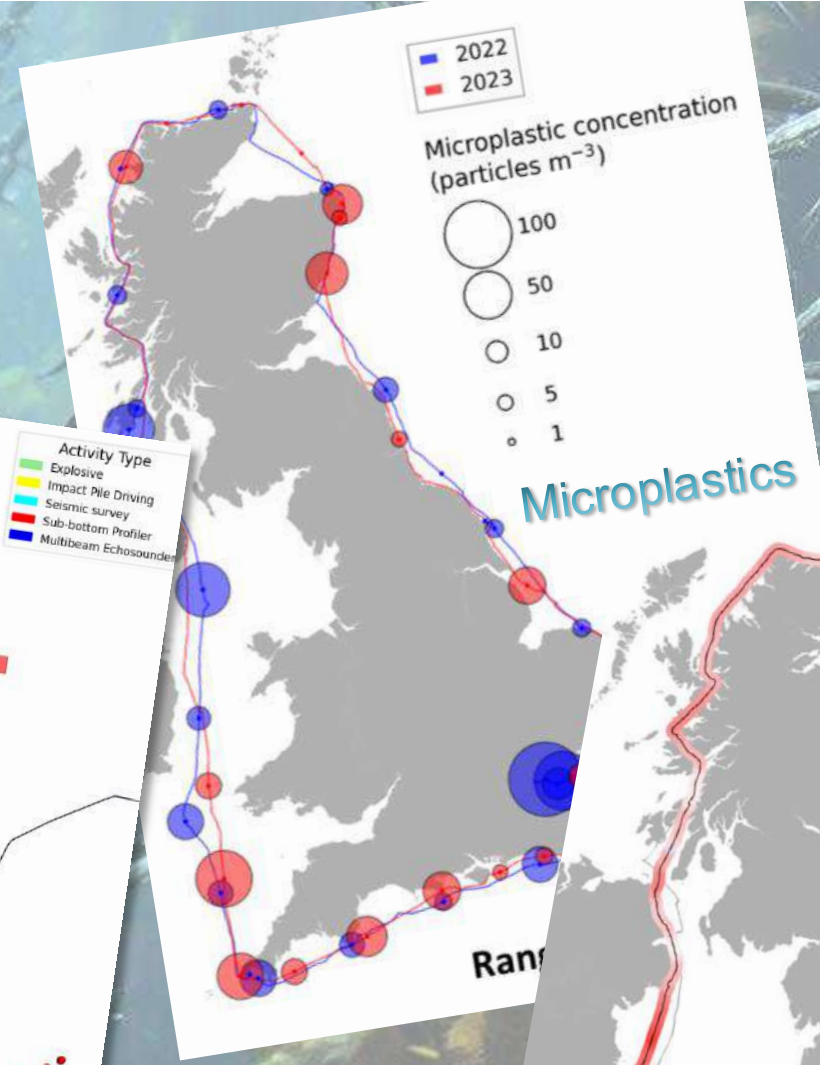
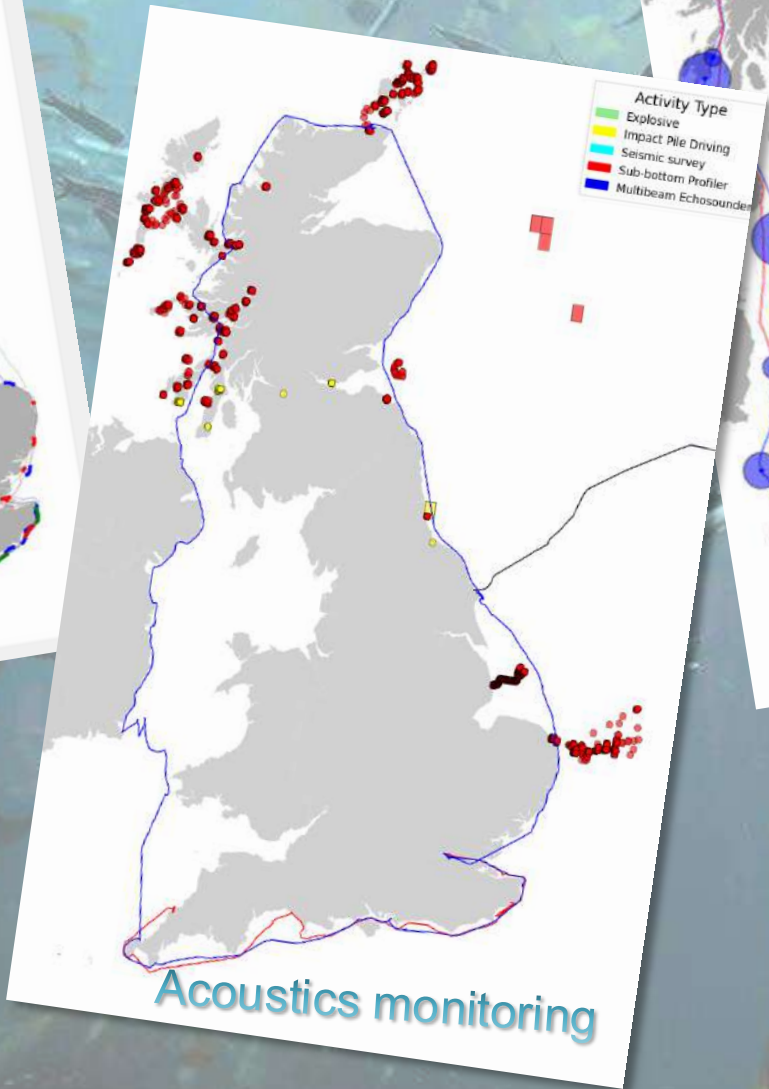
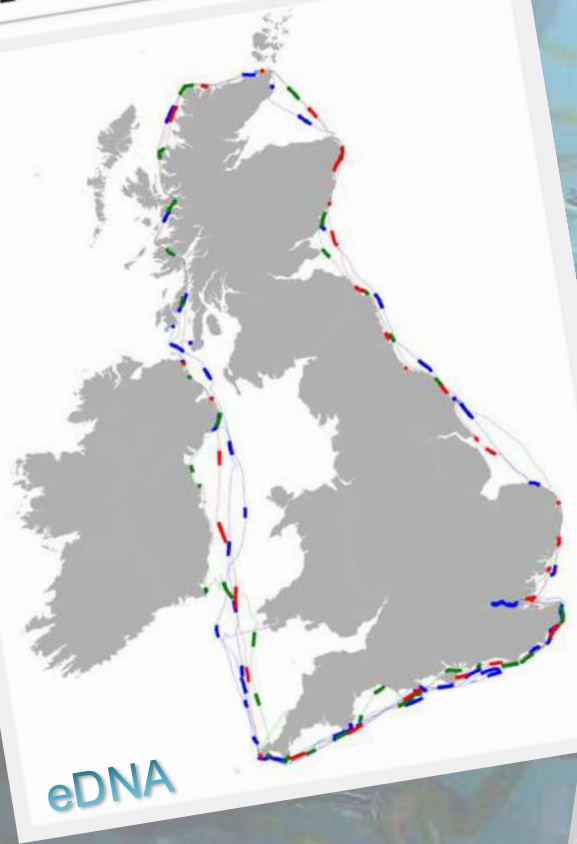
Environmental (e)DNA

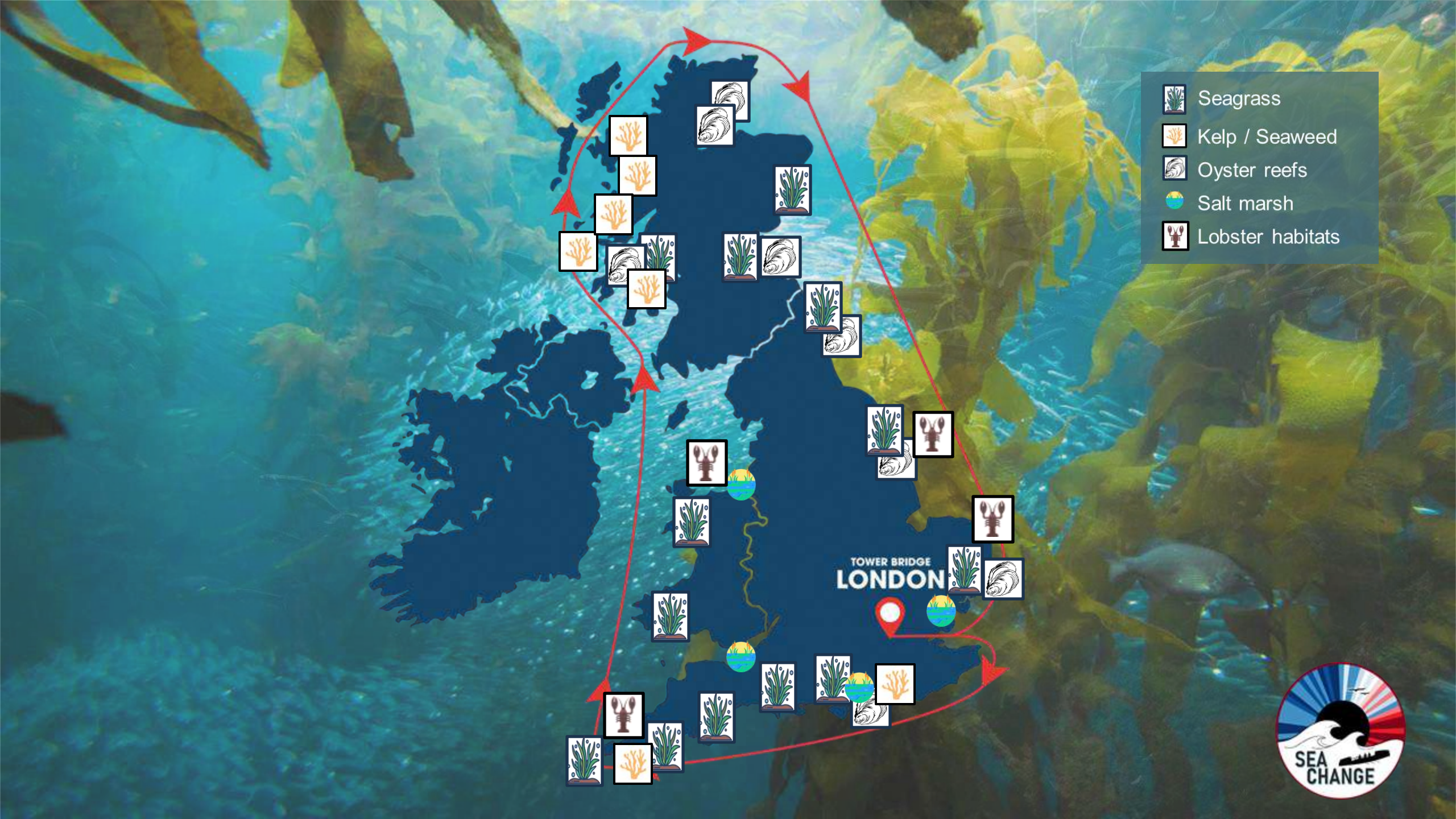


Sea Surface Temp



- 2022 (3 teams, 56 samples)
- 2023 (1 team, 31 samples)
- 2024 (2 teams, 36 samples)





-  Seagrass
-  Kelp / Seaweed
-  Oyster reefs
-  Salt marsh
-  Lobster habitats





Hebridean
Whale &
Dolphin
Trust



Communities at the heart
and the head.

Empower communities to design
their own solutions, with financial
support that recognises the services
they are delivering.

Focus on co- benefits

Eco Systems can recover!

Embracing different types of
knowledge in science
And
recognising the value in
'indigenous' understanding. Is
key to making positive change.

Shifting baselines is a
significant problem

The need for monitoring
tools

