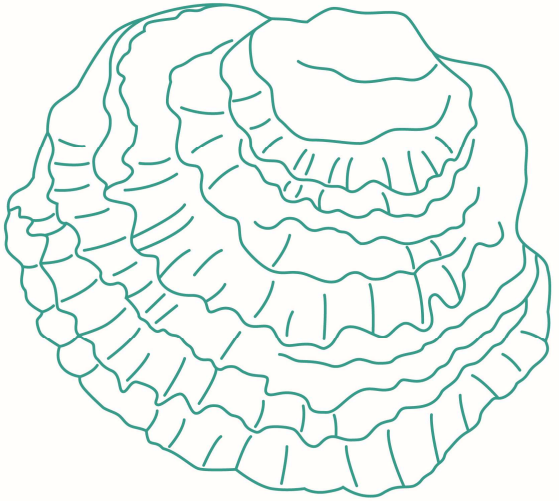
Lessons Learned in Building a Successful Native Oyster Restoration Alliance.

Alison Debney, ZSL

with contributions from Stefano Carboni, Hein Sas, Andreas Essenberger, Katrin Wollny-Goerke, Celine Gamble

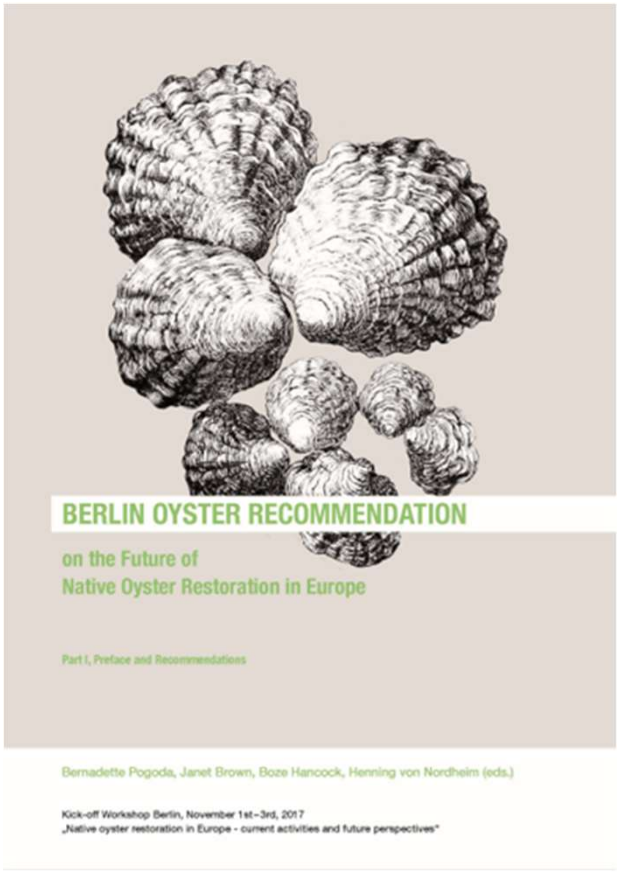


NATIVE
OYSTER
NETWORK

UK & IRELAND

Lesson 1: Create a shared vision/purpose

NORA 5 Interview – NORA

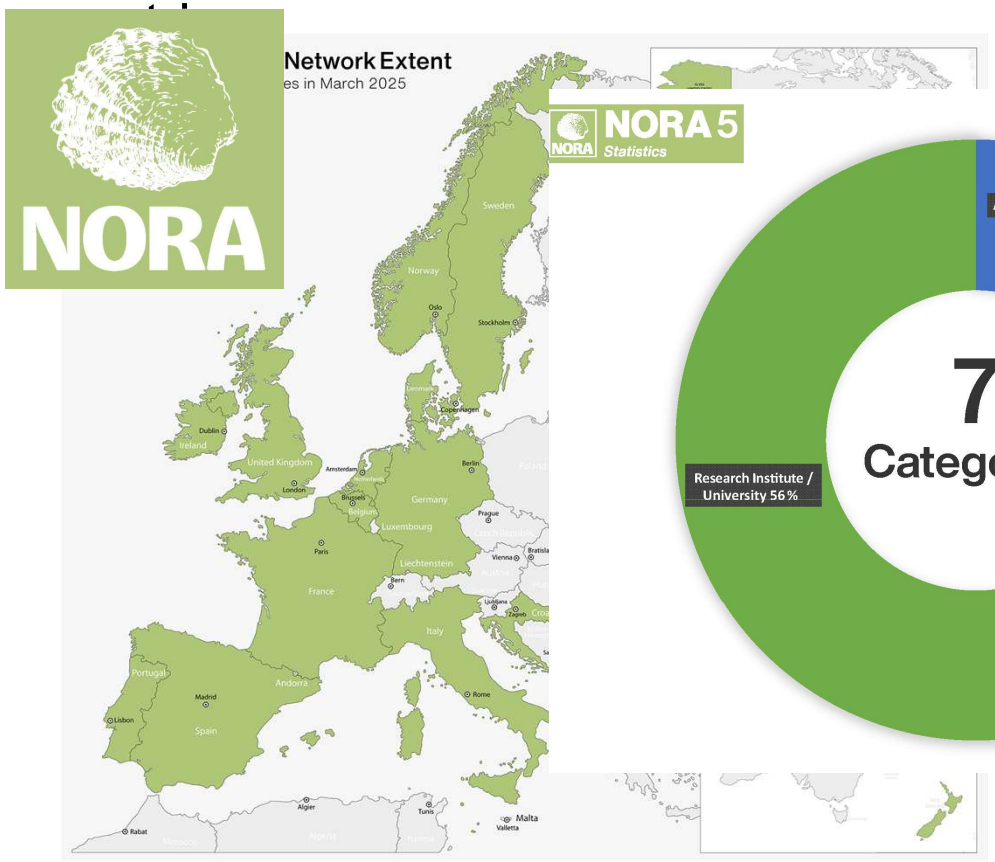


NORA will facilitate large scale restoration of flat oyster *Ostrea edulis* reefs in European marine waters by:

- supporting the protection and ecological restoration of the native European oyster, *Ostrea edulis*, and its habitat in areas of its current or historical distribution.
- overcoming existing barriers to the conservation, restoration and recovery of the European oyster by providing a platform for the NORA community to collaborate and participate in knowledge exchange.
- seeking to support responsible restoration practice, in compliance with biosecurity and sustainability.

We are greater than the sum of our parts

NORA = 500 members - 44 projects - 17

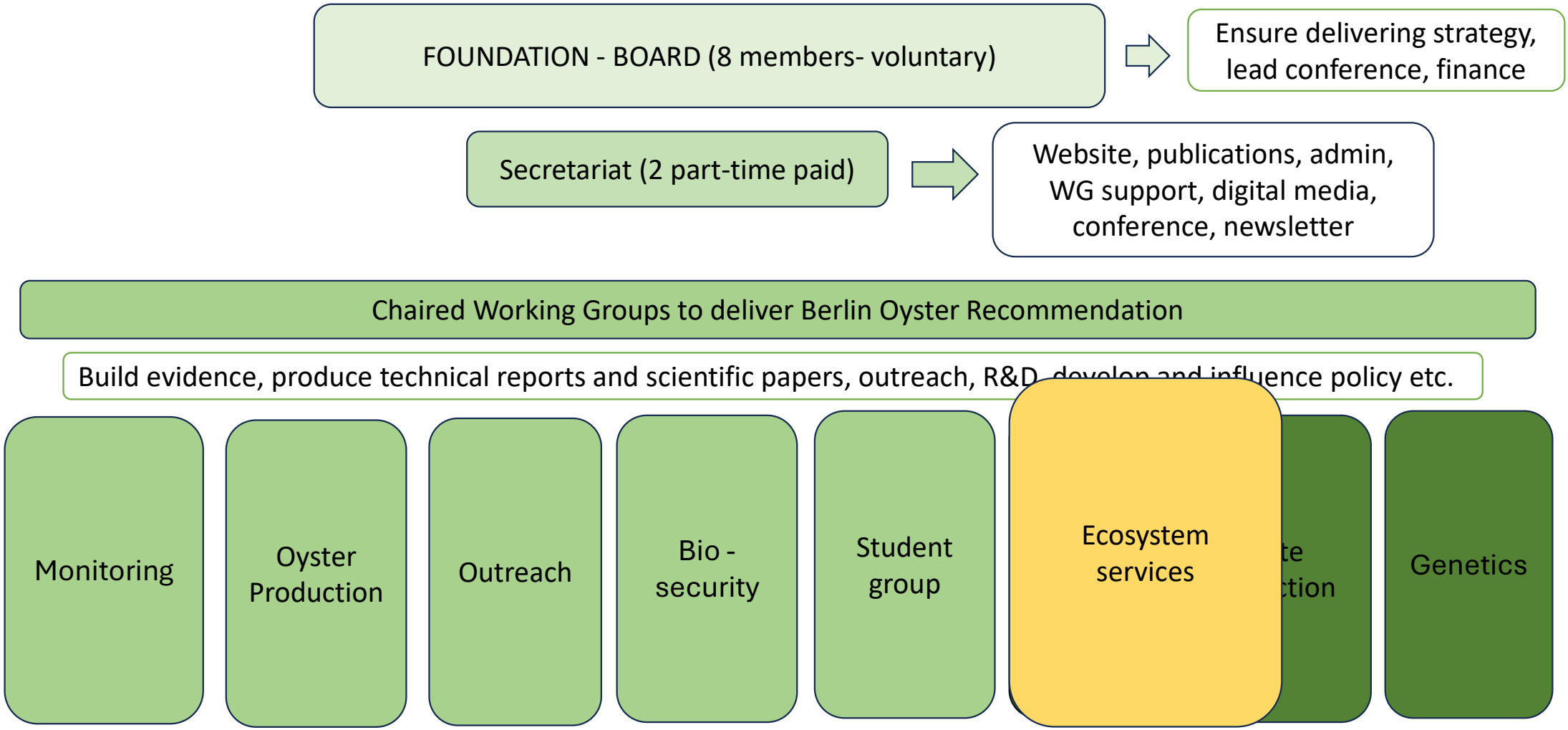


UK and Ireland native oyster restoration projects

Present day

1) DEEP
2) ENORI
3) The Solent Oyster Restoration Project
4) Galway Bay Oyster Restoration
5) Seawilding (previously Loch Craignish Native Oyster Restoration)
6) The Wales Native Oyster Restoration Project
7) Wild Oysters: Conwy Bay
8) Wild Oysters: Tyne and Wear
9) Wilder Humber
10) Saving Ester, Fal Fishery Cooperative CIC
11) NONI, Ulster Wildlife Trust
12) Fish for Tees
13) Restoration Forth
14) NORRI Project
15) Kilchoan Native Oyster Restoration Project
16) Oisre Conamara
17) Restoring the Thamescape
18) Restoring Helford's Native Oysters

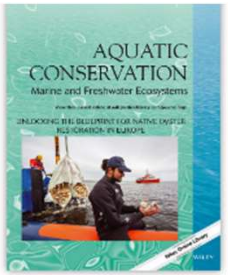
Lesson 2: Build a structure that works to fill purpose



Lesson 3: Identify knowledge gaps & barriers

but recognise that we don't know everything we need to do at the outset and we may do things in a non-linear fashion

Aquatic Conservation:
Marine and Freshwater Ecosystems



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SPECIAL ISSUE ARTICLE | Open Access

Forty questions of importance to the policy and practice of native oyster reef restoration in Europe

Philine S. E. zu Ermgassen, Kruno Bonačić, Pierre Boudry, Cass A. Bromley, Tom C. Cameron, Bérenger Colsoul, Joop W. P. Coolen, Anamarija Frankić, Boze Hancock ... See all authors

First published: 12 November 2020 | https://doi.org/10.1002/aqc.3462 | Citations: 23

71 people were consulted across 28 institutions and 11 European countries to generate 194 questions followed by a 1-day online workshop and 2 post-workshop rounds of voting resulted in the final 40 questions.

Lesson 4: Keep testing what you think you know

Table 1.1: Oyster habitat definition and description (modified from Pouvreau et al. 2021b).

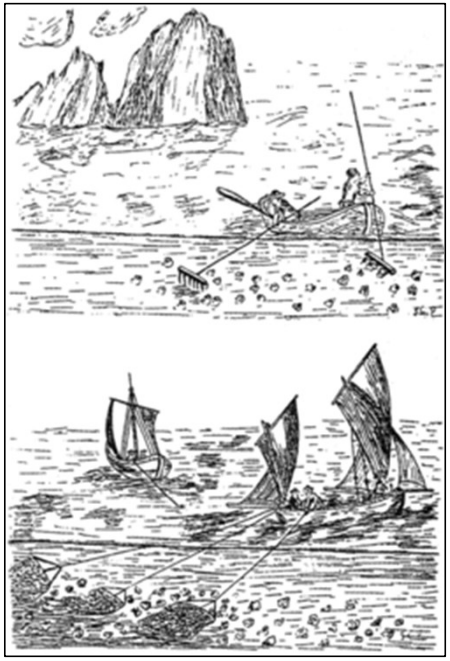
Criteria	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4
Oyster habitat descriptor	Mixed sediments	Mixed sediments featuring oysters	Functioning oyster habitat reefs and beds		
Example					
Max density	0-1 ind/m²	1 to 5 ind/m²	5 to 10 ind/m²	10 to 20 ind/m²	> 20 ind/m²
Aggregation	None	Single/pair	Several individuals	Many individuals	Maximal
Size spectrum	1 cohort	1 or 2 cohorts	Several cohorts	Several cohorts	Many cohorts
Recruitment	< 0.1 ind/cm²	< 1 ind/cm²	< 10 ind/cm²	< 100 ind/cm²	> 100 ind/cm²
Oyster composition	Rolling - Buried	Fixed - Emerging	Small clusters	Big clusters	Biogenic reef structure
Habitat resilience	Minimal	Minimal	Low	Medium	High
Biodiversity	Low	Low	Medium	High	Very high
SER label	★	★★	★★★	★★★★	★★★★★

@Stephan Pouvreau

Looking back to go forward

"…yet all this time there have been **extensive tracts** of oyster grounds existing in the North Sea but **known only to a few fishermen comparatively**. This bed or ground is of enormous dimensions compared with other oyster grounds; its length Easterly and Westerly is nearly **200 miles**, and varying in breadth from **30 to 70 miles**…" (1885[86])

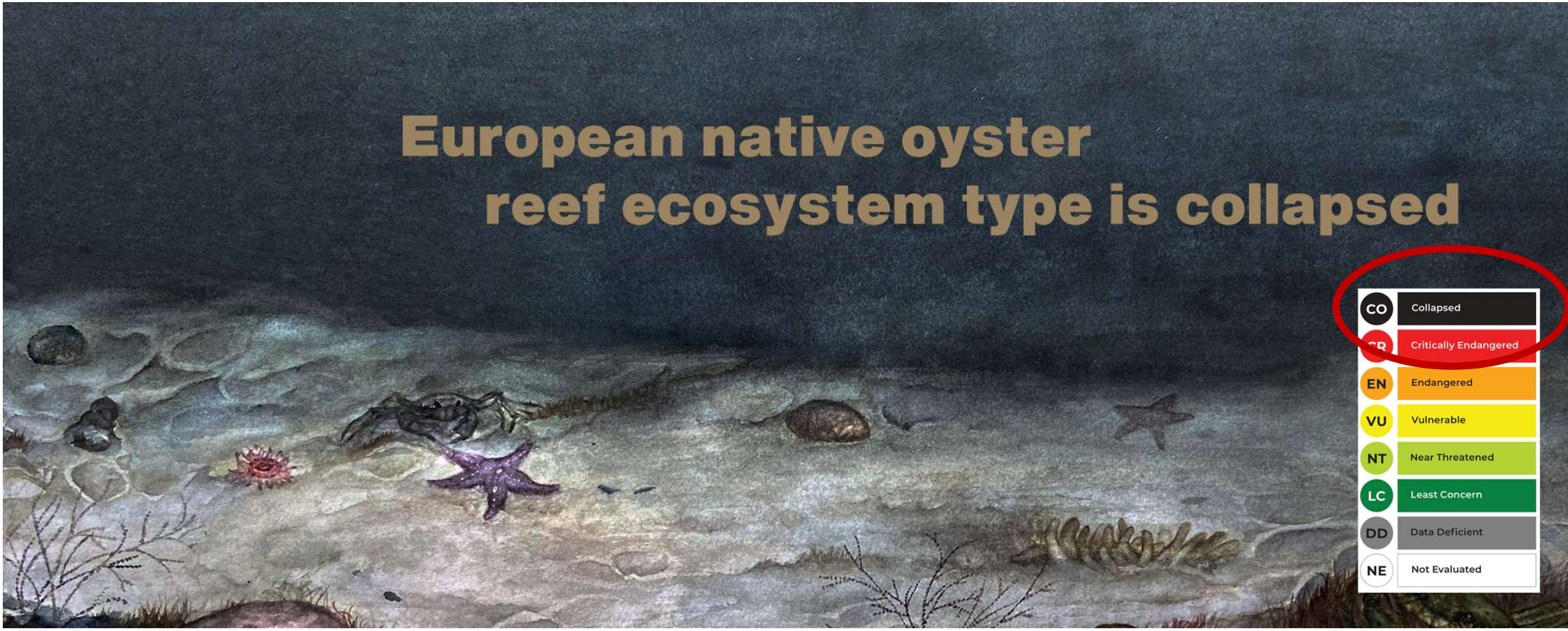
"**New oyster ground** lately discovered in the British Channel; **lies off Guernsey and Jersey**; **extends 40 miles in length and 9 miles in breadth**." (1891[81], quoting a description published in 1849)



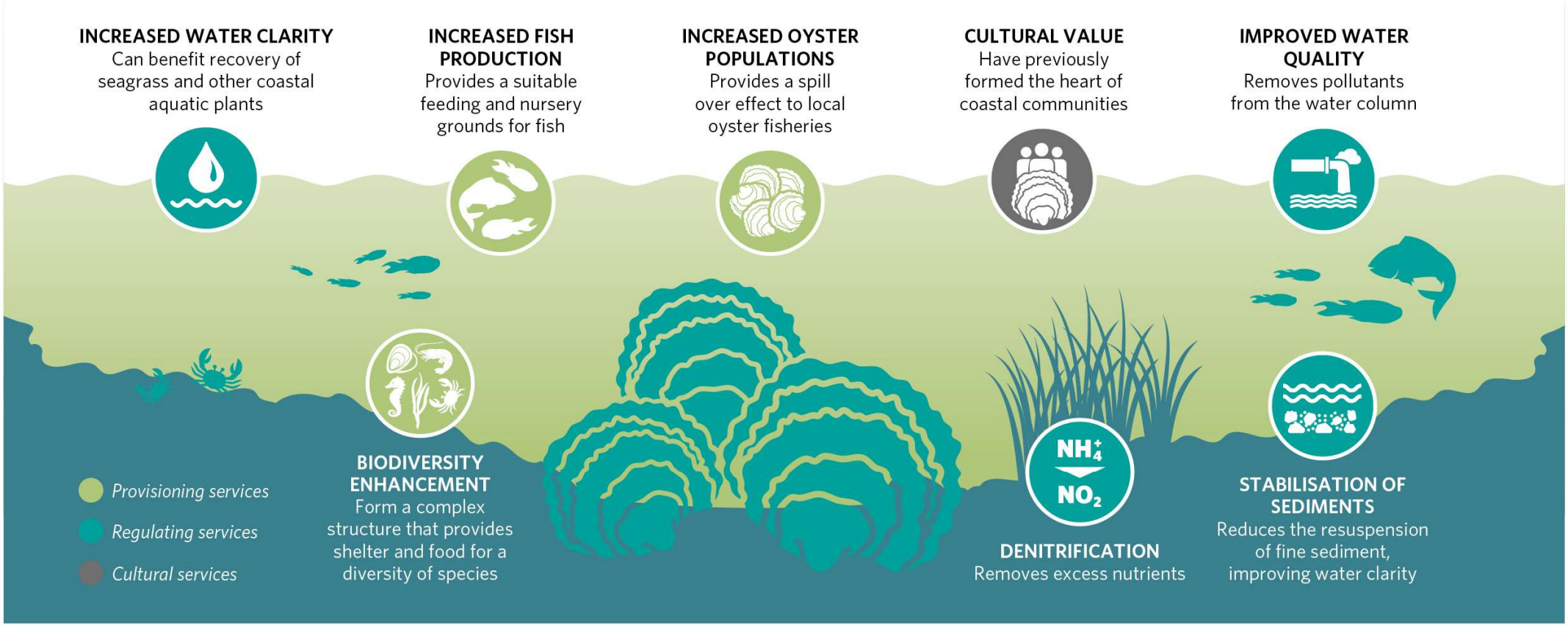
Known reef presence totalled 1,758,077 ha = 167 x Paris

A total of 190 species associated with oyster reef habitats were recorded across 13 phyla, representing 7 trophic guilds

Ostrea edulis Ecosystem Red List Assessment

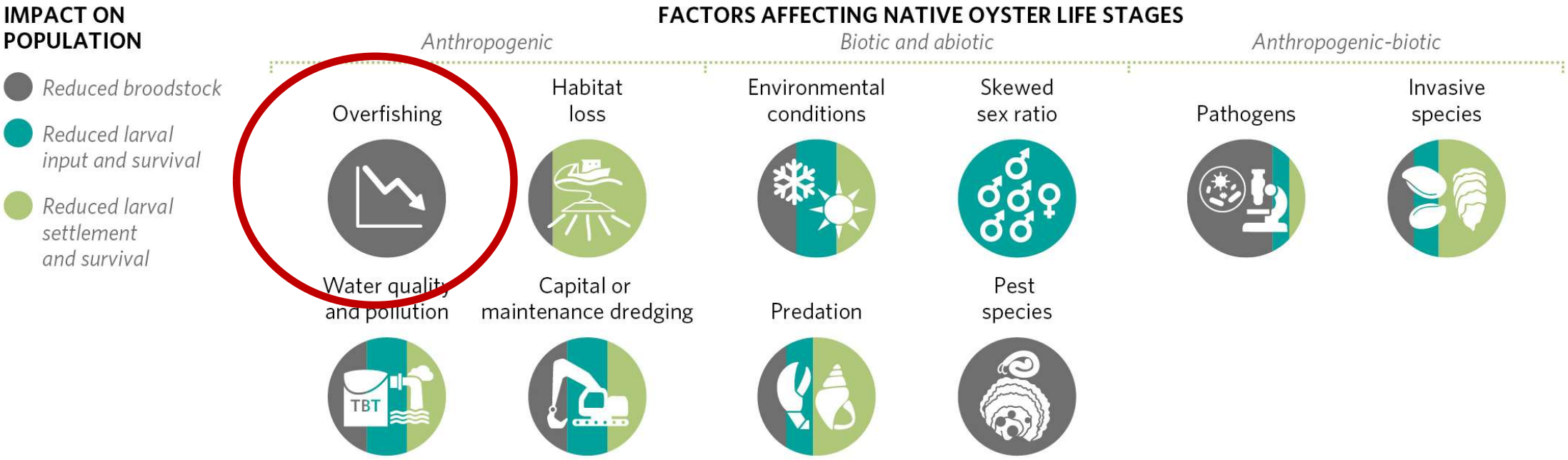


Ecosystem service provision & connectivity



Lesson 5: Co-create solutions to challenges

DRIVERS OF NATIVE OYSTER DECLINE



Advancing restoration knowledge

NATIVE OYSTER NETWORK

NORA

WHAT RESTORATION PRACTITIONERS NEED TO KNOW ABOUT THE OYSTER PRODUCTION INDUSTRY

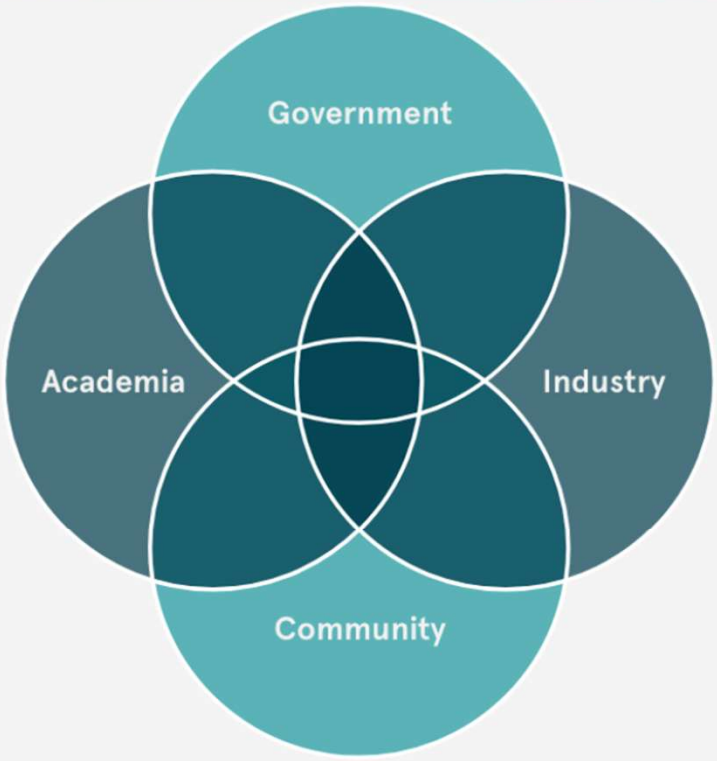
The recent increase in conservation and restoration activities of the European flat o
increased demand for seed oysters. The current supply of native oyster seed is insu
between oyster production and restoration funding combined with the specific oyst
make it challenging and risky for native oyster producers to simply respond to this p
document was compiled by oyster seed producers and academic partners working
inform restoration practitioners seeking to work with oyster growers on relevant iss
a clear understanding of prerequisites for future work together. Oyster seed can be
from sea-based collectors, in a spatting pond, or in a hatchery (Figure 1). Each techi
drawbacks, which should be considered when selecting which supplier to partner w

SEA-BASED COLLECTORS

Sea-based collectors rely on natural spat settlement.

POND-BASE

Pond-based produ



Source: GRRIP Project (2020)[8]

WHAT OYSTER PRODUCERS NEED TO KNOW ABOUT AT RESTORATION

NORA

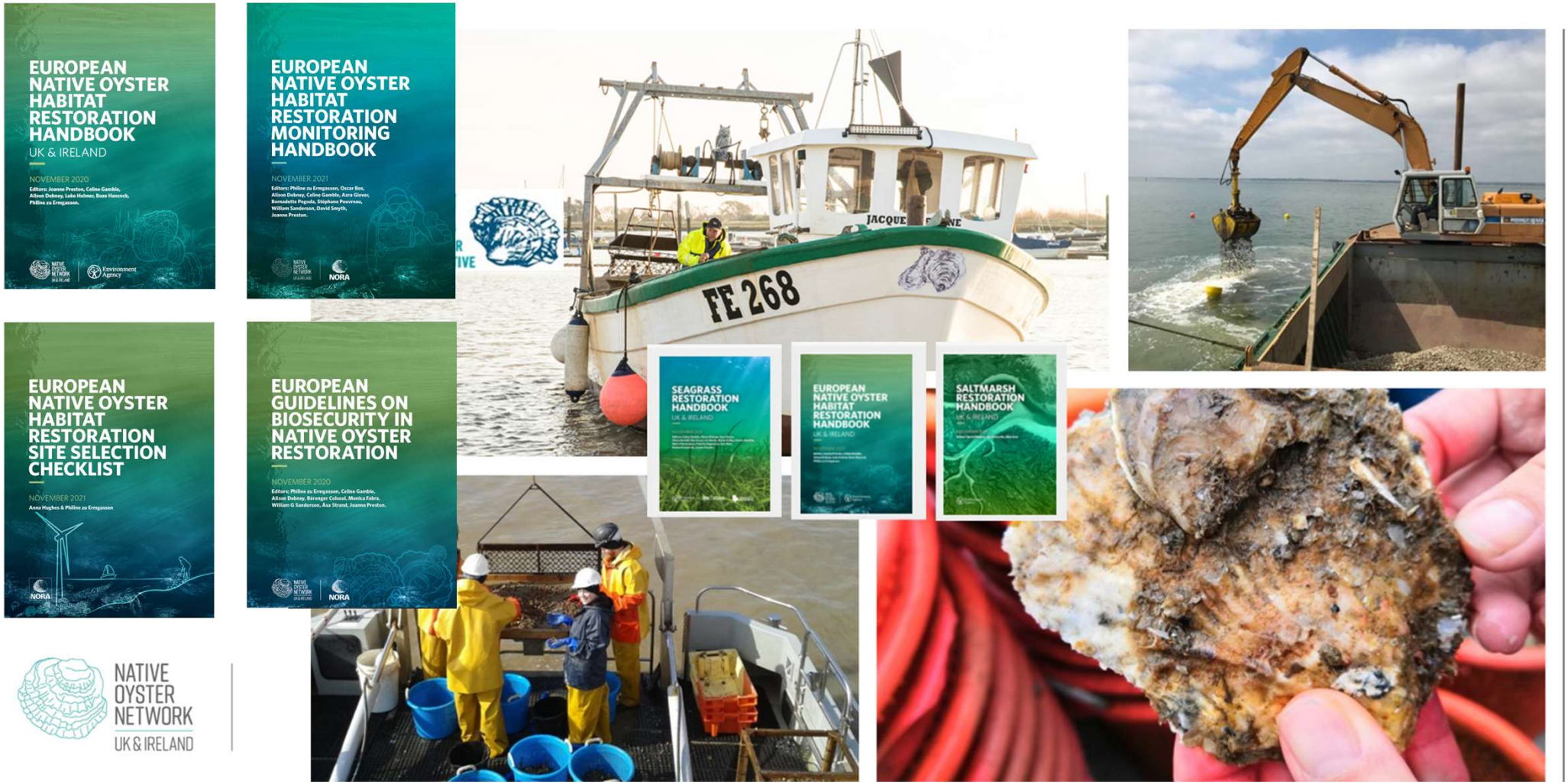
nd restoration activities of the European flat oyster (*Ostrea edulis*) has resulted in
s. Considering the specific requirements of restoration projects and the limitations
ed, the current supply is insufficient. There are challenges arising from the nature
tion projects, as well as differences in product requirements relative to the existing
ent was compiled by oyster restoration practitioners and academic partners to inform
toration relevant issues and processes, thereby promoting a clear understanding of
.

AT RESTORATION PROJECTS TRYING TO ACHIEVE?

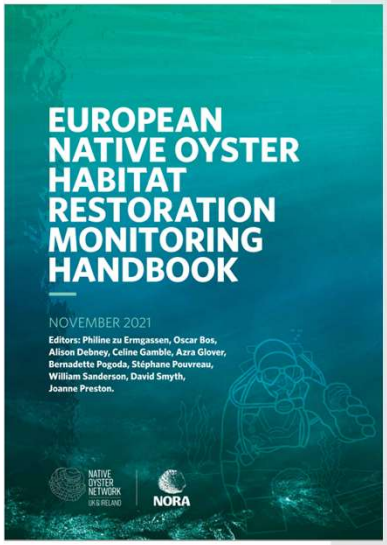
bers and high
e, but were largely
to late 1800s. Oyster

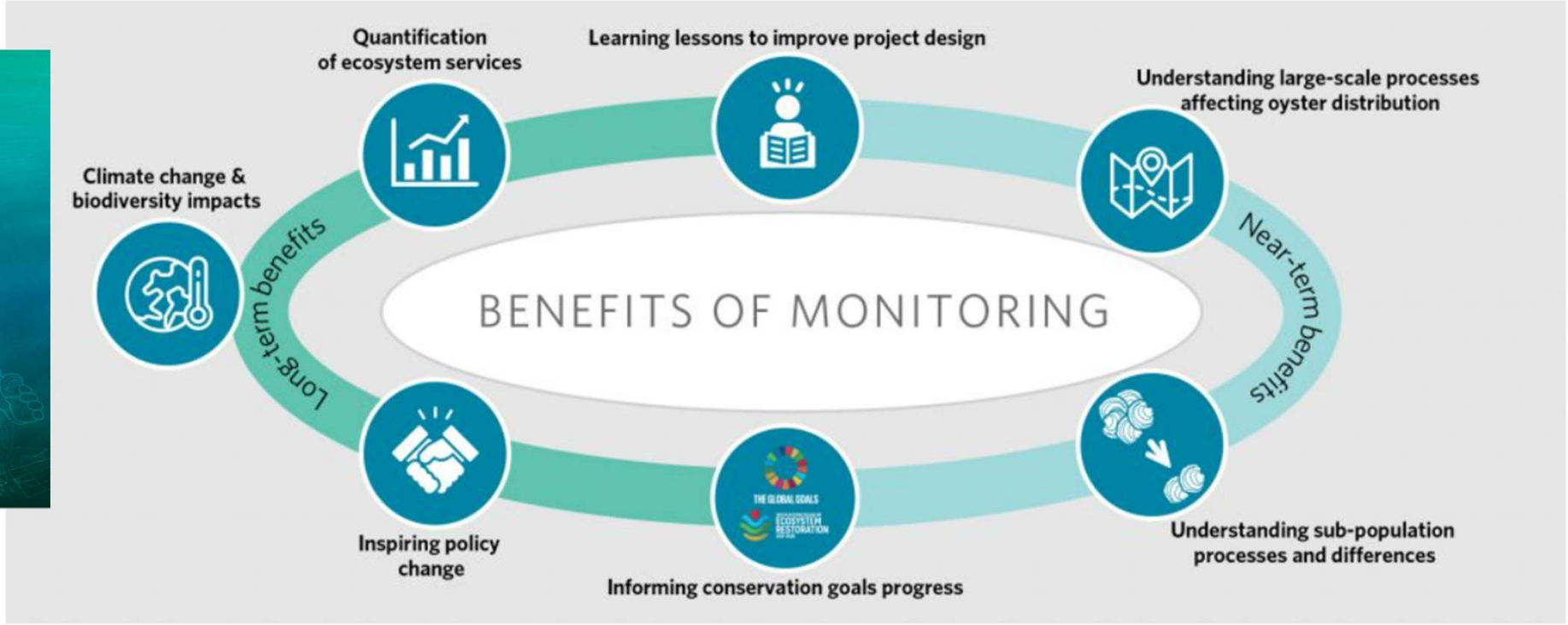
so few examples remain across its range. Restoration practitioners are therefore learning on the job as to what to expect and what to aim for in their restoration projects.

Lesson 6: Strong technical outputs will underpin Alliance



Lesson 7: Create common monitoring protocols





Monitoring allows not only for the basic performance of each reef to be assessed through time but also assists with lessons learned. Consistently gathering monitoring information allows those data to be bundled to provide a critical evidence base in the long term for developing environmental policies.

Lesson 8: Create a ‚go-to' central hub open to all

- [NORA – Native Oyster Restoration Alliance]

Native Oyster Network / NORA Infographics

Download
Areas-to-be-Vigilant.jpg

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Beneficiaries-of-Native-Oyster-Restoration.jpg

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Drivers-of-Native-Oyster-Decline.jpg

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Ecosystem-Services-

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Known-Biogeographic-Range.jpg

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Life-Cycle-of-Ostrea-Edulis.jpg

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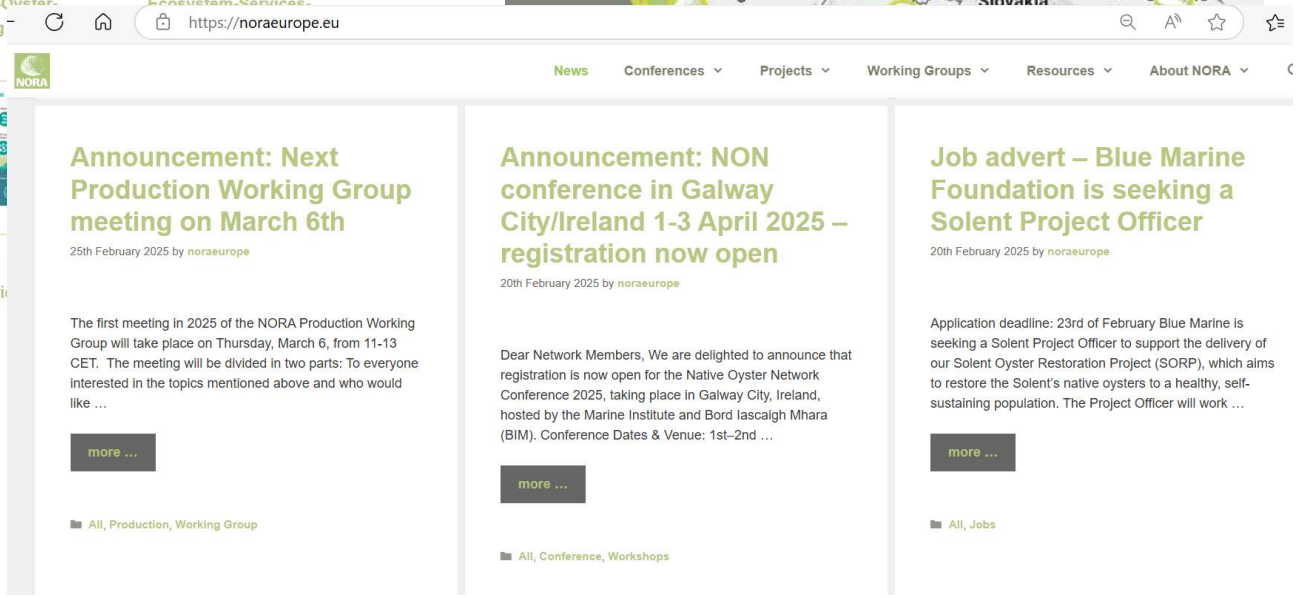
Measurable-Metri



Lesson 9: Knowledge exchange and relationship building

2025 – NORA6 in Cartagena, Spain. 24.-27 November 2025, “Working together for oyster restoration” See: https://nora6.es/

Student working group

students@noraeurope.eu.

- To enhance and strengthen the collaboration between students of all educational levels (bachelor, master, PhD, PGR) working in the field of European oysters and create a friendly and accessible platform to meet, exchange ideas and feel more actively represented within the NORA community.

Lesson 10: It will take dedication and some funding

Ten lessons to support a strong alliance:

Above all, have the belief that that a successful alliance is greater than the sum of parts

1. Create a shared purpose
2. Build an alliance structure that will fulfil its purpose
3. Identify knowledge gaps and barriers to restoration success
4. Know your species – habitat – ecosystem. Be the ‘go-to’ experts
5. Co-create solutions to overcome challenges
6. Be output driven – e.g. strong technical reports co-delivered will underpin the Alliance
7. Have a common monitoring protocol to measure impact
8. Create a ‘go-to’ central hub to host shared resources; co-create these resources
9. Generate opportunities for knowledge exchange and relationship building
10. Recognise that it will a lot of effort, dedication, a firm belief and some funding

We look forward to collaborating!

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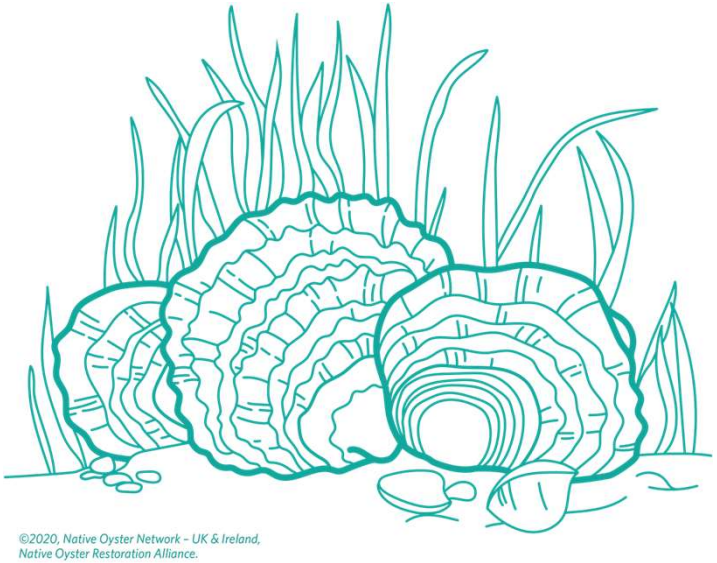

[NORA – Native Oyster Restoration Alliance]

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