



NORA Monitoring Working Group Strategy

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Berlin Recommendations

No. 5 = Create Common monitoring protocols.

Background: Native oyster restoration is in its infancy in Europe. There are numerous outstanding questions regarding best practice for restoration of the European native oyster. A shared monitoring protocol will allow lessons and outcomes to be shared between all European restoration wefforts. This will reduce duplication of effort and ensure that progress towards successful restoration is as rapid as possible.

Recommendation: Monitoring protocols that will provide comparable results for projects throughout Europe and for restored sites should be developed and followed. Where possible, monitoring should include the assessment of ecosystem services on a habitat and ecosystem scale.

Progress so far:

The NORA community has produced a suite of handbooks to aid in native oyster restoration practice, biosecurity and monitoring.

The monitoring handbook objective was to collectively agree a suite of monitoring metrics and methods that is implemented by restoration projects to assess the progress, scale, success and failures or restoration efforts and activities.

In reality, the implementation of common monitoring protocols is challenging across the highly varied conditions, and context of different restoration projects occurring at very different locations across the biogeographic range of *Ostrea edulis*. For example, some are deeper water projects in the North Sea, others are intertidal in the Mediterranean.

However, if we are to compare these projects, collecting comparable data will be a very powerful tool to enabling us to learn, up-scale, refine and communicate to policy makers and funders, the wider impact of native oyster restoration (e.g. by quantifying ecosystem service provision).

Alongside the monitoring guidelines, the NORA community of experts came together to undertake a Priority Setting Exercise to identify the Forty questions of importance to the policy and practice of native oyster reef restoration in Europe. (zu Ermgassen et al 2020)¹

Monitoring Working group Strategy

In October 2022 Preston & Boze developed a draft strategy that was taken to the WG via the first Monitoring WG meeting on 19th January 2023. A recording of this meeting was sent to all WG members, and the minutes and presentation are available on the NORA website.

¹ zu Ermgassen, P.S.E, Bonacic K., Boudry P., Bromley C.A., Cameron T.C., Colsoul B., Coolen J.W.P., Frankić A., Hancock B., van der Have T.M., Holbrook, Z., Kamermans P., Laugen A.T., Nevejan N., Pogoda B., Pouvreau S., Preston J., Ranger C.J., Sanderson W.G., Sas H., Strand A., Sutherland W.J. (2020). **Forty questions of importance to the policy and practice of oyster restoration in Europe.** Journal of Aquatic Conservation: Marine and Freshwater Ecosystems. Special Issue Article. DOI: 10.1002/aqc.3462

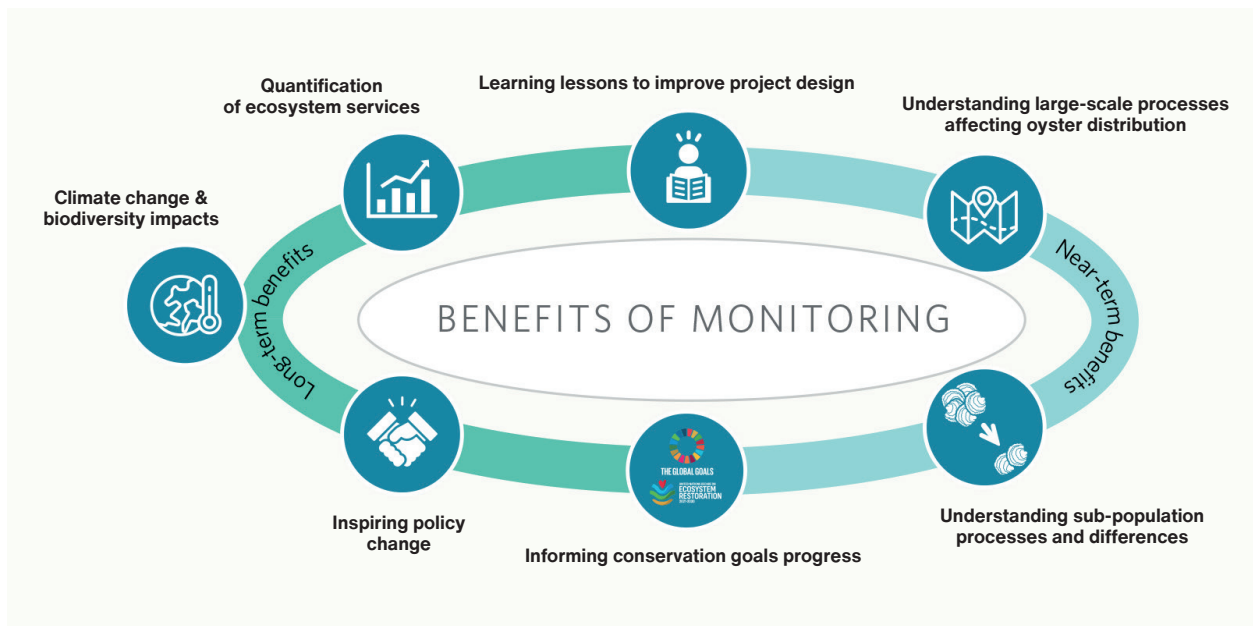


Figure 1 Monitoring allows not only for the basic performance of each reef to be assessed through time, but also assists with lessons learned. Consistently gathering monitoring information allows those data to be bundled to provide a critical evidence base in the long term for developing environmental policies. From the **European Native Oyster Habitat Restoration Monitoring Handbook**²

One of the key challenges we face as a restoration community is to collect the data to calculate the Return on Investment for restoration projects. This, combined with the quantification of ecosystem services provided by the restored habitats, is needed to demonstrate how restoration can meet the objectives of global, regional and national urgent priorities; such as Sustainable Development Goals (SDGs), UN Decades (Ocean and Ecological Restoration) and Nationally Determined Contributions (NDCs), and therefore justify and unlock funding for large scale restoration.

Here is the amended strategy and actions arising from this for consultation:

1. Assess the **extent** and **uptake** of common monitoring protocols across the NORA community, and the biogeographic range of *O. edulis*.
 - a. Create a database of projects across biogeographic range and NORA community
 - b. Create a shared spreadsheet of agreed monitoring metrics from handbook
 - c. Send NORA wider community to complete spreadsheet to identify which metrics each identified restoration project are monitoring
2. Analyse the **extent** and **success** of restoration projects to date, given the existing data.
3. Identify which of **40 priority research questions** could be answered from the agreed common monitoring metrics in the monitoring handbook and map the uptake of monitoring against these.

² zu Ermgassen, P.S.E., Bos, O., Debney, A., Gamble, C., Glover, A., Pogoda, B., Pouvreau, S., Sanderson, W., Smyth, D. and Preston, J. (eds) (2021). **European Native Oyster Habitat Restoration Monitoring Handbook**. The Zoological Society of London, UK., London, UK.



4. Identify which metrics, if monitored would provide the data to priority research questions, e.g.:
 - a. Calculate ROI
 - b. Provide a **definition of oyster habitat/reef structure**.....
 - c. Quantify key **ecosystem functions/services**

5. Identify the **bottlenecks and barriers** to monitoring and develop solutions to this. Proposed solutions include:
 - a. Develop common data sheets for metrics
 - b. Organise knowledge exchange workshops to train projects in monitoring methods and protocols
 - c. Create video training tools

6. Develop a proposal for a NORA/Europe wide website with dashboard and associated database for monitoring data, evaluation and reporting of restoration progress.

This will provide a synopsis of the state, trajectory and success of restoration of native oyster habitat in Europe, and provide the basis for projects to agree on shared suites of metrics to answer the important questions.