

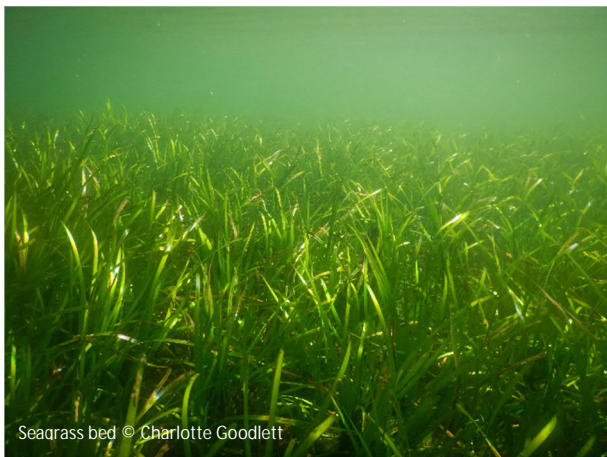
Sea Scotland 2019

Workshop summary: Marine habitat restoration for ecosystem resilience – opportunities and challenges

Workshop objectives:

1. Promote the need for more wide-scale ecological thinking in the context of 'climate emergency' and mainstream the concept of ecosystem enhancement in policy development;
2. Influence and inspire others to collaborate on existing restoration projects, or initiate new ones;
3. Compare learnings from different marine habitat restoration projects.

This workshop was designed to highlight the potential for marine habitat restoration to contribute to climate change adaptation and mitigation. Two case studies featuring projects to restore seabed habitats were used to set the scene: seagrass meadow restoration by Richard Lilley (Project Seagrass) and native oyster restoration by Calum Duncan (Marine Conservation Society, a partner in the Dornoch Environmental Enhancement Project - DEEP). Both speakers gave a short overview of the respective projects and there was a short discussion afterwards. Each project is ground-breaking in its implementation, both in terms of method and scale.



Seagrass restoration involves picking the seagrass seeds, separating them from the plant (allowing a rotting process), and planting the seeds in suitable habitat at sea (see Unsworth et al, 2019). This work is being conducted in Wales as part of a Sky Ocean Rescue x WWF project and the project team hope to expand it to Scotland once relevant permissions have been obtained. The DEEP project has been undertaken in several phases: scoping suitability of Dornoch Firth for native oyster reintroduction, identifying suitable areas for a

small-scale survivability trial and then larger scale reintroductions, procuring and introducing a suitable substrate (culch) onto which oysters can settle, and placing the oysters into the specially prepared areas by SCUBA divers. This partnership project was initiated by The Glenmorangie Company as part of their commitment to corporate social responsibility and 100% environmentally friendly business and wish to go "beyond compliance", with the native oyster restoration complementing their new multi-million-pound anaerobic digestion plant. These projects are taking place in the context of the Sustainable Development Goals (to which Scotland was one of the first nations to sign up), the UN IPBES Report (2019) indicating that biodiversity loss is at critical levels, and the UN Decade of Ecosystem Restoration (2021-2030). The presentations are available [here](#).

The workshop group was then split into four groups to complete an activity: Design a high-level conservation strategy for large-scale marine habitat restoration in Scotland at a sectoral level. Each group was assigned a different sector to consider under this task: aquaculture, commercial fishing, offshore wind and coastal development. Participants developed ideas around the baseline, high-level objectives, the role of the industry and resources that may be required.

Common points between groups included:

- Establishing the ecological baseline of the sites is necessary (“restoration” indicates a species or habitat was formerly present, or had a larger extent that it does now)
- Understanding the potential for restoration within the site, but also across Scotland
- The need for ongoing research/monitoring
- Participation of stakeholders and civil society, as well as raising awareness (of ecological value) and supporting citizen science roles
- Avoiding off-setting – focus on the environment local to the development

Sector-specific discussion points:

1. Aquaculture

- a. In the context of increasing finfish production by 50% by 2030, applications are likely to result in expanding existing sites and establishing new ones;
- b. Questionable whether the inshore area has the capacity for expansion – what is the carrying capacity of the inshore area, especially small sea lochs?
- c. ecological baseline must include physical impacts (e.g. seabed siltation, chemical contamination, sea lice infection), and historic baseline (for restoration, information about the original seabed ecosystems is needed);
- d. Assessment of offshore sites for potential lower impacts (greater water mixing, greater water depth). If offshore sites look promising, existing farms could be moved (and the former inshore sites could be the focus of ecological restoration projects);
- e. Movement of farms to more suitable sites (e.g. offshore) could be incentivised by the prospect of enhancing their ‘green profile’ and greater public acceptance (social licence);
- f. Need to set up partnerships and funding opportunities to support projects – industry could pay in to this
- g. Processes at planning permission need to be reduced and simplified, but there may be opportunities through this process, licencing process and/or decommissioning processes to require restoration to be a requirement of a license to operate.

2. Commercial fishing

- a. The objectives should focus on quality and diversity of habitats, and continued research (the latter also encouraging citizen science and involvement of the industry). Fish nursery areas should be the target of restoration initiatives.
- b. Long-term change should be considered as part of any initiative (e.g. effects of climate change)
- c. Baseline monitoring is needed for both ecological condition and fishing footprint
- d. Involvement of the fishing industry and local communities would be essential, along with specific (high value) stakeholders; preventing conflicts is key, the industry would need to be fully involved and benefits of the projects should be clear.

3. Coastal development

- a. National-scale laboratory for establishing restoration projects: ‘testing site’ to scale up to different regions;
- b. Sliding scale of mitigation – developments with the greatest impact have the highest level of mitigation;
- c. Avoid a model where developers can offset (e.g. paying into carbon trading scheme) – have to protect and restore what’s close to the development;
- d. Work out what debt is owed to the ecosystem from the development – how much value does it offer in the first place?

- e. Environmental taxing for developers, making them create some kind of space on land or in the area for restoration work;
 - f. Raising awareness in local communities of value of ecosystem so they are better informed.
4. Renewables
- a. Opportunities – take up a lot of space and exclude other activities, so opportunities for de facto restoration (around physical structure of wind turbine);
 - b. However, may limit species that are appropriate for restoration – this would have to be determined case by case;
 - c. Design of infrastructure could be modified to attract species to them – the science is mixed on this;
 - d. Potential to use licence conditions to require restoration as part of development;
 - e. Suggest an industry-level scheme where different operators contribute to whole project, but without being cost-prohibitive;
 - f. Doing projects at a scale that is worthwhile without unrealistically increasing costs of developments.

The key points from this workshop were summarised and fed back to the wider group of conference delegates in a final plenary session. It was acknowledged that there are tensions between existing growth targets in different sectors, as also included in the National Marine Plan, and domestic and international targets for biodiversity. In the context of the First Minister announcing and acknowledging that we are in a “climate emergency” and stating that Scotland needs to be “getting higher over the bar” on biodiversity commitments in response to the ecological crisis, such tensions must be acknowledged and addressed. The response of all sectors of civic Scotland to the IPCC and IPBES reports needs to reflect their conclusions: that the way we’ve been doing things isn’t working and the status quo needs to change. There is some good law and policy already in place on environmental protections and recovery in Scotland, and in some instances good progress is being made in implementing them, but many conclude that action has to go much further to address the twin crises.

From an operational perspective, there is scope for rethinking planning and licencing – it is normal to seek to enable developments in the best possible way and there is potential for businesses and developers to go further than “the bare minimum” to meet regulatory requirements and instead go “beyond compliance” to contribute to nature’s recovery. Indeed, the regulatory framework should proactively encourage and where necessary require ecosystem enhancement, recovery and/or restoration (depending on the circumstances). This requires political will and an improved legal regulatory framework to help it happen. An ecosystem-based regulatory and planning system should reward people for doing business in a way that improves the environment and benefits local communities. Achievement of true sustainable development will not happen without such a progressive framework.

There are numerous restoration opportunities post-decommissioning where structures at sea are removed – this could include oil and gas platforms, renewables structures and fish farms. Delegates said they wanted to see real corporate social responsibility: well-planned out spending that leads to positive environmental outcomes.

Finally, partnership-working is key to the innovation and success of these kind of initiatives, most crucially with the communities of place that are going to be affected.

Further reading

- Richard K.F. Unsworth, Chiara Bertelli, Leanne Cullen-Unsworth, Nicole Esteban, Richard Lilley, Benjamin Lawrence Jones, Christopher Lowe, Hanna Nuuttila, Samuel Rees (2019) Sowing the seeds of seagrass recovery using hessian bags. *Frontiers in Ecology and Evolution*, In Press.
- <https://www.pewtrusts.org/en/research-and-analysis/articles/2019/03/05/pew-launches-efforts-to-protect-restore-oyster-and-seagrass-habitats>
- <https://naturecoevocommunity.nature.com/users/73434-richard-unsworth/posts/45598-sowing-the-seeds-of-ocean-recovery-requires-a-phase-shift-in-marine-restoration>
- <http://web.unep.org/coastal-eba/content/seagrass-conservation-and-restoration>
- <https://oceana.org/reports/restoration-seagrass-meadows>
- <https://www.vims.edu/research/units/programs/sav1/restoration/index.php>