



MASTS Annual Science Meeting 2025

Call for Speakers and E-Posters

Template for Abstract Submission

E-POSTER/ORAL

Happy in their Home? Restoration and Survival of the European Flat Oyster (*Ostrea edulis*) in the Dornoch Firth

Full name: Gurjameer Singh Ramday

E-mail address of lead presenter: G.Ramday@hw.ac.uk

Organisation: Heriot-Watt University

Student: N

Abstract

The European flat oyster (*Ostrea edulis*) has probably been extinct in the Dornoch Firth for over a century. Since 2014, the Dornoch Environmental Enhancement Project (DEEP) has been restoring the species by deploying >112,000 farm-reared adults under strict biosecurity protocols, establishing biodiversity baselines, and informing best practice. However, deployment is not the end of the story.

Post-deployment survival was quantified by tethering oysters to anchored strings within the restoration site, enabling direct census at 3 months post-deployment and annually thereafter. Survival data showed initial mortality was high (first 3 months), declined by year 2, and declined again by year 3. This non-linear pattern enabled the restored population to be modelled and yields critical parameters for restoration economics (cost per surviving oyster). Furthermore, the present study also enables demographic forecasting in terms of the number attaining reproductive maturity. Coupled with the monitoring of spat settlement, the present study enables the progress of the restoration project to be tracked towards a sustainable population.

The present work demonstrates the value of long-term monitoring for both validating and valuating restoration activities. It enables the refining of deployment strategies and population projections. Overall, it is clear that the restoration of oyster populations is likely to be a decadal activity using present techniques.

Optional - Acknowledgements

The DEEP programme of work was supported by The Glenmorangie Company Ltd, The Marine Conservation Society & Heriot-Watt University.

Optional - Additional Authors

William G. Sanderson, Alexander Roberston-Jones, Naomi Kennon & Evita Kypraki.



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SPEAKER

For speaker offers, please indicate which session you are interested in:

General Science Session

Community Identification of Challenges and Opportunities for Marine Restoration and Enhancement in the Shetland Islands

Full name: Tanya Riley

E-mail address of lead presenter: tanya.riley@uhi.ac.uk

Organisation: UHI Shetland

Abstract

The sea plays a central role in Shetland's way of life, influencing its climate, industries, and culture. However, like many coastal regions, it faces a range of anthropogenic pressures. The Marine Restoration and Enhancement for the Shetland Islands project used a two-phase community co-creation process to identify local challenges and opportunities for marine restoration and enhancement. The project gathered 431 inputs from a diverse range of stakeholders, including local residents, marine industries, environmental organisations, and governmental bodies. Phase one focused on identifying key challenges and opportunities for marine restoration and enhancement, whilst phase two refined these findings based on further stakeholder feedback, evaluating consensus.

Thematic analysis of stakeholder contributions highlighted the role of interventions across the land and coast in addressing multiple marine pressures and identified pressure management as an actionable opportunity for marine restoration and enhancement. Existing governance frameworks were considered only partially effective, with gaps identified in both local and national contexts, as well as in funding and monitoring mechanisms. Stakeholders emphasised the importance of local data collection, evidence-based management and practical case studies to guide actionable initiatives. These insights informed the development of guiding principles for Shetland and provide transferable examples for future restoration and enhancement initiatives in other regions.

The project highlights the value of community-driven engagement efforts, providing a model for integrating local knowledge and voices into future marine management, ensuring that restoration and enhancement initiatives are locally relevant and sustainable, whilst aligning with national strategies.



The main text must be size 12 in calibri font. Keep the page margins the same as set here. Paragraphs must be justified (straight edged) on both left and right. Use single line spacing and leave a line gap between paragraphs. If you would like to insert a figure you can do so but be mindful of space.

The word limit is **250 words**, and abstracts should be accessible to other disciplines, by avoiding jargon and keeping technical details simple. The abstract will appear in the programme as submitted; however, the organising committee reserves the right to edit abstracts for clarity or correctness of English and will consult the author if any significant changes are needed.

The abstract deadline for both talks and e-posters is **1700 on 29th August 2025**. For your abstract to be published in the conference programme, you must register and pay to attend the conference **in person**. Further information about your registration will be provided in the acceptance email. Presenters will be informed about their submission by 24 September.

Once completed please send this word document to masts@st-andrews.ac.uk.

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Optional - Additional Information

<https://www.shetland.uhi.ac.uk/research/marine-spatial-planning/research/people--place/guiding-marine-restoration-and-enhancement-in-the-shetland-islands/>

Optional - Acknowledgements

This project was funded by the Marine Fund Scotland 2024-2025. This project is endorsed by the United Nations Decade of Ocean Science for Sustainable Development as a Decade Activity.

Optional - Additional Authors

Rebecca J Giesler, Kathryn Allan & Rachel Shucksmith.



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SPEAKER/E-POSTER (*no preference*)

For speaker offers, please indicate which session you are interested in: General Science Session

Learning from water quality induced seagrass restoration failures in the Firth of Forth

Full name: **Elizabeth Lacey, Ph.D.**

E-mail address of lead presenter: ElizabethLacey@projectseagrass.org

Organisation: Project Seagrass

Student: Y/**N**

Abstract

The Restoration Forth Project highlights the complexities and critical lessons learned from implementing marine habitat restoration in a heavily industrialised and urbanised estuary. Located in the estuary of Scotland's River Forth—an expansive, 250,000-hectare zone stretching 55 miles to the North Sea—this unique project unfolded amidst significant human pressures from over a million residents and key industries such as oil, gas, defence, and shipping. Centuries of alteration through land reclamation, pollution, and hard sea defences have led to the loss of over half the Firth's intertidal zones and severely degraded water quality. In collaboration with multiple organizations and a highly engaged community, our team undertook seagrass restoration efforts using *Zostera marina* and *Zostera noltii*. Poor water quality and a lack of locally adapted seed sources led to failures in *Zostera marina* establishment and transplanting of *Zostera noltii* showed mixed results, highlighting the challenges of restoration in degraded urban estuaries. While the original goal of scaling to 4 hectares was not achieved, this hands-on project offers valuable insights into the importance of localized seed sourcing, community collaboration, and adaptive strategies. Our next phase includes monitoring of small-scale pilot studies with locally collected seeds and refined methodologies. This project underscores that meaningful progress in restoration often emerges not only from success but from learning through setbacks.

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SPEAKER

For speaker offers, please indicate which session you are interested in:

Technological Innovation in Environmental Monitoring

Toward optical closure in a highly scattering coccolithophore bloom

Full name: Cait McCarry

E-mail address of lead presenter: cait.mccarry@strath.ac.uk

Organisation: University of Strathclyde

Abstract

Coccolithophores are a globally distributed calcifying phytoplankton that play a critical role in the marine ecosystem through their contribution to the carbonate pump. When present in high concentrations near the surface, they significantly influence the optical properties of oceanic environments, due to their highly scattering calcium carbonate coccoliths. Quantifying concentrations from satellite imagery necessitates accurate parameterisation of inherent optical properties (IOPs), most significantly the spectral absorption and backscattering coefficients. Here, we present an optical closure assessment using a comprehensive set of *in situ* hyperspectral IOP and radiometric measurements collected during a coccolithophore bloom in the Icelandic Basin in June 2024. Total absorption was derived from a Point Source Integrating Cavity Absorption Meter (PSICAM), which is largely insensitive to scattering error. This was used to correct the absorption-attenuation (a_{cs}) instrument to obtain spectral scattering. Spectral backscattering (b_b) was derived from the Hyper- b_b instrument. Spectral remote sensing reflectance (R_{rs}) was modelled using the radiative transfer model HydroLight, populated with these measured IOPs and observed boundary conditions. Initial optical closure assessments showed good agreement between *in situ* radiometry and modelled R_{rs} at low particulate inorganic carbon (PIC) stations (i.e., at low coccolithophore abundance). Conversely, at high PIC stations (indicative of a coccolithophore bloom), optical closure was not achieved. For these stations, a sensitivity analysis of the χ_p parameter used to convert the volume scattering function into b_b suggests that χ_p varies with increasing PIC and that the traditional single value of 1.16 typically used in these calculations may be insufficient to achieve optical closure. By adopting a more sophisticated approach to selection of χ_p we are able to achieve a more consistent level of optical closure across the observed range of PIC values.

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Optional - Additional Information



Include any hyperlinked pages and documents you wish to reference. Please keep this brief.

Optional - Acknowledgements

Write down any necessary acknowledgements here, for example funding bodies. Please keep this brief.

Optional - Additional Authors

Brynn Presler-Marshall, University of Strathclyde

Farley Miller, Bigelow Laboratory for Ocean Sciences

Alex Poulton, Heriot Watt

Catherine Mitchell, Bigelow Laboratory for Ocean Sciences

David McKee, University of Strathclyde



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Abstract Submission

Dr Texa Sim

General Science Session

Dogs, Detection, and *D. vexillum*: Innovative Management Solutions for an Invasive Threat

Full name: Texa Sim

E-mail address of lead presenter: cdd.scot@gmail.com

Organisation: Conservation Detection Dogs Scotland

Abstract

Conservation Detection Dogs (CDDs) are specially trained canines that use their powerful scenting abilities to locate target species, traces, and pathogens. Commonly used for terrestrial and freshwater targets, their role in the marine environment is more novel. This project aims to train CDDs to recognise, search for, and indicate the presence of the highly invasive non-native carpet sea squirt, *Didemnum vexillum*.

D. vexillum poses a significant risk to marine activities on account of its fast growth rate, allowing it to rapidly smother infrastructure. It also presents a threat to natural ecosystems, outcompeting and changing habitat availability for native species. At present, species identification relies on visual inspection and confirmation, however, *D. vexillum* may be easily confused with other colonial ascidians. This may lead to the species going unnoticed or being misidentified, allowing it to spread and overgrow marine infrastructure. As the management and eradication of *D. vexillum* is costly, it also poses restrictions on marine industries once established. It is preferable and more cost-effective to use methods to accurately confirm the presence or absence of the species as a preventative measure, in addition to controlling spread at infected sites.

CDDs have been proven to be faster and more efficient at detecting target species than humans, and when trained to detect *D. vexillum*, could offer a method of rapid identification and control for marine space users such as shellfish aquaculture sites. There are currently no dogs trained to detect *D. vexillum* globally, making this project the first of its kind.



Optional - Acknowledgements

Financial support for this project was provided by the Sea-Changers Innovation Fund.



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SPEAKER

For speaker offers, please indicate which session you are interested in:

General Science Session

What drives fishers and citizens as data collectors? Implications for data application and marine management

Full name: Rachel Shucksmith and Katie Brigden

E-mail address of lead presenter: rachel.shucksmith@uhi.ac.uk, katie.brigden@uhi.ac.uk

Organisation: UHI Shetland

Student: N

Abstract

Understanding why individuals engage in data collection is crucial for leveraging their contributions in marine management. Fishers and citizen scientists represent two distinct yet complementary sources of knowledge, each shaped by different motivations, practices, and relationships to the marine environment. We examine what drives fishers and citizens to participate in data collection and how these drivers influence the quality, applicability, and integration of their data in management processes. Using a mixed-methods approach combining interviews, surveys, and comparative analysis, we examine knowledge types, perspectives, and incentives for participation. We then consider how these insights inform the design of inclusive monitoring and management strategies and how such knowledge can best support sustainable management. This study can help to understand the implications of motivational differences, perception for data credibility, stakeholder trust, and the long-term uptake of participatory approaches in marine monitoring and management.