

Beyond Sustainability: A Global Study of Nature-based Solutions in Regenerative Tourism

Chloe King

¹ *Department of GeoSciences, University of Edinburgh, s2113115@ed.ac.uk*

I would prefer to deliver a talk.

Are you a student? (Delete as appropriate): Yes

You must be a student member of IMarEST to be eligible for the student prizes. Join for free here - <https://www.imarest.org/membership/membership-registration/upgrade-your-membership/student-member-simarest>

Tweetable Abstract: Tourism must be seen as a catalyst for positive social and environmental change. This research centers “regenerative tourism” as a nature-based solution, in which tourism actively regenerates socio-ecological systems and makes destinations more resilient to crises—from COVID-19 to climate change. #MASTSasm2021

Twitter Handle: @chlocking313

Abstract: As the UN Decade of Ecological Restoration begins in 2021, there is a need to reimagine the tourism industry as a key catalyst for positive social and environmental change. What does it mean for tourism to go beyond “sustaining” a place—but instead actively regenerate ecosystems, improve community well-being, and create better economic opportunities? How are communities and ecosystems made more resilient to crises—from COVID-19 to climate change—when tourism operators embrace nature as the solution? The concept of “regenerative” travel may be the way forward in answering these questions. Nature-based marine tourism is a rapidly growing global industry, supplying US \$36 billion to the global economy each year,¹ with the potential to contribute to marine ecosystem protection and restoration efforts while offsetting potentially harmful consequences of rapid tourism development. Through a systematic review of tourism-funded or facilitated marine nature-based solutions, this paper identifies key areas in which marine tourism can be regenerative, ultimately proposing an adapted “Regenerative Tourism Framework” based upon the IUCN Global Standards for Nature-based Solutions. Following this, the framework is then used to assess and evaluate the work of 28 tourism operators across the globe, of both marine and terrestrial domains, to better understand what factors enable tourism enterprises to be more ecologically, socially, and culturally regenerative.

Ultimately, this study recommends that five factors are key to shifting from “sustainable” to “regenerative” tourism, including centering community needs, improving ecosystem integrity, embracing diverse and inclusive business models, governing in a transparent and just manner, and enhancing conservation partnerships.

Community-led Marine Biodiversity Monitoring Project Scotland

Madlaina Michelotti & Owen McGrath,

NatureScot
COMMUNITYMARINESURVEY@nature.scot

I would prefer to deliver a talk.

Are you a student? No.

Tweetable Abstract:

The Community-led Marine Biodiversity Monitoring Project is actively exploring solutions to some of the challenges to community marine survey participation in Scotland.



Abstract

The Community-led Marine Biodiversity Monitoring Project empowers communities across Scotland to safeguard our seas by monitoring marine biodiversity around their coastline.

The project, co-produced with communities and local groups, has been actively exploring solutions to some of the challenges to community survey participation by improving skills, knowledge and access to equipment and professional survey support through a dedicated project officer and marine experts. The project is also co-creating a community data journey to empower groups to share their data to inform and influence decision-making in Scotland, and ensure data collected by communities are robust, quality assured and available in national marine databases.

Communities and local groups are well placed to monitor their local coasts and inshore waters. With enthusiasm, many groups approached NatureScot over the years looking for support and advice on how to undertake marine surveys. Recognising the real community interest in this on the ground, and the wider benefits of community-led surveys, NatureScot - in partnership with Fauna & Flora International, and with funding from The William Grant Foundation - have been developing practical ways to support and engage groups in marine monitoring.

Community participation has great environmental and community benefits; from increasing our knowledge of the marine environment and contributing to databases, to promoting ocean stewardship, building community connections and having fun whilst learning more about the marine environment.

The project is a three year project which began in 2018 with a handful of groups expressing interest, to now having 20+ groups involved, and many more interested. Communities have access to equipment, are using the Community-led Marine Biodiversity Monitoring Handbook, and are participating in training to improve their skills and knowledge. They are also engaging their communities and young people in their activities, connecting

more people with Scotland's seas. Some groups have even already been able to submit data to national databases, improving our knowledge of marine species and habitat distributions around Scotland.

Crucial to the project's success, is its emphasis on co-production. By working in close consultation with community and local groups, the project is addressing and supporting community needs to enable participation in community-led surveys. Through co-production, the project has been successful in achieving its key objectives.

References:

<https://www.nature.scot/communitymarinesurvey>

A UK study of value chains in public marine data.

Charlotte Miskin-Hymas¹, Claire Jolly², James Jolliffe³, Clare Postlethwaite⁴, and Emma Heslop⁵

- 1 Marine Environmental Data and Information Network, British Oceanographic Data Centre, National Oceanography Centre – charmisk@bodc.ac.uk
- 2 Organisation for Economic Cooperation and Development - claire.jolly@oecd.org
- 3 Organisation for Economic Cooperation and Development - james.jolliffe@oecd.org
- 4 Marine Environmental Data and Information Network, British Oceanographic Data Centre, National Oceanography Centre – cfpo@noc.ac.uk
- 5 Global Ocean Observing System - e.heslop@unesco.org

I would prefer to deliver a talk.

Are you a student?: No.

The Marine Environmental Data and Information Network (MEDIN), established as an open and collaborative partnership in 2008, is the hub for UK marine data. MEDIN promotes sharing, re-use and improved access to marine data via an online portal, which contains information about over 15,600 marine datasets collected or managed by over 600 UK organisations. Within the MEDIN framework, data are managed and delivered by a network of specialist Data Archive Centres (DACs). These include the UK Hydrographic Office; the Met Office; the British Oceanographic Data Centre; the British Geological Survey; DASSH; Marine Scotland; CEFAS; the Archaeology Data Service; Historic Environment Scotland; and the Royal Commission on the Ancient and Historical Monuments of Wales.

Since 2019, MEDIN has been collaborating with the Organisation for Economic Cooperation and Development (OECD) and the Global Ocean Observing System (GOOS) on a project to better understand the pathways through which marine data are used and transformed into actionable information, creating systematised value chains for the first time (Jolly et al, 2021). Generally, value chains are a useful concept for mapping the relationship between data production, data processing, generation of data products and usage by different user groups. Focusing on marine data made available from public data repositories, an online survey was developed to gather information on data usage in different sectors of the UK economy and beyond. The study found a diverse user-base of marine data in the UK, with multiple industries of the UK's ocean economy using the data made available through MEDIN DACs. Moreover, the links between different types of marine data and different sectors of the economy are multiple and varied, spawning many complex value chains as a result.

The joint project between OECD, GOOS, and MEDIN concluded with a series of recommendations

for institutional funders, the marine observing community and data archive centres. These include promoting the use and reuse of marine data in policies and supporting the entire marine data value chain. Public marine data generate benefits in many different sectors of the economy and the project recommends developing communication strategies that clearly outline how the collection and archive of marine data are used and reused for all these different purposes throughout the ocean economy. A final recommendation is to facilitate the use of Application Programming Interfaces (API's) to consider the technical needs of data users and developers to enable programmatically interacting with marine data. MEDIN will support UK marine organisations to implement these recommendations.

Whilst the study described here is UK focused, the aim is to extend the work to other countries/marine networks, increasing the evidence base for value chains in marine data.

References

Jolly, C., Jolliffe, J, Postlethwaite, C.F. and Heslop, E.. (2021), "Value chains in public marine data: A UK case study", *OECD Science, Technology and Industry Working Papers*, No. 2021/11, OECD Publishing, Paris, <https://doi.org/10.1787/d8bbdcfa-en>.

TWEET - "MEDIN has collaborated with @OECD and @GOOSocean to better understand UK marine data pathways, types & users, creating systematised value chains for the first time. Public marine data generate benefits across the economy, now the aim is to extend this work globally!

#MASTSasm2021"

Harnessing the value of Scottish marine biodiversity data to benefit nature: streamlining data flows and unlocking marine data sources

Rona Sinclair

Authors' Affiliations: NatureScot

¹ *Marine Ecosystems Activity, NatureScot* – rona.sinclair@nature.scot

I would prefer to deliver a talk.

Abstract

Accessibility of biological data has become more urgent than ever before in tackling the biodiversity crisis and the global climate emergency. Scotland has one of the world's richest, most productive and biologically diverse seas; as well as being biologically important, Scotland's seas and coasts are home to many essential marine industry sectors that support and sustain communities. Expanding human activity in the marine environment requires a stronger focus on managing human activity pressures on marine ecosystems. Aligning policies and management decisions with a strong evidence base for a future Blue Economy and Green Recovery from the Covid-19 pandemic relies heavily on access to complete and high-quality marine biodiversity datasets.

Limitations to biodiversity data discovery and re-use, as a result of restricted data sharing, limited metadata and complex data workflows, was a driving force behind the formation of the [Scottish Biodiversity Information Forum \(SBIF\)](#) in 2010 following a public petition calling on the Scottish Parliament to: *“Urge the Scottish Government to establish integrated local and national structures for collecting, analysing and sharing biological data to inform decision making processes to benefit biodiversity.”*

An ongoing piece of work, as an adjunct to the original SBIF review published in 2018, to coordinate and improve Scottish marine biodiversity data workflows is being led by NatureScot in collaboration with stakeholders – the users and suppliers of marine data. The goal of this project is to explore and identify where the marine community feel the barriers or gaps exist in the current infrastructure and make recommendations for improvements to the integration and interoperability of the existing Scottish marine

biodiversity data infrastructure. What do individual recorders / organisations do with the marine biodiversity data that they hold?

A core part of this work is focused on: (1) identifying and resolving species and habitat data workflow duplication; (2) unlocking and mobilising high-quality data resources collected across the key sectors (public; commercial; academia and charity); (3) streamlining existing dataflow pathways from data suppliers to data users; and (4) improving data collation and integration across organisations and between sectors into existing and developing downstream infrastructures, so that marine survey data can be easily accessed, collated, trusted, appropriately acknowledged & used by others.

The outputs from this project will provide a clear definition of the niche of each existing database and portal that receives Scottish biodiversity data and will present a series of biodiversity receptor and sector-based 'as-is' and 'to-be' dataflow mappings, to assist in coordinating and streamlining data flows.

The project is working together with the UK MEDIN¹, its accredited network of data archive centers, and BioDIG² to foster join-up between Scottish and UK aspirations for marine biodiversity data recording. MEDIN will play a core role in achieving the goals of this project by providing the tools and services for the long-term curation, management and onward publication of marine species and habitats data within the UK and internationally.

Tweet #MASTSasm2021

NatureScot: Harnessing #marine biodiversity #data to benefit #nature: streamlining data flows and unlocking marine data source

¹ MEDIN is the Marine Environmental Data and Information Network (<https://medin.org.uk/>)

² BioDIG - the Biodiversity Data and Information Group, a sub-group of HBDSEG (Healthy and Biologically Diverse Seas Evidence Group).

Science for marine management: Evidence and the Marine Management Organisation

Aisling Lannin¹, Leanne Stockdale¹, Chris Graham¹, Christopher Sweeting¹.

¹ Evidence and Evaluation Team, Marine Management Organisation, Lancaster House, Hampshire Court, Newcastle upon Tyne, NE4 7YH – evidence@marinemanagement.org.uk

I would prefer to deliver a talk.

Are you a student? (Delete as appropriate): No.

Abstract

Tweetable abstract

@The_MMO to share our MMO Story and new 2021-2025 Evidence Strategy at MASTSasm2021. Covering our recent research, our evidence gaps, and our future research, the presentation will include how the #MASTSasm2021 community can engage with MMO evidence activity.

Tweetable abstract picture



Twitter handle
@The_MMO

In 2020, the Marine Management Organisation (MMO) marked ten years as the manager and independent regulator of England’s seas. We used this milestone to develop and launch our “MMO Story” which sets out our ambitions for our seas and coasts. As we embrace a period of momentous change how we use and look after our seas remains one of the biggest challenges of our times.

Working across government and with devolved administrations, academia, industry, NGOs, and others, MMO seek to harness the best evidence and technology to make decisions and help deliver our ambitions. Underpinning this intent, the MMO2021-2025 Evidence Strategy sets a clear direction for how we will develop evidence to help us respond to these challenges.

This presentation shares the MMO story and introduces our evidence strategy. Drawing on the climate theme of the conference for illustration, the presentation explores our recent research, our evidence gaps our future direction and how the MAST community can engage with MMO evidence activity.

References

MMO (2020) Our MMO Story - the next ten years, MMO July 2020 28pp available at <https://www.gov.uk/government/publications/our-mmo-story-the-next-ten-years>

MMO (2021) MMO Evidence Strategy 2021-2025 July 2021 19pp available at <https://www.gov.uk/government/publications/evidence-strategy-for-the-marine-management-organisation-mmo-2021-2025>

A multidisciplinary approach to identifying the footprint of an MPA for a migratory benthic species

Thorburn, J.¹, Wright, S.², Lavender, E.¹, Dodd, J.³, Wright, P.⁴, and James, M.¹

¹ *Scottish Oceans Institute, School of Biology, University of St Andrews, St Andrews, United Kingdom*

² *Centre for Environment, Fisheries and Aquaculture Science, Lowestoft, Suffolk NR33 0HT*

³ *NatureScot, Oban, United Kingdom*

⁴ *Marine Laboratory, Marine Scotland Science, Aberdeen, United Kingdom*

I would prefer to deliver a talk

Are you a student? (Delete as appropriate): No.

You must be a student member of IMarEST to be eligible for the student prizes. Join for free here - <https://www.imarest.org/membership/membership-registration/upgrade-your-membership/student-member-simarest>

Presenting at the #MASTSasm2021 how we combined multiple data sources to investigate the movements of flapper skate (*Dipturus intermedius*) in relation to the Loch Sunart to the Sound of Jura MPA. These all demonstrate the MPAs wider connectivity, helping to inform the management of the species. @JAThorburn

Spatial management tools, such as Marine Protected Areas, are increasingly being used to help conserve and manage marine species. To increase their effectiveness for mobile species, the identification of behaviours that increase localised space use, such as residency and site fidelity, is of paramount importance; especially if these are in relation to critical habitats or life-history events. However, once these behaviours have been identified and spatial management is deemed suitable, it is important to understand the wider impact such management may have within the species distribution. The Critically Endangered flapper skate (*Dipturus intermedius*) shows varying levels of residency, by multiple size classes, within a core area of its current distribution. This led to the Loch Sunart to the Sound Jura (LStSoJ) MPA being designated to support the species' conservation. Understanding the connectivity of the MPA to other areas within the flapper skate's distribution is essential for understanding the wider impact of the site. However, despite high localised knowledge of this species' spatial ecology in the MPA, its wider movements and connectivity to other areas are less well known. There is limited evidence from mark and recapture and photo ID data that skate move outside the MPA to areas in southwest Scotland and Northern Ireland. To investigate these movements in greater detail, forty-five skate were tagged with archival tags (depth and temperature) inside the MPA boundaries. Twenty-five archival depth records, spanning from 3-772 days, were recovered. Tidal patterns within the depth data were identified using a Hidden Markov Model, and used to provide daily location estimates. The modelled movements showed most skate to be highly localised within the MPA, but three individuals undertook wider movements. A subsequent acoustic

tagging project deployed 59 long-term acoustic tags on skate within the MPA. Opportunistic detections of six of these skate on acoustic receivers deployed as part of other projects outside the MPA have helped validate the modelled movements. The archival and acoustic data build on the mark and recapture and photo ID data by further demonstrating movements by mature males and females between the MPA, Northern Ireland and southwest Scotland. The combination of different data sources contributes significantly to our understanding of both the footprint of the LStSoJ MPA as well as demonstrating its connectivity with other regions, helping to inform the development of a coherent network of spatial management throughout the species' distribution.



Acknowledgements

Thanks to the MARPAMM, COMPASS and SeaMonitor projects for providing additional detection data.
