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Call for Speakers and E-Posters

Template for Abstract Submission

E-POSTER

Conservation planning for highly mobile species – minke whale residency, movements and population characterisation in the Southern Trench MPA

Full name: Duncan MacDougall
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Organisation: University of St Andrews
Student: Y

Abstract

Implementing effective conservation management in marine environments is challenging for migratory whales due to their vast ranges and the lack of data in key areas of their distribution. Around UK coasts, the behaviour of minke whales, the smallest rorqual whale, is poorly understood. The Southern Trench off northeast Scotland was designated as a Marine Protected Area (MPA) in 2020 largely to protect its high abundance of minke whales. However, understanding of the movements of these whales, their population characteristics and risks from various anthropogenic pressures are lacking. Using our 25-year photo-ID dataset together with photos from other marine users, we will explore site fidelity over inter and intra-annual scales. Initial results comprising 106 individuals show inter-(n=23) and intra-year (n=21) re-sightings within the Firth, but limited interchange with the Scottish west coast population (n=4). A 20-year dedicated boat-survey dataset supplemented by drone footage (>120 mins) collected since 2021 will allow examination of minke whale foraging hotspot inter-annual variability, spatiotemporal suitability of the MPA placement and likely risk from anthropogenic threats. Telemetry attachment will allow us to determine residency durations and scale of movements of individual minke whales in the Moray Firth. Biopsy sampling will further provide information on sex ratio and pregnancy rates of this population, potentially allowing us to determine the importance of the MPA to different segments of the population. Addressing these gaps will enable an assessment of the existing MPA suitability, help to inform adaptative management, and contribute to our understanding of North Atlantic minke whales.

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Optional - Additional Authors
Dr Kevin Robinson, Professor Sascha Hooker

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SPEAKER

Marine Mammals

Cetacean Behavioural Ecology and Environmental Drivers

Full name: Mae McGinley Smith
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Organisation: Radboud University
Student: Y

Abstract

Cetaceans play a critical role as apex predators in marine ecosystems, regulating food webs and enhancing nutrient cycling through mechanisms like the "whale pump". Monitoring their behaviour provides important insights into ecosystem health and their responses to environmental stressors. Tidal cycles and diurnal patterns are known to influence cetacean foraging, but how these drivers interact with anthropogenic pressures in coastal habitats is not understood. In regions like Fishguard Harbour (Pembrokeshire, Wales), species such as *Phocoena phocoena* and *Tursiops truncatus* face cumulative impacts from boat traffic and tidal variability. Current models lack any integration of these interacting drivers across multiple species. The combined effects of tidal phase, time of day, and boat activity on cetacean abundance and behaviour in coastal zones have not been determined.

This study shows that tidal phase significantly influences cetacean abundance, with peaks during early ebb tide and low tide. Harbour porpoises occur mostly at midday, whereas bottlenose dolphins display more flexibility. Contrary to expectations, scheduled ferry operations caused no detectable behavioural disruption, suggesting localised habituation. However, increasing boat counts amplified surface behaviours: leaping (OR = 2.19) and socializing (OR = 2.21) probabilities rose significantly per additional vessel. Tidal phase explained 2.8% of abundance variance (η^2 = 0.028). Advanced modelling identified Seasonality, diel cycle and sea state as primary predictors of cetacean presence. The results suggest that tidal fronts concentrate prey during ebb phases, driving cetacean abundance, while diurnal niche partitioning reduces interspecific competition. Boat activity induces non-acoustic disturbance, manifesting as modified surface behaviour rather than avoidance.

Acknowledgements
All the data used in this project was provided by Sea Trust Wales.

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E-POSTER

Adapting to Coastal Futures: Preliminary Insights into Managing Legacy Waste Risks in a Changing UK Climate

Full name: Seyi Adebangbe
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Organisation: University of Glasgow / (Resilience of the Anthropocene coast and Communities (RACC) project
Student: N

Abstract

Accelerating climate change is placing the UK's ~1,700 historic coastal landfills and 3,000 hectares of contaminated land at critical risk, with many already eroding and releasing pollutants. Indeed, recent national assessments like Dynamic Coast 2 (Scotland) and new Environment Agency datasets (England and Wales) highlight an accelerating future erosion risk—projecting significant impacts on coastal assets and communities—necessitating novel forecasting techniques to incorporate complex, previously under-quantified risks such as the widespread legacy waste which the RACC project is now addressing. The Resilience of Anthropocene Coasts and Communities (RACC) project confronts this "burning imperative" by developing an innovative risk assessment framework. This presentation unveils its preliminary findings. We showcase the initial development of integrated models combining geospatial data (historical maps, aerial/satellite imagery, LiDAR), advanced erosion/flood hazard mapping under future climate scenarios (UKCP18, NCERM2), and socio-landscape vulnerability characterisation. Early results highlight the successful collation of critical datasets for at-risk regions and the foundational architecture of a novel decision-support tool. This tool, designed explicitly for urbanised shores, aims to facilitate evidence-based shoreline management planning that adequately accounts for our industrial waste legacy. These initial outputs collectively signify a crucial step towards equipping stakeholders with the evidence needed for proactive, sustainable management of these ticking time bombs, moving beyond reactive crisis response to build genuine coastal resilience. These findings represent tangible progress towards understanding and mitigating the pollution risks from legacy waste, paving the way for adaptation to ensure resilient coastal communities and ecosystems.

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SPEAKER/E-POSTER (indicate your preference)

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Projecting Climate Change Scenarios on Marine Ecosystem Models

Full name: Adhip Aditya
E-mail address of lead presenter: a.aditya.1@research.gla.ac.uk
Organisation: University of Glasgow
Student: Y/N

Abstract

Climate change is increasingly affecting marine ecosystems, altering trophic interactions and ecosystem dynamics at multiple scales. Investigating and anticipating these shifts is essential to inform management strategies and assessing risks of new infrastructure projects. The UK is considering the construction of a near-shore geological disposal facility (GDF) to safely isolate and contain radioactive waste. Characterising the biosphere and predicting the possible changes it may undergo during the 100-year construction and operational phase of the GDF will underpin the permissions required for its development.

The CLIME project applies the Ecopath with Ecosim (EwE) modelling suite to develop spatially explicit models of the North Sea and Irish Sea. These models incorporate variable human pressures (fishing) and environmental drivers (e.g. sea surface temperature). Functional group responses to environmental drivers are simulated by the models to predict changes to foraging capacity, species distribution and the impact to food web structure.

Here we will present ongoing work using IPCC climate change scenarios to project the Irish Sea EwE ecosystem model forward to test temporally dynamic foraging responses. This work will support the development of the spatiotemporal model of the region. The project is aiming to provide a framework for assessing long-term ecological change to provide a robust basis for risk assessments associated with nationally significant infrastructure projects.

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Title of abstract

Evidencing the value of natural capital on youth wellbeing in deprived coastal communities.

Full name: Laura Bentley
E-mail address of lead presenter: 3063844B@student.gla.ac.uk

Organisation: University of Glasgow

Abstract

With ever increasing anthropogenic pressures such as overfishing, pollution and global climate change, our coastal and marine environments are degrading. Vital to our survival, they provide many ecosystem services from food to pharmaceuticals, storm protection and tourism. The UK government's 25 year plan aims to improve natural environments to a state that allows sustainable use for future generations, part of this plan is to achieve Good Environmental Status in UK seas. Identifying the current health of our marine and coastal environment and working to understand how ecosystem services feed into societal benefits, is crucial to this aim. Coastal communities can play a key role in environmental protection. A strong, socially coherent community can be powerful in instigating change. This research will apply the natural capital framework to assess ecosystem services and their associated benefits, in one of the UK's most deprived coastal communities. Working with 16-18 year olds, this research will aim to assess the role of social and natural capital on the mental wellbeing of youths residing in deprived coastal communities.

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

Optional - Acknowledgements
Funded by NERC – IAPETUS

Optional - Additional Authors
Katherine Simpson, Heather Sugden, Bryce Stewart and David Bailey

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Call for Speakers and E-Posters

Template for Abstract Submission

E-POSTER

Title of abstract

Optimising the sampling efficiency of stereo-BRUVs in turbid waters through horizontal field of view adjustments

Full name: Reece Mills
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Organisation: Queen's University Belfast
Student: Y

Abstract

Stereo-video systems provide a non-intrusive approach for collecting *in situ* morphometric data, offering insights into the size structure, biomass and reproductive potential of marine assemblages, which can support management and conservation. These systems use two calibrated cameras with overlapping Fields Of View (FOV) to generate accurate three-dimensional measurements. A widely used approach is stereo-Baited Remote Underwater Video systems (stereo-BRUVs), which attract animals into the cameras' FOV using bait. In turbid waters, however, individuals are often only visible within a few metres from the camera, frequently before they enter the stereo-overlap area, making measurements unobtainable. This limitation has long hindered the effective use of stereo-BRUVs in many estuarine and coastal environments, highlighting the need for adjustments to camera configurations.

To address this, we tested how increasing the cameras' Horizontal (H)-FOV influences the stereo-overlap area and measurement accuracy, using GoPro Hero 9's three H-FOV settings (narrow, linear, wide) at ranges of 0.5-4.0 m. Wider H-FOVs substantially increased the usable overlap area (narrow: 4.90 m^2; wide: 8.97 m^2) for capturing length measurements. Although wide H-FOVs increased distortion at image edges, spatial error mapping revealed accuracy remained high across most of the field (<1% error at 4 m), declining only at the extreme peripheries (>14% at 4 m). These findings provide practical guidance for researchers, outlining protocols for selecting H-FOV settings that maximise data capture in turbid water, thereby overcoming measurement bottlenecks while maintaining accuracy. With careful implementation, wide H-FOVs can improve sampling efficiency and expand the usefulness of stereo-BRUVs in challenging environments.

Optional - Additional Information

N/A

Optional - Acknowledgements

This study is part of a PhD studentship at Queen's University Belfast, funded by the Department of Agriculture, Environment and Rural Affairs (DAERA). Supplemented with funding from the PEACEPLUS MOSAIC project

Optional - Additional Authors

Ruairí J. Gallagher, Samuel Smith, Patrick C. Collins & Jonathan D. R. Houghton

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Call for Speakers and E-Posters

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Poster or SPEAKER

Technological Innovation in Environmental Monitoring

From Lab to Field: Quick and Affordable Ways to Improve Selectivity of Fishing Gears

Full name: Moritz Eichert
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Organisation: Heriot Watt University
Student: Y (phd)

Abstract

Improving the size selectivity of fishing gear is essential for the long-term sustainability of fisheries. Gear modifications such as escape gaps, mesh size, and mesh shape are widely used to achieve this, but testing them in the field is costly and time-consuming.
We present a laboratory-based approach using FISHSELECT software to estimate size selection curves using data acquired from fall-through experiments with common whelk (*Buccinum undatum*. Whelk contributes 10 – 15 % to the national Shellfish landings (quantity), worth 15 - 27 million £ (2018-2022). To comply with minimum conservation reference size (MCRS) selectivity is split in two stages: at the seabed, through escape gaps in pots, and on deck, through sorting grids. Fishers and managers have long struggled to determine the most effective gap diameters and grid bar spacings that align with regionally defined MCRS.
Our results provide clear, practical guidelines for escape gap dimensions and grid bar spacing, which we successfully validated with field data. This methodology offers an accurate, time-efficient, and low-cost tool that can help fishers and managers, to improve the size-selective performance of fishing gear, supporting more sustainable fisheries management.

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Optional - Acknowledgements
Centre for Doctoral Training in Sustainable Management of UK Marine Resources (Natural Environment Research Council grant reference: NE/W007215/1).

Optional - Additional Authors
Document any other individuals who need to be acknowledged here. Do not include emails or list them above.

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Microbial carbon remineralisation in sub-Arctic fjords under future warming.

Full name: Beth Langley
E-mail address of lead presenter: 2693942l@student.gla.ac.uk
Organisation: University of Glasgow
Student: Y

Abstract

Remineralisation of organic carbon in marine sediments plays a pivotal role in global carbon cycling and climate regulation by limiting long-term carbon storage and releasing carbon back into the atmosphere. Fjordic sediments, recognised as carbon burial hotspots, contribute disproportionately to global marine carbon sequestration. In the Arctic, these fjords are experiencing rapid changes driven by climate warming. Yet, our understanding of the microbial communities responsible for carbon remineralisation in fjordic sediments, and how their activity may respond to future warming, remains limited, largely due to a lack of direct evidence linking microbial identity to function.

Here, we investigate the rates and mechanisms of microbial carbon remineralisation in Greenlandic fjords by tracing the fate of ^{13}C-labeled algae in surface sediments under present and projected future temperatures. Using DNA-stable isotope probing (DNA-SIP) coupled with 16s rRNA sequencing, we identify microorganisms in sediments that are actively engaged in carbon degradation. By linking microbial identity to function, this study reveals the key communities driving carbon remineralisation in sub-Arctic fjord sediments and uncovers how their activity may respond to climate warming. These insights improve our ability to predict changes in sedimentary carbon storage and enhance our understanding of the broader impacts of climate change on the Arctic carbon cycle and the global carbon budget.

Optional - Acknowledgements
This work was funded by IAPETUS2 as part of the Natural Environment Research Council (NERC) Doctoral Training Programme and the Scottish Alliance for Geoscience, Environment and Society (SAGES) Small Grants Scheme.

Optional - Additional Authors
Nicholas Kamenos, Karen Cameron, Tony Gutierrez, Heidi Burdett, Thomas Juul-Pedersen

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Nature-Inspired Artificial Mangrove Roots for Coastal Erosion Mitigation

Full name: **Narakorn Srinil**
E-mail address of lead presenter: narakorn.srinil@newcastle.ac.uk
Organisation: **Newcastle University**

Abstract

Coastal erosion driven by wave impact poses significant challenges to shoreline resilience. Severe erosion rates have been recorded, for instance, along coastlines of the Chao Phraya Delta, Thailand. These undermine environmental sustainability, local economy and resilience of coastal communities. To overcome this critical issue, we develop a novel Artificial Mangrove Root (AMR) system, a nature-inspired soft engineering solution that mimics mangrove root characteristics, to dissipate wave energy and enhance coastal sedimentation.

This study presents a numerical investigation into the wave-induced damping capabilities and associated multi-body dynamic responses of AMR structures designed to imitate a complex morphology of multiple multi-directional mangrove roots (Rhizophora species) under waves. To evaluate the hydrodynamic performance and structural integrity, attention is placed on the effects of variable wave conditions including the wave period, wave height and wave incident direction versus the AMR orientation. The influence of water depth and the implementation of rigid and flexible root materials are also considered. Parametric studies are performed to identify wave damping and drag coefficients of the AMR system depending on hydrodynamic forces, relative coupled flow-body motions and frontal area distributions. Numerical results are compared with experimental tests, highlighting the wave attenuation capabilities of the AMR prototype. These findings support ongoing field observations of pilot sites in the Eastern Chao Phraya Delta, where AMR systems have been installed. The numerical study contributes to the understanding of AMR features, provides insights into the AMR design optimisation and enables us to explore various eco-creative design parameters and environmental conditions.

This study is part of the Eco-NICE project supported by a Research Collaborations grant, ID [1203407805], under the International Science Partnerships Fund. The grant is funded by the UK Department for Science Innovation and Technology in partnership with the British Council. The presenter thanks to team members include Yan Aye at Newcastle University UK, and Butsawan Bidorn, Thanawatth Sattabongkot and Warit Charoenlerkthawin at Chulalongkorn University, Thailand.

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E-POSTER

Waist deep in the big muddy: investigating the interactive effects of microplastics and chemical fertiliser pollution on biogeochemical cycling and ecosystem function in a Scottish estuary

Full name: Michael Vail
E-mail address of lead presenter: mlv1@st-andrews.ac.uk
Organisation: University of St Andrews
Student: Y

Abstract

Coastal benthic ecosystems and their microphytobenthic (MPB) inhabitants sequester pollutants, store carbon, stabilize sediments, and regulate nutrient fluxes across water-sediment interfaces. Single stressor studies have built our understanding of anthropogenic impacts on ecosystem functions, though the interactive effects of multiple stressors on have not been investigated in detail. Microplastic and fertiliser pollution are both widespread and increasing pollutants in coastal ecosystems. As they frequently coexist in coastal soft sediment ecosystems it is important to understand how they interact with each other and how these interactions impact ecosystem functioning.

This study explores the interaction of microplastics and fertilisers and their impacts on benthic ecosystems and their functioning, aiming to identify nonadditive interactive effects on benthic functions. Polyethylene-microfibres (0-0.3g/kg) and NPK fertilisers (0-300g nitrogen/m^2) - alone and in combination- were added across a gradient to intact sediment core mesocosms from the Tay Estuary (Scotland) seeded with local biofilm. Changes in ecosystem function were measured after a 30-day incubation period in a 12hr light/dark temperature-controlled room (16°C). Oxygen production and consumption, and nutrient fluxes (NH_4^+, NO_2^-, NO_3^-, and PO_4) were measured using paired light/dark benthic incubations. Changes in photosynthetic capacity, MPB biomass, and the carbohydrate fraction of extracellular polymeric substances following the Dubois Assay were quantified. Changes in the diatom and benthic invertebrate community structure were quantified via microscopy. Findings suggest that interactive effects between microplastics and fertilizers are complex and increase variability within measured responses to their addition. Changes across functional responses and the wider implications for coastal biogeochemistry will be presented.

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Reducing the Cost of Annotation for the Monitoring of Cliff -Nesting Birds using Self-Supervised Learning

Full name: Charis Hanna
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Organisation: University of St Andrews
Student: Y

Abstract

Monitoring seabird populations is essential for understanding ecosystem health and the impacts of environmental change. However, traditional methods are constrained by the logistics of manual surveys and automated approaches often rely on extensive image datasets for effective performance. To address these limiatations, we explore self-supervised learning strategies for object detection of seabirds on the Isle of May. Our approach leverages a limited set of bounding box annotations alongside a large collection of unlabelled images, enabling models to train effectively with reduced labour cost. We evaluate multiple self-supervised methods across different detectors and assess their ability to accurately detect species with varying population densities under challenging field conditions. Preliminary results indicate that incorporating unlabelled data through iterative pseudo-labelling can improve detection performance across species, providing a scalable pathway for population monitoring. This work demonstrates the potential of self-supervised computer vision techniques to expand research capacity by reducing annotation constraints and enabling more frequent, fine-grained monitoring of seabird colonies.

Optional - Additional Authors
Kasim Terzić, Karen Spencer, Mark James

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E-POSTER

Carbon-scapes: Understanding carbon connectivity across the land-ocean continuum using a seascape approach

Full name: Lucy Robinson
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Organisation: University of St Andrews
Student: Y

Abstract

Coastal ecosystems are recognised as globally significant sites for the storage of carbon and their potential for climate change mitigation. This is due to carbon originating from both autochthonous and allochthonous sources. The carbon stored in blue carbon ecosystems (BCEs) derives from autochthonous and allochthonous organic matter. Despite widespread scientific interest, the sources and cross-habitat subsidies of organic carbon (OC) held in BCEs and the exchanges with the adjacent environments (i.e. terrestrial and marine) remain poorly quantified.

In this study, we use the Dornoch Firth, an estuary in North-East Scotland, as a natural laboratory to assess the sediment carbon dynamics across a mosaic of different coastal ecosystems, and to understand the carbon connectivity between terrestrial, intertidal and marine environments. We collected sediment samples across coastal habitat gradients from six sites along the length of the Dornoch Firth. The samples were analysed using a range of traditional and novel approaches, including stable isotope analysis, thermogravimetric analysis and py-GCMS, to assess the variability in the stocks and sources of OC across estuarine and tidal gradients.

This study will facilitate the development of policy and management practices for the protection of BCEs and significant carbon sources , by developing the understanding of cross-ecosystem OC exchange in estuarine environments.

Optional - Acknowledgements
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Optional - Additional Authors
Corallie Hunt, Mark Huxham, William Sanderson, Richard Streeter, Craig Smeaton