Coastal Futures & REACH 2022
Innovation for Ocean Recovery

An Online Conference January 18th, 19th & 20th 2022

Speaker Notes



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Programme

January 18th 2022 (Day 1)

9.30 - 9.55 **Keynote 1 Ministerial Presentation Rebecca Pow, Defra**
Parliamentary Under Secretary of State for the Environment
Format: Presentation 15 mins & Q&A Chair: **Charles Clover**, Blue Marine Foundation

10.00 - 11.15 **Session 1 Coastal Governance**
Chair: **Amy Pryor**, TEP & Coastal Partnership Network
Objective: To provide an update on major projects which are seeking to improve coastal governance
Format: 4 x 10 minute presentations & Q&A

Championing Coastal Coordination - The 3C's project	**Damian Crilly**, Environment Agency
One Coast and levelling-up Britain's periphery	**Nicola Radford**, Coastal Communities Alliance
Barriers to Diversity	**Surshti Patel**, ZSL
Progressing National Marine Parks	**Natasha Bradshaw**, Consultant & **Kathryn Deeney**, Plymouth City Council

11.25 - 12.40 **Session 2 Adapt or Die – different perspectives of coastal adaptation**

Chair: **Rachael Hill**, Environment Agency
Objective: The impacts of climate change at the coast are very evident now and so how we invest, design and engage communities in adaptation will be a growing challenge – for us all.
Format: 4 x 10 minute presentations & Q&A

Coastal Adaptation – the national picture	**Karen Thomas**, Head of Coastal Partnership East & Adaptation Lead, LGA Coastal SIG
Coastal Voices – a community view of erosion and adaptation: Video	**Sharon Bleese**, Coastal Partnership East
Designing Solutions – An architects view	**Robert Barker**, Director, Stolon Solutions
Coastal Adaptation & Nature-based Solutions	**Emily Cunningham**, Lead Officer of the LGA Coastal SIG

Lunch 12.40 - 13.10

13.10 - 14.25 **Session 3 The legal & political context for the next decade**
Chair: **Chris Tuckett**, Marine Conservation Society
Objective: To highlight a number of key points of the political agenda which are setting the context for the work in the coastal and marine environment.
Format: 3 x 15 minute talks & Q&A

The thin green line: the laws to restore nature?	**Richard Benwell**, Wildlife & Countryside Link
Water pollution out of control in our rivers and coasts – back to the bad old days	**Hugo Tagholm**, CEO, Surfers Against Sewage
The Office for Environmental Protection OEP	**Natalie Prosser**, Interim CEO, OEP

14.35 - 15.50 **Session 4 Restoring Estuarine and Coastal Habitats (REACH) – Progress**
Chair: **Roger Proudfoot**, Environment Agency
Objective: To illustrate progress with examples of practical habitat restoration and nature-based solutions
Format: 4 x 10 mins presentations & Q&A

Progress with seagrass restoration in West Wales **Dr Richard Unsworth**, Swansea University
Tees Tidelands **Zahra Ravenscroft**, Environment Agency
The Sussex IFCA Nearshore Trawling Byelaw: An Ecosystem Approach To Management
Tim Dapling, Chief Fisheries & Conservation Officer, Sussex IFCA
& Professor Peter Jones, Sussex IFCA Chair, University College London
How Healthy is Chesapeake Bay After Three Decades of Restoration Efforts and Why
Rich Batiuk, Co -Founder Coastwise Partners

16.00 - 17.15 **Session 5 Innovation in practice**
Chair: **James Bussell**, Natural England
Objective: to understand and reinforce what innovation is and provide some practical examples from four sectors where innovation is happening.
Format: 4 x 10 mins presentations & Q&A
Innovation in nature conservation – if you're not innovating you have a problem
Chris Davis, Natural England
Developing youth programmes & building capacity **Mhairi McCann**,
Founder & CEO of Youth SYEM 2030
Greening the recreational boating sector from vessels to infrastructure **Phil Horton**,
Environment & Sustainability Manager, RYA
Ports as hubs for sustainability as well as trade – innovation, investment and action
Alex Pepper, Senior Policy Lead, ESG, UK Major Ports Group

17.25 - 17.50 **Keynote 2 The evolution of protected species mitigation associated with offshore wind energy development in the US: the past, present and future**
Dr Mari Smultea, CEO/Chief Scientist, Smultea Sciences
Format: Presentation 15 mins & Q&A Chair: **Olivia Thomas**, The Crown Estate

January 19th 2022 (Day 2)

9.30 - 9.55 **Keynote 3 "2022: The Year of Climate Adaptation"** **Emma Howard Boyd**,
Chair of the Environment Agency
Format: Presentation 15 mins & Q&A Chair: **Craig Bennett**, CEO The Wildlife Trusts

10.00 - 11.15 **Session 6 Blue Carbon - from idea to practical application?**
Chair**: Nigel Pontee**, Jacobs
Objective: The idea of blue carbon has been around for over 10 years. This session will explore what steps it will take to make applying it to operational management a reality.
Format: 4 x 10 mins presentations & Q&A

A view from the future - State of blue carbon projects in the US
Hilary Stevens, Restore America's Estuaries
Where are we now in the UK - State of evidence in UK **Laura Harland**, Defra
Carbon credits from UK managed realignments - carbon budgets at Steart
Hannah Mossman/Rachel Dunk, Manchester Metropolitan University
Where next - What more do we need to do in the UK - Realising the benefits of blue carbon
Dan Laffoley, IUCN / Mission Blue

11.25 - 12.40 **Session 7 Restoring Estuarine and Coastal Habitats (REACH) – Developing Learning**
Chair: **Joanne Preston**, Portsmouth University

Objective: To share learning from estuarine and coastal habitat restoration activities

Format: 3 x 15 mins presentation & Q&A

Capturing lessons from developing handbooks for coastal habitat restoration **Celine Gamble**, UK & Ireland Native Oyster Network, Zoological Society of London/University of Portsmouth
Priority knowledge for oyster restoration at scale **Prof. William Sanderson**, Heriot-Watt University
Restoring shellfish habitats to restore ecosystem services - what do we know and how do we grow the evidence base? **Dr Philine zu Ermgassen**, European Native Oyster restoration Alliance

Lunch 12.40 - 13.10

13.10 - 14.25 **Session 8** **Offshore wind growth: what do we want our marine environment to look like by 2050 and how do we get there?**

Chair**: Olivia Thomas**, Head of Planning, The Crown Estate

Objective: To understand the current situation and what is going to need to change to deliver the anticipated growth of offshore wind in line with net zero targets to 2050. The sea space is ever increasingly constrained and the marine environment ever more at risk of compromise unless we realise a vision of what we want our marine environment will look like. What do we want and how will we get there?

Format: 4 x 10 mins presentations & Q&A

Targets to Net Zero: Government's enabling role **Amy Ferguson / Ruth Stubbles**, Defra, Programme Directors of Defra's Offshore Wind Enabling Action Programme
The evolution of marine plans **Paul Gilliland**, Head of Marine Planning, MMO
What needs to change **Helen Walker**, Head of Environment, ScottishPower Renewables Offshore
How do we revive our seas alongside an offshore energy transition **Kirsten Carter**, Marine Principal Policy Officer, RSPB

14.35 – 15.50 **Session 9**: **Coexistence with offshore wind: fishing, conservation & nature enhancement**

Chair: **David Tudor**, Blue Marine Foundation
Objective: To illustrate the opportunities for co-existence of activities with offshore wind farms, to focus on potential benefits and to highlight the challenges.
Format: 3 x 15 mins presentations & Q&A

Fishing and offshore windfarms: a fisherman's view on coexistence **Merlin Jackson**, Thanet Fisherman's Association
Increasing the UK offshore windfarm footprint: What are the biodiversity benefits and enhanced ecosystem services we can forecast? Jean-Luc Solandt, Principal Specialist - Marine Protected Areas, Marine Conservation Society.
A Dutch perspective on coexistence and nature enhancement opportunities **Marjolein Kelder**, Project lead, Rich North Sea & **Erwin Coolen**, Program Director

16.00 – 17.15 **Session 10** **Regional Delivery Groups – Strategic targets for Net Gain – Resolving what we want** Chair: **Peter Barham**, SUDG

Objective: To explore if there can be a more coherent and strategic approach to delivering high level policy ideas into practice in regional seas.
Format: 4 x 10 minute presentations and Q&A

A strategic approach to marine net gain: An industry perspective **Jen Godwin**, SUDG Executive Officer

Offshore wind enabling actions programme – marine compensation the story so far and next steps
Ros Gaulton, Defra Team Leader, Compensation and Impacts, Offshore Wind Enabling Actions Programme
Marine net gain – aims, principles and next steps **Natalie Bown**, Defra Team Leader, Marine Net Gain, Offshore Wind Enabling Actions Programme
Strategic Goals: How do we achieve lasting recovery of the marine environment? **Joan Edwards OBE**, Director Policy & Public Affairs at The Wildlife Trusts

17.25 - 17.50 **Keynote 4 Change is coming – The Natural Capital Ecosystem Assessment Programme** **Sarah Young**, Defra
Format: Presentation 15 mins & Q&A Chair: **Vicki Castro-Spokes**, Defra

January 20th 2022 (Day 3)

9.30 - 9.55 **Keynote 5** **Tom McCormack**, CEO of the Marine Management Organisation

Format: Presentation 15 mins & Q&A Chair: **Tim Morris**, Chief Executive UK Major Ports Group

10.00 – 11.15 **Session 11 The State of Marine Environment– how is it faring and what measures are needed?** Chair: **Colin Moffat**, Robert Gordon University

Objective: To describe the latest information on the state of marine environment in UK waters, outline the drivers of the observed changes, conclude on the likely consequences of further developments (e.g. marine renewables) and explore options for the future.

Format: 3 x 15 minute presentations & Q&A

Marine Strategy Update **Andrew Scarsbrook**, Defra
The Marine Strategy – an eNGO perspective **Chris Tuckett**, Marine Conservation Society
The need for regional indicators and annual reporting to drive local marine nature recovery **Ruth Williams**, Cornwall Wildlife Trust

11.25 - 12.40 **Session 12 Fisheries: Delivering on the ground for fisheries, climate and the environment** Chair: **Mark Duffy**, Natural England

Objective: To highlight positive steps and ideas that are being set out to deliver benefits for fisheries, climate and the environment.

Format: 4 x 10 minute presentations and Q&A

Towards climate smart fishing - an eNGO perspective **Gareth Cunningham**, MCS
Cooperative scallop fishery management in Ramsey Bay Marine Nature Reserve – update and implications after a decade of experience **Peter Duncan**, Isle of Man Government & **Isobel Bloor**, Bangor University
What's that got to do with the price of fish? Valuing the impacts of the North Sea sandeel fishery to show how natural capital accounting can help improve our seas **Jo Bayes**, Natural England

Remote Electronic Monitoring with cameras – underpinning sustainability? **Helen McLachlan**, RSPB

Lunch 12.40 - 13.10

13.10 - 14.25 **Session 13 The UK Fisheries – Future Prospects** Chair: **Helen McLachlan**, RSPB

Objective: To outline the current developments which are framing the future of fishing in the UK and explore how innovations could have an impact.
Format: 4 x 10 minute presentations & Q&A

The Joint Fisheries Statement **Robbie Fisher & Samantha King**, Defra
More questions than answers, the future for our inshore fisheries **Jerry Percy**, Director of the New Under Tens Fishermen's Association (NUTFA)
Fisheries Innovation: Funding change that makes a difference **Tom Catchpole**, Cefas
Can you generate public goods with public money through fishing and aquaculture? **Duncan Vaughan**, Natural England

14.35 – 15.50 **Session 14: MPAs: From Paper Parks to real protection**

Chair: **Joan Edwards**, The Wildlife Trusts
Objective: To provide an update on MPAs and the progress that is being made to achieving a fully protected MPA network.
Format 4 x 10 mins presentations & Q&A

HPMAs progress & Management plans for every offshore MPA by 2024 **Tim Adey**, Defra
Progress toward well-managed MPAs and new HPMAs in Scotland: MCS perspective **Calum Duncan**, Head of Conservation Scotland, Marine Conservation Society
IFCAs delivering MPA objectives – news from the frontline **Robert Clark**, Association of IFCAs
30x30 and marine protected areas **Angelo Villagomez**, Senior Fellow with the Center for American Progress

16.00 – 17.15 **Session 15 Restoring Estuarine and Coastal Habitats (REACH) - Delivering Nature-Based Solutions at scale** Chair **Steve Hull**, ABPmer
Objective: to provide us with views on what actions we need to take to scale up restoration of estuarine and coastal habitats.
Format: 3 x 15 mins presentations & Q&A

Restoring Meadow, Marsh and Reef – progress **Ben Green**, Environment Agency
Coast to coast: nature-based solutions for climate, biodiversity and people **Jazz Austin**, RSPB
Multistate partnership working together to improve water quality and coast resilience **Megan Ossmann**, Chesapeake Research Consortium

17.25 - 17.50 **Keynote 6 Innovation, Recovery & Action** **Bob Earll**, Coastal Futures & CMS

Format: Presentation 15 mins & Q&A Chair: **Roger Proudfoot**, Environment Agency

DAY 1 – Tuesday 18th January

Keynote 1 Ministerial Presentation Rebecca Pow, Defra
Parliamentary Under Secretary of State for the Environment

Chair: **Charles Clover**, Blue Marine Foundation

Session 1 Coastal Governance

Chair: **Amy Pryor**, TEP & Coastal Partnership Network

Championing Coastal Coordination (3C's Initiative)

Damian Crilly
Environment Agency
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The aim of the 3C's Initiative is to determine how the existing activities of those involved in coastal governance can be strengthened to better coordinate and achieve improvements to coastal environments that are linked to enhanced social and economic outcomes, and how collaborative governance systems can be enhanced to facilitate this process.

The 3Cs initiative will explore how to share ownership of complex issues and maximise outcomes through collaborative, partnership approaches by organisations and institutions from across civil society, the public sector and the private sector to make better use of limited resources.

We are seeking to learn:

- What public policy levers will support the most appropriate interventions?
- How can the private sector add the most value, what is the business case for private sector involvement?
- Who should the civil society sector partner with to provide the maximum collaborative advantage?
- What partnership model is the most appropriate for which situation?

One Coast and levelling-up Britain's periphery

Nicola Radford
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The presentation will focus on the Governments Levelling Up agenda and the impact for English coastal communities, it will discuss the 'how' the levelling up agenda works, and the need to think carefully about the 'where'. Is the focus to be on reviving 'left-behind' towns and struggling coastal communities as economically successful places in their own right? Or is the priority to boost the productivity of the UK's large cities outside of London – which lag similarly sized cities in other countries – as a means of boosting their wider regions?

We will then look at how wider coastal partnerships, the Coastal Communities Alliance, Coastal LGA SIG, Coastal Partnership Network have been brought together to form One Coast to champion our coastal communities and in doing so has not only brought about the opportunity to provide the secretariat for the All-Party Parliamentary Group Coastal Communities but is key to providing a joint

voice to Government and Partners on the opportunities and possibilities our coastal communities can offer.

Black and Brown Faces in Green and Blue Spaces

Surshti Patel
Technical Specialist, Zoological Society of London
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Attention on Equality, Diversity and Inclusion (EDI) in our environment sector is increasing but considering the challenge, it is slow and often efforts are disparate. This is an issue that needs to take integrated systems change approach. There are many barriers that still exist for people from diverse backgrounds to engage with the environment sector ad accessing our natural environment. This creates a monocultural environment that impacts our management and governance now and in the future. I will be exploring this through the lense of racial diversity in the UKs environment sector, looking at its current state, how we got here and ways forward.

Surshti Patel is a Technical Specialist at the Zoological Society of London. She is an interdisciplinary conservation practitioner, with eight years' experience working with NGOs, business, academia, and scientists. Surshti works on developing and applying socio-ecological approaches to a range of environmental health issues, with a strong interest in pro-environmental behaviour and nature benefits at individual and societal levels. Surshti aspires to understand and leverage achievable, fairer, and equitable decision making and action, for shared human and environmental well-being. She has worked in the Philippines, India, Bangladesh, Kenya, Cameroon, Mozambique and the UK.

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National Marine Parks Vision

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www.bluemarinefoundation.com/2021/04/06/national-marine-parks-a-vision-for-british-seas/

In 2021 Plymouth City Council were awarded £9.5 million by the Heritage Lottery Fund to progress the vision for a National Marine Park. In the same year, Blue Marine Foundation launched a vision for National Marine Parks across Britain.

Plymouth Sound National Marine Park was self-declared in 2019 by the people of Plymouth after many years of research and discussion. Plymouth City Council is currently appointing a CEO to deliver the vision over the next few years which will support social, economic and environmental aspirations. Plymouth is pioneering this vision which offers valuable experience for the evolution of other National Marine Parks in Britain.

Blue Marine Foundation ('BLUE') hosted a conference in Plymouth to help mobilise momentum behind Plymouth Sound National Marine Park in 2018, at which unanimous support was shown. It sparked research into the potential application of the vision for National Marine Parks across Britain. Natasha Bradshaw was commissioned by BLUE to research the vision and interviewed people from the national to local level across the country. She found a high level of interest in the idea, based on the opportunity to increase conservation, access and appreciation of the sea. In 2021 two reports were released with associated publicity: '*A Vision for National Marine Parks in British Seas'* co-authored with Dan Crockett from BLUE, shortly followed by a *Vision for National Marine Parks in Scotland*.

National Marine Parks: A Vision for British Seas
Film: https://www.bluemarinefoundation.com/2021/04/06/national-marine-parks-a-vision-for-british-seas/
Report: National Marine Parks: A Vision for British Seas https://www.bluemarinefoundation.com/wp-content/uploads/2021/04/National-Marine-Parks-Vision.pdf
Supplementary Report – Scotland: Argyll Coast and Islands
https://www.bluemarinefoundation.com/wp-content/uploads/2021/06/National-Marine-Parks-Scotland.pdf

Plymouth Sound National Marine Park
https://plymouthsoundnationalmarinepark.com/

Session 2 Adapt or Die – different perspectives of coastal adaptation

Chair: **Rachael Hill,** Environment Agency

Coastal Adaptation - The National Picture - Adapt or Die

Karen Thomas
Head of Coastal Partnership East and LGA Coastal SIG Working Group lead on Adaptation
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- Coastal Change is not new but the speed of change is.
- 2021 Climate Change reports highlight significant risks at the coast now and action is needed urgently.
- We need more coastal erosion data and evidence - and fast- but it's unlikely to be an improved picture.
- Coastal change has far reaching impacts to us as a nation even if you don't live 'on the edge'.
- We need to discuss what type of coast we want - resilient coastal economies and environments will be key to funding and shaping our adaptation plans.
- New national plans and strategies will be a great platform for collaborative adaptive approaches over next 5 years - but we need involvement from a wider range of sectors - notably planning and infrastructure providers.
- The next 5 years will be critical in establishing the 'art of the possible' at the coast.
- LGA Coastal SIG Adaptation working group welcomes new practitioners to support this important work.
- Our ability to adapt and transition to a resilient coast is possible but **we must act now**.

Coastal Partnership East | Coast Management (coasteast.org.uk)
The Local Government Association Special Interest Group on Coastal Issues - The LGA Coastal SIG

Coastal Voices – a community view of erosion and adaptation: Video

Sharon Bleese
Coastal Partnership East

ADAPT & THRIVE - How Climate Adaptive Planning can achieve positive enhancements to the coast

Robert Barker, BA Hons, MA Arch, ARB, FRIBA
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As settlements on the coast struggle with rising sea levels and coastal erosion there can feel like little opportunity or hope for a better future. Old habitats die hard, and it is not uncommon for people to expect the government to step in and protect them. But this is not realistic – we cannot hope to fight change, and we shouldn't just give up and walk away we must learn to embrace change for the better … to **adapt and thrive!**

Climate adaptive planning seeks to achieve positive enhancements to the coast and give residents hope for the future. Instead of climate resilience we should hope to advocate climate enhancement - to continuously adapt to changes in the environment (from climate change) to deliver sustained

benefits and improvements. The Value of nature is rising. Natural capital of ecological compensation and carbon sequestration is encouraging land-use change. Eco-industry, tourism and agriculture are also adding value to coastal areas.

Better and more flexible land-use planning that enables people to continue to live and work on the coast and when the time comes to change or relocate without huge financial penalty is key. This talk seeks to explore some ideas and to enter the debate about how we can learn, not just to adapt but to thrive.

www.stolon.co.uk
www.hamptonquay.uk

Coastal Adaptation – A brighter future for people and nature

Emily Cunningham
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The Local Government Association Coastal Special Interest Group (LGA Coastal SIG) has a membership of 57 coastal councils. Together we cover 60% of England's coast and serve 16 million people.

We are already living with disruptive climate change; and nowhere is this more evident than at our coast. But climate change is not the only threat facing coastal communities. People that live at the coast face widening socio-economic inequality, a lack of quality year-round jobs, a lower life expectancy and high rates of many major diseases. The coastal and marine ecosystems on which coastal communities depend for their prosperity and wellbeing are, in many cases, in poor or declining condition.

But further decline isn't inevitable. We must work together to see the opportunities that coastal adaptation can bring as part of a wider, just transition towards a brighter and healthier future for the people and wildlife that live at the coast. Restoration projects can play a part in this transition and examples will be given as to 3 innovative projects that are restoring habitats to increase coastal resilience. There are win-wins to be had by co-locating biodiversity restoration projects in areas of flood or coastal erosion risk.

Restoration projects alone can't solve the challenges facing our coastal communities and policy solutions are needed. The Motion for the Ocean is a policy template developed by marine experts that aims to help local authorities bring the potentially competing threads of economy, environment and community wellbeing together at a local policy level and begin to tackle coastal challenges in a holistic way, helping realise a brighter future than we have now for both people and nature.

All attendees are encouraged to write to their local Councillor to ask them to table a Motion for the Ocean. More details are available at https://oceanconservationtrust.org/project/the-motion-for-the-ocean/ and we are happy to support as needed. Contact me by email.

Session 3 The legal & political context for the next decade

Chair: **Chris Tuckett,** Marine Conservation Society

The thin blue line: the laws that protect our marine environment

Richard Benwell
CEO, Wildlife and Countryside Link
Richard@wcl.org.uk

The Environment Act 2021 is now law, but there is still much left to be decided.

Between the first and final versions of the legislation, there were significant changes that are relevant to the future of marine conservation.

This talk looks at three of these legal changes: on targets, biodiversity net gain, and site protection. It describes how the law changed during the passage of the bill and the outstanding questions, which will determine whether or not these changes have a positive influence on the state of nature in the marine environment. It suggests that there is still a risk that the marine environment will be neglected in the target-setting process, leading to a situation where improvements in the terrestrial environment obscure ongoing decline at sea. It points out the challenges associated with developing net gain at sea, in the context of a growing number of market-based mechanisms for compensating for environmental harm. And it looks ahead to the forthcoming Nature Green Paper and the interpretation of the 30x30 commitments as an important political agenda that will determine the integrity of the protected site network.

Each of these changes at the domestic level closely relates to political and policy discussions ahead of international talks under the Convention on Biological Diversity and the Convention on the Law of the Sea, so the decisions made on the details of these legal provisions is likely to have relevance not just for the future of conservation in the UK, but also on the ability of the government to influence and shape those critical multilateral agreements.

Water pollution out of control in our rivers and coasts – back to the bad old days

Hugo Tagholm
Chief Executive of the national marine conservation and campaigning charity,
Surfers Against Sewage
hugo@sas.org.uk Twitter Handle: @hugoSAS and @SASCampaigns

Hugo will be talking about the current wave of sewage pollution devastating the UK's rivers and beaches, impacting both sensitive habitats and people who use these unique and fragile spaces. He will talk about the campaigns and tactics that have helped raise public and political awareness on the issue, and action through the Environment Bill. Centring on the importance of real-time water quality information, the talk will focus on the success of the Safer Seas & Rivers Service, the only real time water quality app tracking and reporting sewage and diffuse pollution. This has been central to helping keep communities safe and engaging them with local campaigning on the growing issue of sewage in our seas. Connecting local water users and communities with politicians, water company CEOs and the opportunity to drive change through the Environment Bill has delivered significant progress on exposing the sewage scandal and the need for action to restore and protect blue spaces nationwide.

Hugo Tagholm Fuller Biog

Hugo leads the ocean campaigning charity Surfers Against Sewage, taking action from the beach front to the front benches of Parliament. SAS connects and empowers over 100,000 ocean activists annually, and drives government legislation to protect our seas across four environmental pillars - plastic pollution, water quality, climate change and rewilding our ocean. Hugo is part of the Edinburgh University Ocean Leaders programme and was recently awarded a Doctorate of Science by Exeter University for his services to the marine environment. He is a columnist for Oceanographic magazine and a non-executive director of the ethical creative agency Enviral. He was made Environmentalist of the Year 2021 by the Save the Waves coalition.

Here's a selection of recent articles that might be useful:

(1) Seaspiracy: What does ocean conservation look like now? | LinkedIn
(2) Time To Act • Surfers Against Sewage (sas.org.uk)
(3) A deposit return scheme would halt the tide of plastic | Comment | The Times

An Introduction to the Office for Environmental Protection

Natalie Prosser
Interim CEO, The Office for Environmental Protection
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The Office for Environmental Protection is a new public body created by the Environment Act 2021, as part of a new system of environmental governance being established following the UK's departure from the EU.

Its principal objective is "to contribute to environmental protection and the improvement of the natural environment". It will do this by holding government and other Public Authorities to account against their commitments and environmental law.

The OEP's remit will cover those public authorities with obligations under environmental law in England. That remit could be extended to cover Northern Ireland – this will be formally decided by the Assembly early next year.

Now legally created following Royal Assent, the OEP will operationally 'go-live' in January. The New Year will also see the organisation launch a consultation on its proposed strategy.
Our environment – and, with it – the OEP's scope is blue, as well as green. Therefore, the OEP will be able to look into matters connected to the marine environment. Interim CEO Natalie Prosser will give an introduction to the new organisation, including its functions and its remit.

Session 4 Restoring Estuarine and Coastal Habitats (REACH) - Progress

Chair: **Roger Proudfoot,** Environment Agency

Lessons learnt from seagrass restoration in Wales

Richard Unsworth
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Seagrass restoration in West wales is beginning to be a success, but not without extensive lessons learned.

We outline six overarching lessons that came out of the project, these include:

1) The need to integrate people and the local community into the project.
2) The need to do your homework and assess your site and trial your methods.
3) Importantly we explain and discuss a lot about how restoration requires learning from your mistakes whilst being persistent.

Tees Tidelands: an integrated approach to flood risk management and habitat creation

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Tees Tidelands is an ambitious programme to re-naturalise parts of the Tees Estuary for wildlife and people.

The programme has 2 primary objectives:

- to reduce the increasing risk of flooding caused by climate change
- to enhance, protect and restore habitats

A central theme of this programme is to try out innovative ideas, challenge unsustainable decisions and actions, and connect local communities to the estuary. A programme of ecological monitoring on completed sites will be expanded to quantify the wider multiple benefits delivered through these projects.

Schemes on this programme offer the potential to provide nature based solutions to flood risk that provide significant biodiversity gains. Projects are supported by local industry, Natural England, and other nature conservation bodies. Carbon and biodiversity trading could provide financial contributions to fund the programme both now and into the future.

An Ecosystem Approach to Inshore Fisheries Management: The Sussex Inshore Fisheries and Conservation Authority's *'Nearshore Trawling Byelaw 2019'*

Tim Dapling
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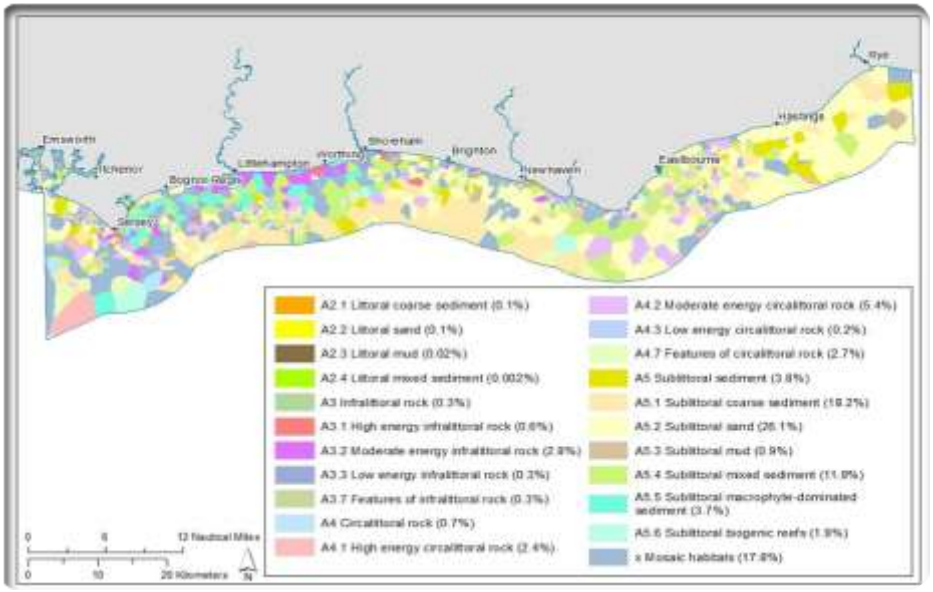
The Sussex Inshore Fisheries and Conservation Authority (Sussex IFCA) was established in 2010 under the Marine & Coastal Access Act 2009. The 'Act' defines the Authority's core duties (Part 6. S.153 and S.154) to develop sustainable fisheries and regulate fishing activities within marine protected areas. The Authority's seaward district extents six nautical miles seaward from lowest astronomical tide, extending from Chichester Harbour in the west, to Rye Bay in the east. The landward element of the district covers the counties of East and West Sussex. The Authority is funded from both Sussex County Councils and Brighton and Hove City Council.

Integral to the Authority's strategic planning and the development of sustainable fisheries is the application of an ecosystem approach to fisheries management. This has been enabled through an understanding of marine habitats, and the identification of environmental values to geographic areas within its District derived from local habitat complexity, sensitivity and ecosystem services.

The Authority has progressively developed a detailed understanding of marine habitats within its District, that extends over 500 square nautical miles. Over more than a decade marine habitat information has been acquired and subsequently interpreted into marine habitat maps. The ambition is achieved from both Sussex IFCA officer research [1] and from working with relevant bodies including the Sussex Wildlife Trust and associated Sussex Biodiversity Records Centre, Sussex Seasearch, University of Brighton and the Channel Coast Observatory. The Authority has delivered and commissioned specific inshore habitat mapping projects including the '*Sussex Coastal Habitats Inshore Pilots I & II*' that interpret existing UK Hydrographic Office bathymetric survey data utilising known ground truth data.

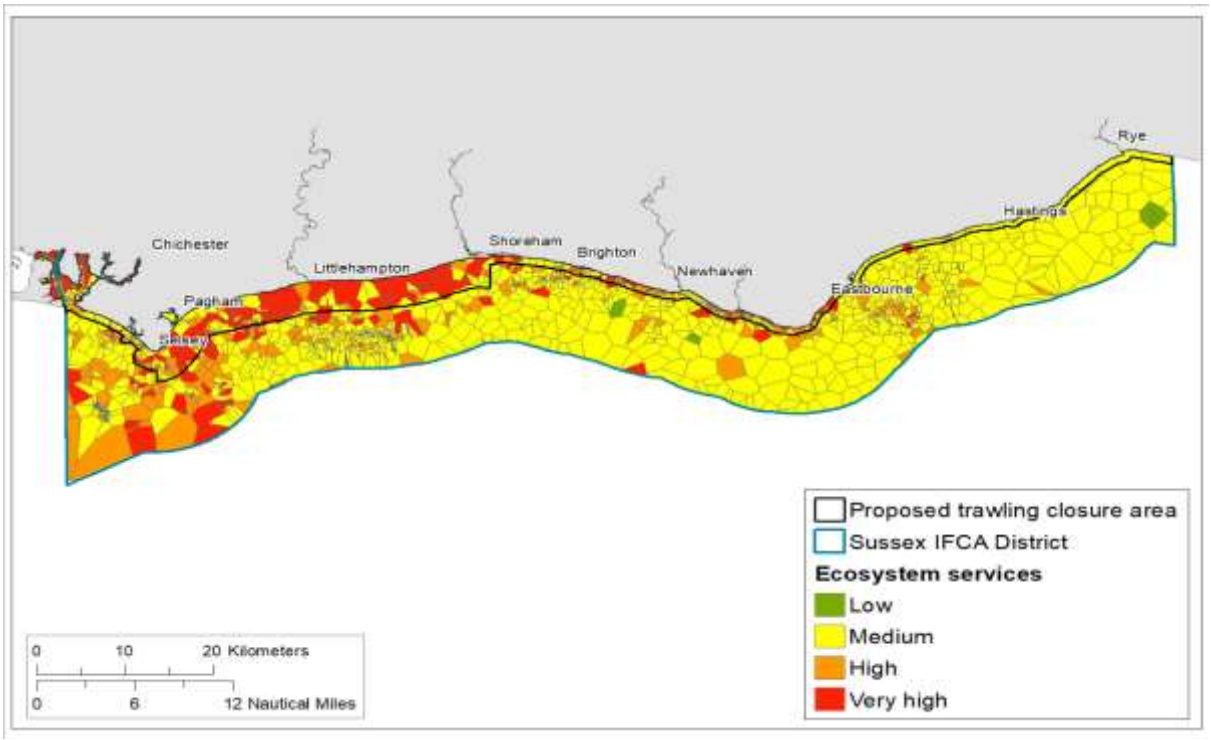
Figure 1. Seabed habitats map at EUNIS level 2 and 3 [1]



The ecosystem services provision for known habitat type was assessed for: food, raw materials, climate, regulation/air quality, natural hazard prevention, primary production, nutrient cycling, reproduction, biodiversity maintenance, water quality regulation, cognitive value, recreation and feel good.[1] Within the IFCA District the highest environmental habitat values are found inshore compared

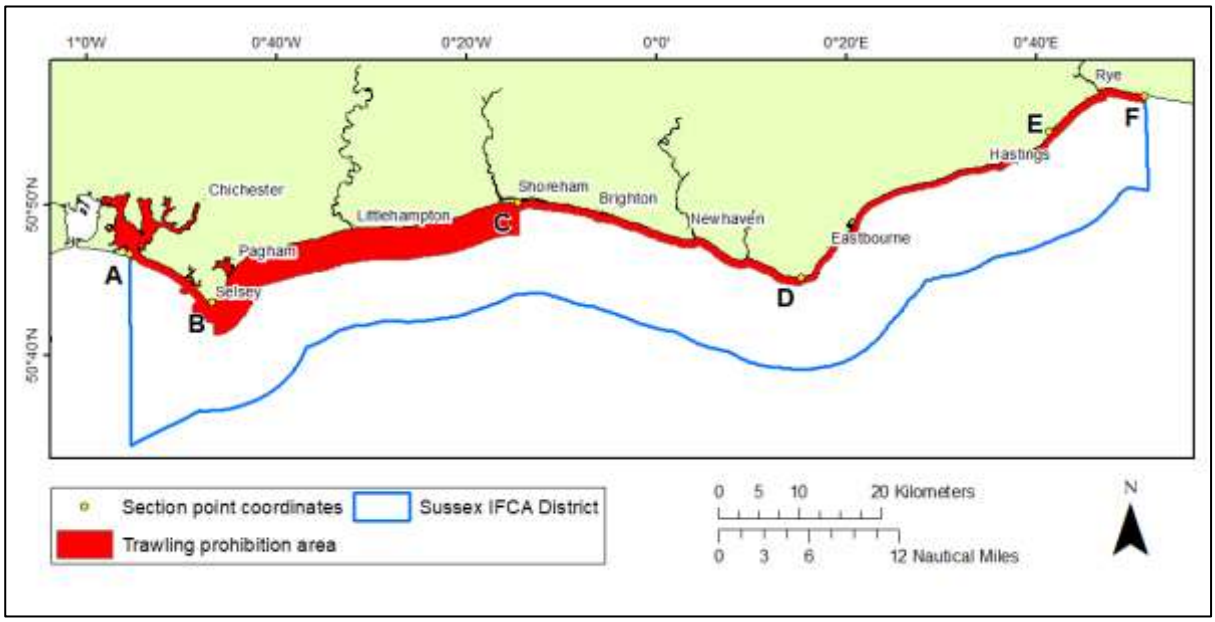
to offshore, and the highest value was in the west of the District, south of Selsey and within the inshore coastal strip from Selsey to Brighton. In this area there are historic records of a dense historic kelp beds, which have now largely disappeared since the mid 1980's. This nearshore marine zone is important for many fish and shellfish species during key life stages including spawning and nursery grounds. Locally important commercial and recreational species dependent on healthy nearshore habitats include bass, black seabream, cuttlefish and lobster.

Figure 2. Ecosystem services provisioning map



To enable ecosystem-based management the Authority has in parallel developed a long-term data set for observed fishing activities. This data has been interpreted and mapped, and in conjunction with habitat maps used in this instance to identify and prioritise trawling management needs.

Several years of byelaw development for nearshore trawling management included both informal and statutory consultation processes with the fishing community. In March 2021, the Authority's *'Nearshore Trawling Byelaw 2019'* was confirmed by Defra and came into force. The Byelaw establishes a year-round spatial closure on trawling activity over more than 300 square kilometres. The Byelaw applies to nearshore zone extending up to 4 km seaward from the mean high water spring line. The byelaw prohibits all trawling within Chichester Harbour and also introduces further trawling mesh restrictions on existing trawling to reduce juvenile fish bycatch of bass and black seabream.
Figure 3. Extent of prohibited trawling 'Sussex IFCA Nearshore Trawling Byelaw 2019'



The primary functions of the Byelaw are to protect and recover essential fish habitats, conserve spawning grounds and fish and shellfish nursery areas from the impacts of nearshore trawling; enabling these vital areas to recover and achieve their full biological potential, maintain healthy ecosystems and in turn support long term sustainable inshore fisheries.

References:

(1) Nelson, K. (2017) Identifying marine management priority areas by mapping environmental value and fishing intensity, M.Sc. Thesis, University of Brighton

(2) Nelson, K. and Burnside N. G. (2019). Identification of Marine Management Priority Areas using a GIS-based Multi-criteria Approach. Ocean and Coastal Management, 172: 82-92

How Healthy is Chesapeake Bay After Three Decades of Restoration Efforts and Why

Rich Batiuk
Retired, Associate Director for Science, Analysis and Implementation
U.S. Environmental Protection Agency Chesapeake Bay Program Office (1985-July 2018)
Co-Founder of CoastWise Partners (Aug 2018-Present)
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With over 40 years of history, the multi-jurisdictional effort to restore the health of the Chesapeake Bay ecosystem is yielding positive outcomes with the resource now evidencing measurable signs of recovery. The lessons learned from this multi-year, multi-jurisdictional restoration effort can provide understanding and guidance for ecosystem restoration efforts elsewhere. Six "lessons learned" from this effort include: 1) support inclusive management structure for consensus decision making; 2) institutionalize an independent reactive and proactive advisory role for the scientific community; 3) set numeric restoration goals, measure, then publicly report progress towards achievement; 4) define clean water simply; 5) build and institutionalize monitoring networks, analyse the data, report to the public; and 6) commit to a system of public accountability. Across the Chesapeake Bay and its watershed, we are observing long term trends providing measurable evidence that decades of shared decision making and taking an array of management actions to reduce pollutant loads,

manage fisheries, restore habitats, and permanently conserve lands are working. However, decades into restoration and protection, the Chesapeake Bay Program partnership is still facing significant challenges to achieving its goals, principally further changing human behaviour and responding to the widespread effects of continued climate change.

Session 5 Innovation in practice

Chair: **James Bussell**, Natural England

Innovation in Nature Conservation

Chris Davis
Principle Advisor – Nature Recovery Network, Natural England
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Key Statement

'The conservation of natural resources is the fundamental problem. Unless we solve that problem, it will avail us little to solve all others' President Roosevelt.

- Innovation is the process to resolve complex problems and issues;
- There is a limited understanding of its application how it can be managed;
- The formal application of innovation management processes in nature conservation are essential to implement radical new ideas;
- Innovation processes could act as a catalyst between identifying conservation issues and the implementation of ideas to resolve them.

Developing youth programmes & building capacity

Mhairi McCann
Founder & CEO of Youth SYEM 2030

Greening the Recreational Boating Sector: from Vessels to Infrastructure

Phil Horton
Environment and Sustainability Manager, RYA
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Phil will introduce the Royal Yachting Association's Carbon Pathway to Zero. The RYA is the UK's National Governing Body for all forms of recreational and competitive boating. We also manage the British Sailing Team, which is one of the UK's most successful Olympic and Paralympic medal-winning teams.

Our sustainability strategy and pathways all follow the same pattern to scope our work. We have areas that we control – our staff, our facilities, transport; areas that we manage – public events such as the Dinghy Show, the British Sailing Team, and racing events at venues around the UK; and areas that we influence – the wider boating community and the recreational boating industry. We need to adopt best practice in all that we do within those areas we control and manage, but the biggest positive impact we can have is through encouraging change among the hundreds of thousands of boaters and many marine businesses that we interact with every year.

Given the wide scope of our plans, the presentation focuses in on one element of influence – the propulsion systems used in many inland, coastal and offshore recreational boats.

Useful Links

RYA Sustainability Strategy: https://assets.rya.org.uk/assetbank-rya-assets/action/directLinkImage?assetId=47596

RYA Carbon Pathway to Zero: https://assets.rya.org.uk/assetbank-rya-assets/action/directLinkImage?assetId=54783

Further information on the RYA's environmental programmes: https://www.rya.org.uk/about-us/policies/environment-and-sustainability

The Green Blue, the joint RYA / British Marine programme: www.thegreenblue.org.uk

Ports as hubs for sustainability as well as trade – innovation, investment and action

Alex Pepper
Senior Policy Lead ESG, UK Major Ports Group
Alex.Pepper@ukmajorports.org.uk

Ports are an essential part of the UK economy, enabling trade with the rest of the world, through the import and export of goods. As well as hubs for trade, they are hubs of activity and communities in themselves, bringing together a wider range of partners. They are an excellent location to innovate as they bring together a mix of users helping to build a demand for new solutions.

UK ports invest significantly each year with much of this supporting more efficient and sustainable port development. As a sector the ports industry is involved in innovation across a range of areas, investing time and resources into delivering innovations into practice.

The recently awarded Clean Maritime Demonstration Projects are examples of this, as port operators are collaborating with others on decarbonisation projects. These are projects receiving grant funding to take forward ideas, which if successful, should then benefit the wider maritime sector. These projects range from looking at improving the efficiency of energy networks to helping the transition away from fossil fuels for plant, machinery, and vessels. Many of these projects have developed on basis of ports as hubs and the concept of zero emissions hubs or ports is evolving.

Further information on featured projects

- Freeport East Energy Hub
- Vertically integrated Cloud Based Ports through the development of a port Microgrid at Teesport
- The Northern Ireland Green Seas Project Zero emission solutions for port and vessel operations.
- Associated British Ports - Delivering net Zero in Maritime (ukmajorports.org.uk)
  - Mayflower the feasibility study – looking at the economic feasibility of a green hydrogen supply to the Port of Immingham and the
  - National Clean Maritime Demonstration Hub in Grimsby looking at feasibility study into business case for infrastructure-investment in Zero-Emission(ZE) Fuels/charging-infrastructure.
- The Port of London Authority – The Hydrogen Highway.

Keynote 2 The evolution of protected species mitigation associated with offshore wind energy development in the US: the past, present and future

Dr Mari Smultea, CEO/Chief Scientist, Smultea Sciences

Chair: **Olivia Thomas**, The Crown Estate

The Evolution of Protected Species Mitigation for U.S. Offshore Wind Energy Development: Past, Present and Future

Dr. Mari A. Smultea
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Regulatory mitigation and monitoring requirements for protected marine species specific to US offshore wind development are relatively new compared to the 30-plus years of European/UK experience. This discussion focuses on protected marine mammals, sea turtles, and Atlantic sturgeon. Speaker Dr. Mari Smultea provides perspective from over 30 years of experience managing protected species and marine mammal observer field programs, and energy permitting and impacts analysis, particularly for offshore wind development. Associated approaches in the US are evolving through application of well-established protocols adapted from the US offshore oil and gas sector, increasing empirical knowledge, and ongoing adaptive resource management strategies. We review the US regulatory framework, evolving regulatory requirements, lessons learned, and anticipated future strategies to minimize impacts of offshore wind development on subject species. This review includes rapid advancements in monitoring equipment, including remote techniques and other high-tech innovations. The context focuses on US offshore wind geophysical and geotechnical surveys as well as newly implemented and anticipated construction and operation of offshore wind platforms. With the US Bureau of Ocean Energy Management (BOEM) expected to open the US west coast for lease bidding by 2022, comparisons are made between current US Atlantic and nascent US Pacific floating wind sector approaches in the differing marine environments.

Web-links and/or references:
Selected overview of U.S. protected species regulations/approaches:

- https://www.fisheries.noaa.gov/new-england-mid-atlantic/science-data/offshore-wind-energy-development-new-england-mid-atlantic-waters
- https://www.boem.gov/sites/default/files/renewable-energy-program/Regulatory-Information/BOEM-Marine-Mammals-and-Sea-Turtles-Guidelines.pdf
- https://www.nytimes.com/2021/10/13/climate/biden-offshore-wind-farms.html
- https://tethys.pnnl.gov/
- https://www.offshorewindca.org/news
- https://smulteasciences.com

DAY 2 – Wednesday 19th January

Keynote 3 "2022: The Year of Climate Adaptation" **Emma Howard Boyd**, Chair of the Environment Agency

Chair: **Craig Bennett**, CEO The Wildlife Trusts

Session 6 **Blue Carbon – from idea to practical application?**

Chair**: Nigel Pontee**, Jacobs

A view from the future - State of blue carbon projects in the US

Hilary Stevens
Restore America's Estuaries
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Restore America's Estuaries has been working on blue carbon for over ten years in the US, supporting research, policy, project implementation, and market development. While we have made significant progress in that time, including advances in understanding of methane production, convening the community of practice with a National Working Group, and supporting pilot projects, there are still barriers to funding, implementation, and earning marketable credits.

Opportunities:

- Two methodologies to bring blue carbon projects to market through Verra
- Two bills before Congress providing guidance to federal agencies for coordinating research, funding for restoration and conservation, protecting coastal ecosystems
- First blue carbon market project nearly complete in Virginia
- Virginia passed legislation to allow for sale of carbon rights on submerged lands
- Strong demand from private sector for blue carbon credits
- Carbon calculators for several regions are available or in production

Challenges:

- Project must be large for market feasibility
- Public lands generally lack mandate to sell carbon rights
- Expense and permitting barriers for any project in coastal zone
- Risk and uncertainty complicate negotiations with funders
- Emphasis on restoration/mitigation, but loss prevention of fresh and tidal wetlands is more important

www.estuaries.org/bluecarbon

Blue Carbon: Where are we now - State of the evidence in UK

Laura Harland
Ocean Climate Science Team, Defra
Laura.harland@defra.gov.uk 07827986218

A healthy and resilient ocean is vital to all life, and plays a crucial role in climate change mitigation, adaptation and resilience. The UK recognises the vital role of the ocean in a changing climate: a healthy and resilient ocean is better placed to adapt to a changing climate and to

mitigate climate change. Therefore, as well as advocating for greater ocean action internationally, we are taking action domestically to improve ocean health and resilience.

Certain marine and coastal habitats, including saltmarsh, seagrass and marine sediments, are important long-term carbon stores. These habitats can be lost or damaged by human activities and their area is being squeezed by sea level rise, which can contribute to carbon emissions. Habitat creation and restoration could contribute to carbon removals whilst also providing a range of co-benefits for biodiversity and climate adaptation.

Net zero will require changes to the management of these environments and research is required to better understand these changes and their impacts, and new approaches and solutions will need to be developed and demonstrated.

This talk provides a Defra perspective on the state of evidence on blue carbon, its link to policy, and future evidence needs.

Carbon credits from UK managed realignments: carbon budgets at Steart Marshes

Rachel M Dunk*, Hannah L Mossman, Robert B Sparkes, Stuart Rae
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@RM_Dunk, @H_Mossman, @sparkes_geochem, @mmuecolenv

Coastal wetlands restored by managed realignment have considerable potential to accumulate carbon through deposition of sediment brought in by the tide and burial of vegetation in the site. These carbon storage benefits could serve as motivation for site creation (alongside other benefits such as flood risk management and supporting biodiversity), either through direct funding and inclusion in carbon accounts (e.g. as countries and organisations seek to meet net zero carbon targets) or through the generation and sale of carbon offsets. While standard methodologies for quantifying the net carbon storage benefits of coastal wetlands are available, at present there is no UK specific standard (i.e. no equivalent to the domestic offset methodologies available for woodland and peatlands), which may limit potential investment in coastal wetland restoration projects.

Here, we highlight key considerations in the development of a UK specific methodology for coastal wetland creation. Ideally, this would include general relationships (proxies, models, and default factors) that allow a carbon inventory to be constructed from field and laboratory measurements that are not so resource intensive as to make application of the methodology impractical. In the first instance, this will require in-depth assessment of multiple projects to test the applicability and robustness of existing proxies, models, and default factors, and (where necessary) generate new general relationships relevant to the UK context. These information needs are discussed with reference to an ongoing evaluation of the Steart Marshes managed realignment site.

Hannah L. Mossman, Nigel Pontee, Katie Born, Peter J. Lawrence, Stuart Rae, James Scott, Beatriz Serato, Robert B. Sparkes, Martin J.P. Sullivan, Rachel M. Dunk (2021). Rapid carbon accumulation at a saltmarsh restored by managed realignment far exceeds carbon emitted in site construction. BioRxiv (preprint, currently in review at PLOS One). doi: https://doi.org /10.1101/2021.10.12.464124
Pre-print full-text: https://www.biorxiv.org/content/10.1101/2021.10.12.464124v1.full

Where next? What more do we need to do in the UK to realise the benefits of blue carbon?

Dan Laffoley
Chair's Advisory Group, World Commission on Protected Areas, IUCN
Chair Hope Spot Council, Mission Blue
Contact: http://danlaffoley.com

It seems to have taken far longer than it should for policy makers to recognise the crucial role that the ocean plays in sustaining life on Earth, shaping the climate, and the degree to which it has already shielded all of us from the true impacts our activities are having on the world around us.

Despite recent welcome recognition of the ocean at COP 21, and alongside much work now directed at understanding and tackling marine management issues in the UK, there is still much that must be done, and now at considerable speed, if we are to sufficiently quickly change the global trajectories that are concerning some many of us. Despite all our efforts to date we still face an overriding decline in biodiversity, accelerating and increasing significant impacts from climate change, and a vast deficit in restoration actions urgently needed to recover lost ecosystem, their values and functionality.

Blue carbon in its broadest meaning is a fantastic opportunity to help meet these challenges by joining the need to tackle climate change and to improve the protection of marine biodiversity. But what can we do to vastly accelerate such efforts to keep marine carbon in natural systems in the way nature intended in the time we have left to act?

The consensus is that the rate of observed biodiversity loss and climate change impacts are such that we now have less than a decade for our actions to take effect to avert disaster. Alongside welcoming recent progress and efforts, this presentation will identify some key imperatives for scaling up and vastly accelerating actions to better protect and realise the benefits of blue carbon in the UK.

Session 7 Restoring Estuarine and Coastal Habitats (REACH) – Developing Learning

Chair: **Joanne Preston**, Portsmouth University

Lessons learnt from developing handbooks for coastal habitat restoration

Celine Gamble
Restoration Project Manager, Zoological Society of London and University of Portsmouth
Twitter: https://twitter.com/CelineGamble
Celine.gamble@zsl.org

During this presentation we draw upon the lessons learnt from developing the recently published coastal habitat restoration handbooks and a series of European native oyster publications.

We reflect on the process of developing the European Native Oyster Habitat Restoration Handbook and Seagrass Restoration Handbook. Covering the key lessons learnt and overlaps within the following themes: getting started, restoration in practice, monitoring, communications and common barriers.

Overall, we highlight the importance of networks and collaborations to translate scientific research and expert knowledge into accessible publications. Aiming to empower and enable restoration, with the hope of further accelerating the field of marine habitat restoration.

Web links/ resources

Website links:

https://nativeoysternetwork.org/

https://wild-oysters.org/

Publications:

European Native Oyster Habitat Restoration Handbook – UK & Ireland:
https://nativeoysternetwork.org/wp-content/uploads/sites/27/2020/11/ZSL00150%20Oyster%20Handbook_WEB.pdf

Seagrass Restoration Handbook: https://catchmentbasedapproach.org/learn/seagrass-restoration-handbook/

European Native Oyster Habitat Restoration Monitoring Handbook:
https://nativeoysternetwork.org/wp-content/uploads/sites/27/2021/11/European%20Native%20Oyster%20Habitat%20Monitoring%20Handbook_WEB_Final.pdf

Priority knowledge for native oyster restoration at scale

Professor William G. Sanderson
Professor, Marine Biodiversity
Heriot-Watt University
w.g.sanderson@hw.ac.uk

Dr William (Bill) Sanderson's research concentrates on sensitive management and sustainable development with a focus on habitats and species of high biodiversity conservation importance. Restoration, MPAs, shellfish habitats are particular focuses. Bill is the Research Director for the multi-award winning Dornoch Environmental Enhancement Project: a partnership between Glenmorangie,

Heriot-Watt University and the Marine Conservation Society that will restore native oysters (*Ostrea edulis*) to the Dornoch Firth. He is also the oyster research lead for the new Restoration Forth programme, led by WWF.

The European native oyster, *Ostrea edulis* (L.), is increasingly recognised as having considerable scope for restoration. There is a clear gap between the scale of restorative projects to date and the historical ecological evidence of their former scale. Overall, escalation of restoration to an operational or systemic scale requires considerable investment. There are likely to be substantial savings to be achieved by improving efficiencies and optimising the processes. Quantification of outcomes in terms of ecosystem services, underpins potential restoration investment, is also an important key stone in achieving restoration at scale.

Web links:
https://researchportal.hw.ac.uk/en/persons/william-sanderson
https://www.youtube.com/watch?v=QSnpk41kln0

References:
[1] https://www.sciencedirect.com/science/article/pii/S0006320717308030
[2] https://www.sciencedirect.com/science/article/pii/S0025326X18308099
[3] https://onlinelibrary.wiley.com/doi/full/10.1002/aqc.3402
[4]https://www.sciencedirect.com/science/article/pii/S0025326X21006135?casa_token=2aD22vOef10AAAAA:RXIBVJUzNV9OWoHjmB2cDpFV73kGBMWfnJ8lOxRnz_7LUF3LBtsQFubdJtHDDKHOjiJxZKr1tnk
[5] https://onlinelibrary.wiley.com/toc/10990755/2020/30/11
[6] https://noraeurope.eu/nora-publications/

Restoring shellfish habitats to restore ecosystem services - what do we know and how do we grow the evidence base?

Philine zu Ermgassen
Independent Consultant and Visiting Researcher at the University of Edinburgh
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The scale of native oyster habitat restoration in Europe is steadily increasing. Yet remarkably little is still known about what we can expect from a fully functioning native oyster habitat. This is largely because such habitat is rare and efforts to restore are still necessarily small scale. But this is changing rapidly.

Understanding and quantifying the potential ecosystem service benefits of native oyster restoration is key to sustaining and scaling up restoration efforts. Key lessons can be learned from the experiences of quantifying ecosystem services in the United States. Here we discuss the importance of understanding ecosystem service delivery in scaling up restoration effect and provide some examples of quantification of ecosystem services from the US experience. Finally, we explore what has been done so far in Europe to ensure that we are on a sound footing for gaining this knowledge about our own species and habitat in the near future.

Web-links and/or references

- https://oceanwealth.org/tools/oyster-calculator/
- https://oceanwealth.org/applications/seagrass-saltmarsh-calculator/
- Setting Objectives for Oyster Habitat Restoration Using Ecosystem Services- A Manager's Guide: https://www.conservationgateway.org/ConservationPractices/Marine/Area-basedManagement/mow/mow-library/Documents/OysterHabitatRestoration_ManagersGuide.pdf
- Forty Questions: https://noraeurope.eu/wp-content/uploads/nora-docs-download/Forty-questions-of-importance-to-the-policy-and-practice-of-native-oyster-reef-restoration-in-Europe-2020.pdf
- European Monitoring Handbook : https://noraeurope.eu/wp-content/uploads/other-publications/European-Native-Oyster-Habitat-Restoration-Monitoring-Handbook.pdf

- Site selection checklist: https://noraeurope.eu/wp-content/uploads/2021/11/NORA-Site-Selection-Checklist-2021-11.pdf
- Estimating and Applying Fish and Invertebrate Density and Production Enhancement from Seagrass, Salt Marsh Edge, and Oyster Reef Nursery Habitats in the Gulf of Mexico https://link.springer.com/article/10.1007/s12237-021-00935-0

Session 8 **Offshore wind growth: what do we want our marine environment to look like by 2050 and how do we get there?**

Chair: **Olivia Thomas**, The Crown Estate

Targets to Net Zero: Government's Enabling Role

Amy Ferguson & Ruth Stubbles
Programme Directors – Offshore Wind Enabling Actions, Defra
E: Ferguson-Stubbles.jobshare@defra.gov.uk

In 2019 the UK Government committed to deliver Net Zero greenhouse gas emissions by 2050 and in October 2020 committed to quadruple offshore wind generation capacity to 40GW by 2030.

The expansion of renewable energy as a key mechanism to reach Net Zero is essential to tackle the climate crisis, but this cannot be done at the expense of our precious marine environment. We are facing both a climate and biodiversity crisis; the two are inextricably linked and we cannot solve one without addressing the other.

Government is a vital player in balancing the activities to tackle these interlinked crises. This presentation will briefly outline some of the work that is already underway to enable this including:

1. The activities of the Offshore Wind Enabling Actions Programme which aims to increase understanding of the environmental impacts of offshore wind and find strategic solutions to manage and mitigate impacts to reduce barriers to the sustainable expansion of offshore wind in English waters.
2. Managing activities and competing demands in the marine environment through Marine Spatial Prioritisation and Natural Capital Ecosystem Assessment.
3. Using our experience to partner and collaborate with the BIES Offshore Transmission Network Review and The Crown Estate's Offshore Wind Evidence and Change programme.

We will also consider how to continue to address the challenges we face by building on the momentum and outcomes of this work and investigate appropriate compensation measures, co-location and co-existence, marine net gain and how data and technology can be used to support sustainable offshore wind development.

The evolution of marine plans

Dr Paul Gilliland
Head of Marine Planning and the Strategic Renewables Unit, Marine Management Organisation
paul.gilliland@marinemanagement.org.uk

Marine planning could easily fit into other sessions – Coastal Governance for example – but here it is in a session on Offshore Wind. Appropriate, perhaps, as the arrival of that sector was a catalyst for marine planning in England (and in many other places).

This session, and indeed marine planning, is about defining where we want to get to and how to get there from where we are now. The presentation will start with reflections on where we are now and how we got here, in relation to offshore wind targets and the evolution and content of published marine plans in England. We need to, collectively, understand and make the most of utilising the current plans as well as considering their further evolution.

Looking to the future and the further evolution of marine plans, what needs to change? To 'improve' the outputs - the plans – we need to consider changes to the inputs required. Those include policy, objectives, a cross-government view, and evidence. None of these are fully or even partly within the

gift of the MMO. However, as the delivery body charged with producing marine plans it is important that we highlight them, not least to assess if and how they might inform the scope and timing of amending or replacing the East Marine Plan.

Marine Planning: https://www.gov.uk/government/collections/marine-planning-in-england

Evidence register: https://www.gov.uk/government/publications/evidence-and-the-marine-management-organisation-mmo/evidence-projects-register

Explore Marine Plans: https://www.gov.uk/guidance/explore-marine-plans

Offshore wind growth: what needs to change?

Helen Walker
Head of Environment Offshore, ScottishPower Renewables
Helen.walker@scottishpower.com

Helen will reiterate what the global 2050 vision is.

1) In 2020 the Offshore Renewable Energy Action Coalition published a document "*The Power of the Ocean*" and in it set out how government and industry could work together to unlock the global potential of offshore wind. https://gwec.net/wp-content/uploads/2020/12/OREAC-The-Power-of-Our-Ocean-Dec-2020-2.pdf

2) This power of the ocean report highlighted the importance of ocean based renewable energy solutions outlining a sustainable vision where offshore wind delivers 1400 gigawatts (1.4 terawatts) of generation capacity by 2050.

3) In terms of ScottishPower Renewables / Iberdrola action we have a strong global pipeline of projects and are leading the energy transition, offshore wind power has become a major business growth vector for the company. We currently have more than 1.3 GW of installed capacity, we plan pipeline expansion allowing Iberdrola to have 12,000 MW in operation by 2030, with investments totalling almost 30 billion euros worldwide during this decade. https://www.iberdrola.com/about-us/lines-business/flagship-projects

To meet the global need, the pace of growth and the scale of deployment of offshore wind needs to accelerate. What needs to change? Helen briefly explores the following topics:

1) Supply chain readiness

2) People and Skills

3) Innovation

4) Global collaboration and sharing

5) Agreed Evidence Base

6) Grid Connection Integration

7) Marine spatial planning UN Global Compact Ocean Stewardship Coalition https://ungc-communications-assets.s3.amazonaws.com/docs/publications/Roadmap-to-Integrate-Clean-Offshore-Renewable-Energy-into-Climate-smart-Marine-Spatial-Planning.pdf recently published roadmap which sums up the benefits of marine spatial planning nicely and succinctly …… *"if done right, MSP accompanied by a strategic environmental assessment can inform site selection lower government regulator costs, streamline developments by mitigating risk of litigation, speed up delivery and investment and ease permitting processes"*

8) Most importantly effective / efficient government decision making in a time bound manner which recognises the need for energy, the climate crisis, and offshore winds fundamental role in tackling it.

How do we revive our seas alongside an offshore energy transition?

Kirsten Carter
Marine Principal Policy Officer, RSPB
Kirsten.carter@rspb.org.uk Twitter @Sealemonsrock

Decades of human activity and exploitation have degraded our seas and, along with climate change, are driving nature loss including the continued and dramatic decline of our globally important seabirds. The climate imperative necessitates unprecedented levels of offshore wind. However, a poorly planned approach to this upscaling is jeopardising both nature and net zero.

Planning systems are not fit to deliver this expansion, grids are not ready and the additional pressure on our seas from the 2030 40GW pipeline alone threatens irreversible nature loses. Industry alone cannot reconcile these challenges; government intervention is needed to avoid the industrialisation of our seas and decimation of nature.

We need system change. And to understand how the decisions we take now will shape the future of our seas. Our energy transition must be supported by a government led roadmap which integrates action for nature and net zero, ending the isolated approach to the management of our seas by embedding positive outcomes for nature in our offshore energy transition.

Session 9 Coexistence with offshore wind: fishing, conservation & nature enhancement

Chair: **David Tudor**, Blue Marine Foundation

Fishing and offshore windfarms: a fisherman's view on coexistence

Merlin Jackson

Thanet Fisherman's Association
07989520484 merlinjackson@btinternet.com

Slide 2. Thames Estuary introduction:

- 10 main Fishing Harbours/Estuaries between Lowestoft and Ramsgate.
- Mixed seabed types. Mainly sand/mud/gravel.
- Shallow area, Average 30m depth.
- Attractive to wind energy.

Slide 3. The Fishing Fleet:

- Approximately 160 licensed vessels between Lowestoft and Ramsgate.
- Majority of vessels under 10 meters and non-nomadic.
- Main Fishing methods: Bottom and mid water Trawling. Anchored Netting. Bottom drift netting. Longlining. Whelk, Lobster and Crab potting.
- Key species: Dover Sole. Bass. Skate. Whelk. Lobster and Crab. Cockles. Oysters.

Slide 4. The Windfarms:

- 8 monopile windfarms since 2005, 566 turbines/ 439KM2.
- Two windfarm extensions, Five Estuaries and North Falls, at survey stage.
- 10 active dredge sites.
- Two installed interconnectors to Europe with three more interconnectors planned.
- Multiple telephone cables, two new additions installed in the next two years.
- UK Sealink interconnector Sizewell to Ramsgate at survey stage.

Slide 5. Challenges between Developers and Fishermen in the Outer Thames:

Challenges between developers and Fishermen from planning through to operation include:

- Loss of fishing ground. Site and Export Cable selected pre fisheries engagement.
- Cable crossing design and whether they can be fished.
- Cable exposures closing ground.
- Pre-Lay grapnel Runs causing seabed problems.
- Turbine positions, spacing and orientation.
- Turbine lighting and safety.
- Surveys.
- Increasing displacement problems.
- Lack of understanding of each other's industry.
- Biggest challenge is Communication.

Slide 6. Past Engagement and Co-existence in the Thames Estuary:

- Currently the leasing/licensing process does not engage with Fishermen prior to site selection or export cable route selection.
- First contact with Fishermen will be by a developer or their representative but lines will already be drawn.
- Timing of engagement is often too late for both sides.
- Differing definitions of 'early engagement'.
- Fishermen adapting to a project rather than being able to work with it.

Slide 7 Lessons learned:

- Early engagement is good for both.
- Benefit in shared knowledge.
- Benefit in Improved working relationship.
- Increased mutual mitigation.
- Significantly reduced objections.

Slide 8. Thanet Windfarm Extension Succorfish tracking:

- Tracking suggested by Ramsgate Fishermen/ working together.
- Thanet Fishermen's Association approached developer to fit trackers for better data.
- Chart gives data on multiple fishing methods, frequency, navigation/displacement.
- Knowledge Key to discussing impacts of turbine positions/ timing/ displacement.
- Coexistence conversations meaningful when working together.

Slide 9. Working together:

- Understanding the constraints of both industries.
- The use of remedial measures to help fishing continue over cable exposures.
- Using Fishermen's Local Knowledge to understand tides, weather and the grounds.

Slide 10. Fisheries Liaison (FLO and FIR):

- Point of contact and often the forward face of a developer.
- Conduit and buffer between developer and Fishermen.
- Key to establishing a good relationship and enhancing coexistence.
- Increasingly important role which needs to keep evolving.
- Important link that the Fishing industry must be a part of.

Slide 11. Going forward with coexistence:

- Fishermen are the best at interpreting their own data and showing what they need to coexist.
- Fishermen's knowledge of grounds has a benefit for developers as well as Fishermen.
- Fishermen need to Understand what developers need so there is a two-way exchange.
- If engagement is early and meaningful, everything flows from that.
- Planning the right site together removes a lot of the problems before they begin.
- Ultimate coexistence is planning together.

Offshore wind: Good or bad for biodiversity and society?

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Let's have a conclusion at the start of 200 words – it is impossible to 'rank' this definitively. Like many things in the marine environment, results aren't wholly understood as yet. However, when looking at historical ecology, we can see a change in the biological community that may resemble something of the pre-industrial past. There will be a change in ecosystem services from depositional to filtration, nutrient recycling & fish habitat creation. These services have been vastly degraded by over 100 years of industrial trawling in the areas of many offshore windfarms. As such, the reduction of the homogenising effect of trawling, coupled with 'pump-primed' habitat creation of bivalve reefs can be considered enhancement for biodiversity and society. Species richness of reef-associated assets increases, and complex mosaic habitats are created (from 'reefy' to 'sandy') between turbines. Set against this (but statistically incomparable) is the effect on seabirds and sandeels that appears negative, whilst impacts on cetaceans and seals appears mixed. What to do? Account for this

change in wider seas planning, and use knowledge to reduce impacts, particularly during construction.

A Dutch perspective on coexistence and nature enhancement opportunities

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With our programme The Rich North Sea we want to seize the unique opportunity which offshore wind farms offer to enhance nature in the North Sea. We are helping our planet in two ways: renewable energy generation to stop climate change, and nature development for more biodiversity in the North Sea. The biodiversity of our largest nature reserve has been reduced by overfishing and diseases, leading to the disappearance of almost all natural reefs. If we want to bring back these reefs, active intervention is needed.

Offshore wind farms provide opportunities for the enhancement of North Sea biodiversity as the addition of hard substrates such as scour protection and the exclusion of bottom disturbance by bottom trawling, gives soft sediment habitats and hard substrate communities the opportunity to develop into more diverse communities.

We are installing artificial reefs and releasing oysters to help marine life thrive. In doing so we are investigating the ideal conditions for optimal nature development. The goal is to then apply the acquired knowledge in all wind farms in the North Sea.

Building blocks for the future
Natuur & Milieu and The North Sea Foundation (Stichting De Noordzee), the initiators of The Rich North Sea, want to establish nature development as a permanent component in the construction of wind farms. We are working on a blueprint in the shape of a 'toolbox' for nature development in all offshore wind farms. The acquired knowledge will be open source so future projects can be started easily and cost-efficiently. This can inspire the entire wind sector and increase the public's enthusiasm for the wonderful opportunities of offshore wind as well.

Session 10 **Regional Delivery Groups – Strategic targets for Net Gain – Resolving what we want**

Chair**: Peter Barham**, SUDG

A Strategic Approach to Marine Net Gain: An Industry Perspective

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The SUDG is an informal grouping of key UK marine industries who share a common interest and commitment to sustainable development within the UK's marine environment. Our members include representation from the cables sector (ESCA), energy (EUK), renewables (RUK), oil & gas (OGUK), UK ports (BPA and UKMPG), aggregates (BMAPA), leisure boats and marinas (British Marine), as well as carbon capture storage (CCSA). The SUDG is committed to working with government, its agencies, conservation bodies and other stakeholders to develop cost effective regulation and marine management that benefits both industry and the environment.

In recent years, the SUDG have been working with government, its agencies and conservation bodies to understand how best the concept of net gain could be implemented in the marine environment. Following a number of SUDG net gain workshops, the SUDG, alongside the TWT put together a proposal to the Offshore Wind Evidence and Change (OWEC) programme for funding to support a project to identify strategic net gain targets for coastal and marine environments. The project proposal was successful, and this presentation summarises the results of this work.

How did this project come about?
There's an increasing recognition of the need for greater action to restore the marine environment in the face of a continued decline in marine biodiversity. Net Gain has been identified as a potential development approach that can contribute to halting and reversing biodiversity loss by leaving the natural environment in a measurably better state than before. Developments that adopt Biodiversity Net Gain (BNG) aim to have a positive impact by delivering an overall increase in biodiversity.

Implementing BNG in the marine environment is recognised as being particularly challenging, due to its dynamic nature and the complex interactions between diverse marine users. It is therefore important to establish clear objectives and targets for Marine Net Gain (MNG) that provide a focus for developer-led action.

How was it delivered?
A Strategic Net Gain Task and Finish Group (T&F Group) was established through the Offshore Wind Evidence and Change programme with the aim to identify a set of strategic targets for the delivery of MNG. An initial gap analysis of existing legal and policy objectives and targets informed discussion around possible priorities for MNG and views of marine stakeholders were obtained via two online surveys. The Group comprised a range of organisations including Defra, Energy UK, Natural England, Renewable UK, RSPB, SUDG, The Crown Estate, The Wildlife Trusts and UK Major Ports Group, supported by an experienced consultancy, ABPmer.

What are the key outputs?
We've recommended a robust set of strategic targets for Marine Net Gain (MNG), which have strong consensus and agreement from industry, regulators and conservation bodies. The targets set a clear direction for how developers could contribute towards MNG to restore and improve the marine environment. The aim of the T&F Group is for these targets to inform Defra's ongoing work through the Offshore Wind Enabling Actions (OWEAP) Programme to develop policy for MNG and its implementation.

The final report is available for download here:
https://www.marinedataexchange.co.uk/content/stories/strategic-net-gain-targets-for-coastal-and-marine-environments

Offshore wind enabling actions programme – marine compensation the story so far and next steps

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- The sea plays a crucial role in managing climate and helping us adapt to changes. Therefore we must balance delivering net zero with addressing the biodiversity crisis to ensure our sea stays healthy and can sustain future generations
- Marine compensation is novel and challenging, with no straightforward solutions and a limited albeit growing understanding of effectiveness.
- Compensation must ensure marine protected areas can still achieve their conservation objectives. This is different to net gain, which can deliver much wider benefits to the natural environment.
- It's important that developments avoid impact through better design that reduces the need for compensation and working in new ways to mitigate impacts.

Marine net gain – aims, principles and next steps

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- The Government's 25-year Environment Plan set out ambitions to restore nature within a generation. For the marine environment this includes reversing the loss of marine biodiversity and, where practicable, restoring it. Marine Net Gain aims to contribute to the recovery of the marine environment.

- Marine Net Gain sits at the intersection of nature protection, climate change policy and economic development and infrastructure deployment.

- The Marine Net Gain project in OWEAP was tasked with defining an approach to net gain that is appropriate to the marine environment and marine development in English waters that reflects the ecological complexity and regulation and uses of the marine environment.

- We will consult on the overarching aims and principles for the policy, and the responses will help shape delivery approaches to translate the aims into real gains for our environment, society and industry. This consultation brings together discussions with marine stakeholders to explore how best to introduce net gain to the marine environment, and we will invite additional views on the principles of Marine Net Gain through the consultation.

Strategic Goals: How do we achieve lasting recovery of the marine environment?

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Following Royal Assent of the Environment Act on the 10th November 2021, there is now a statutory requirement on NSIPs in England to provide a net gain in terrestrial biodiversity and habitats for wildlife [1]. Discussions are still ongoing as to what biodiversity net gain (BNG) will look like in the subtidal and intertidal environments. However make no mistake, delivering BNG at sea and at the coast is going to be a far greater challenge than delivering BNG on land, and many of the difficulties that existing offshore developments are currently facing will also apply to marine BNG.

Our oceans are in a state of crisis – climate change and increasing levels of human pressures are putting massive strain on marine ecosystems. Currently, we are only meeting 4 out of 15 indicators of Good Environmental Status [2]. We need to make sure 30% of our land and seas is connected and protected in order to achieve nature's recovery. It is therefore crucial that marine BNG helps to provide wildlife and habitats with enough space to recover naturally and flourish.

Marine BNG has the potential to be a valuable tool for achieving the recovery of our oceans, but this cannot be done only at the project level. Strategic solutions for marine BNG which allow for the pooling of funds and the creation of environmental headroom are critically needed. Otherwise we will not be able to deliver benefits to the marine environment at the scale needed to achieve significant and lasting recovery of our seas.

[1] Environment Act 2021 (c. 30)
[2] Summary of progress towards Good Environmental Status. Marine online assessment tool, Cefas.

Keynote 4 Change is coming – The Natural Capital Ecosystem Assessment Programme
Sarah Young, Defra

Chair: **Vicki Castro-Spokes**, Defra

Change is coming – The Natural Capital Ecosystem Assessment Programme

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UK Government has set **world-leading ambition** on protecting and enhancing our natural assets. Internationally, through the Convention of Biodiversity, and domestically via the ground-breaking 25 Year Environment Plan. Achieving these goals, including Net Zero by 2050, requires a step change in the way we collect and apply marine evidence. Defra has launched **a flagship science innovation programme**, the **Natural Capital and Ecosystem Assessment Programme** (NCEA), which covers England's land and seas. The programme supports Government ambitions to incorporate nature into national accounts and decision-making processes.

The Marine Natural Capital and Ecosystem Assessment programme will establish **new ways of working** and gather **innovative evidence** to measure the health of our seas and how they are changing over time. The programme will ensure that nature's value is fully considered in decision making across national and local government, and in the private sector. The programme's vision is for a thriving

marine environment where nature is at the heart of decision-making. **This is an ambitious and fundamentally transformative programme which will meet both present and future needs**.

Natural capital considers the value of nature for people and the economy. The marine environment is a shared, busy space. Environmental challenges are interconnected. Natural capital's strategic outlook highlights connections, impacts, dependencies and trade-offs between policy ambitions. Evidence on the quality, quantity and location of our natural assets will guide nature recovery, sustainable use and **investment for future growth.**

Since leaving the EU, Defra is creating and implementing policy, and managing its own waters at an unprecedented pace. EU membership has left the **UK's evidence base with gaps which do not match our new environmental ambitions**. As the UN decade of Ocean Science for Sustainable Development begins, this **significant investment** in marine evidence, is commensurate with the UK's science and technology superpower status.

DAY 3 – Thursday 20th January

Keynote 5 **Tom McCormack**, CEO of the Marine Management Organisation

Chair: **Tim Morris**, Chief Executive, UK Major Ports Group

Session 11 **The State of Marine Environment – how is it faring and what measures are needed?**

Chair**: Colin Moffat**, Robert Gordon University

The future of the UK Marine Strategy perspective - targets and measures

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The UK Marine Strategy Part 1 update published in October 2019 showed that whilst have we have made good progress towards achieving Good Environmental Status in some areas, more needs to be done. Our commitment to achieving GES remains, and whilst the 2020 date has past, the work to deliver GES continues and the 2019 update to UKMS part sets out targets to 2024. But marine biodiversity targets on their own are unlikely to work, they need to take into account and sit alongside targets that relate to actions that manage the pressures on the marine environment to ensure that any use of the marine environment is sustainable.

To achieve these targets we need the right package of measures.

The first step to do this has been the consultation for the proposed updates to the UK Marine Strategy (UKMS) Part Three: Programme of Measures we plan to implement to achieve or maintain Good Environmental Status in UK seas closed on 29 November 2021. Stakeholder feedback is currently being analysed and considered ahead of finalising the updates to the Programme of Measures and publishing later this year.

Publication of the Programme of Measures completes the second cycle of the UKMS. This provides an opportunity to look afresh at how we currently are delivering the strategy, to learn from our experience, to build on and improve the delivery of a UKMS for the future, and to support the delivery of GES.

But we need to look to the future environmental challenges are interconnected - we know this, and this is one of the reasons we have the marine strategy. At its core the UK MS is an adaptative management programme based on framework it considers marine waters as whole and has brought together disparate monitoring programmes, actions and measures from multiple policy drivers under one umbrella.

But this is process heavy so to achieve our goals we are looking to learn for what we have done and enhance and streamline this work, seeking to show how we're going to prioritise improvement over time. This will not only be through targets and measures as set out in the POMS but wider policy actions and a more holistic approach across wider marine policies coming on stream in the years ahead.

Links:

https://moat.cefas.co.uk/summary-of-progress-towards-good-environmental-status/

https://consult.defra.gov.uk/uk-marine-strategy-programme-of-measures-3/uk-marine-strategy-part-3/ (now closed so for reference only)

The Marine Strategy – an eNGO perspective

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- The Marine Strategy started back in 2012 with the aim of achieving Good Environmental Status by 2020.
- By 2020 only 4 out of 15 indicators of marine health were achieved.
- The target is now to deliver GES for all indicators by 2024 - this leaves just 2 years.
- This can only be delivered with buy-in across government, a cross-environment approach, funding and engagement with coastal communities.
- In addition, an ocean recovery strategy is now needed in order to ensure the resilience of our seas to climate change.

The need for regional indicators and annual reporting to drive local marine nature recovery

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Ocean recovery is about giving nature the space and time to thrive and recover, but how do we measure success at a local level, in a specific and time relevant way? High level strategic targets and indicators often don't reflect local or rapid changes, and are at a scale that means they are of little use to help assess the state of regional seas.

Cornwall Council led one of the five national pilots to produce a draft Local Nature Recovery Strategy (LNRS) in 2021, which set out the opportunities and priorities for nature recovery, and which included a marine element despite the remit of LNRS's only going as far as mean low water. However, there is no statutory duty to progress marine opportunities for nature recovery under LNRS's or the Environment Act so Natural England commissioned a piece of work in partnership with Cornwall Council, and Cornwall Wildlife Trust to look at how marine nature recovery (MNR) could be delivered in Cornwall's inshore waters, both within the MPA network and the wider seas.

As well as developing the thinking and methodologies to be applied to prioritise marine nature recovery work, a key part of the project has been to look at what indicators could be used to measure marine nature recovery success. This examined existing criteria and indicators as well as the availability of data, complexity of analysis and associated costs. Data for measurable indicators need to be repeatable and ongoing, where possible with data collected through existing funded programmes and reported on annually. The overarching marine recovery target proposed is for 30%

of land a seas protected by 2030 so we are looking at measuring success between now and 2030, and 5 year cycles are not suitable within that timeframe. The proposed list of indicators act as a proxy for recovery, by assessing the direction of travel, whether increasing or decreasing (detail of proposed indicators can be found in the report linked below).

In the SW there is already an existing model for regular reporting on regional indicators, including most of those identified through the Cornish MNR work; the South West Marine Ecosystems (SWME). Through an annual conference / webinar series, and structured annual report, the SWME reports on indicators collected from existing programmes on an annual basis to assess change, contextualized by local experts. Local indicators act as early warning systems, they are sustainable, cost efficient and models such as SWME help to build social capital and links between science and citizen scientists, increasing outreach.

Could this model work to collate and report on indicators and enable marine nature recovery to be assessed? We believe this model is a good start but further development is needed, particularly ensuring functional linkages are taken into account.

We need marine nature recovery now, so let's use what is already being collected locally through existing programmes, analysed annually with existing resource so it can be sustainable, and ensure we can monitor local trends so we can effectively measure recovery at this important regional scale and feed into local decision making and management.

References:

Cornwall's draft Local Nature Recovery Strategy 2021: https://letstalk.cornwall.gov.uk/nature-recovery-plan-overview
Marine Nature Recovery in Cornwall's Inshore Waters report 2021 pdf: https://www.cornwallwildlifetrust.org.uk/what-we-do/our-conservation-work/at-sea
South West Marine Ecosystems website: https://swmecosystems.co.uk/
South West Marine Ecosystems You Tube channel: https://www.youtube.com/channel/UCojA2OkFX0fM-oq7bVTofhQ
Cornwall's State of Nature Report 2020: https://www.cornwallwildlifetrust.org.uk/what-we-do/about-us/state-nature-cornwall-2020-report

Session 12 Fisheries: Delivering on the ground for fisheries, climate and the environment

Chair**: Mark Duffy**, Natural England

Towards climate smart fishing - an eNGO perspective

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With the importance of the Ocean recognised in the final COP26 decision and a new Climate Objective within the UK Fisheries Act (2020), a joint report by Marine Conservation Society, RSPB & WWF looks at the opportunities to deliver climate smart and sustainable fishing in UK waters.

Web-links:

Climate Smart Fishing Report: https://www.wwf.org.uk/sites/default/files/2021-08/Pact_Media_WWF_Climate_Smart_Fisheries_Report_2021_Aug_16_V2.pdf

Assessment of Carbon Capture and Storage in Natural Systems within the English North Sea (Including within Marine Protected Areas) report:
https://wwfint.awsassets.panda.org/downloads/sams_03745_bcnsea_final_report__issue_03_wwf.pdf

Cooperative scallop fishery management in Ramsey Bay Marine Nature Reserve – update and implications after a decade of experience

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As non-quota species, European scallop fisheries typically lack the management regimes required to control effort, landings and environmental impacts. This study reports on the closure of a depleted Isle of Man scallop fishing ground to enable stock and ecosystem recovery. Following a three-year closure the fishing ground transitioned to a cooperative, user-rights management system within a Marine Protected Area (MPA). The cooperative management approach, which includes industry, scientists and government, is based on submission of an annual fishery management plan by industry which includes pre-fishery surveys, setting of total allowable catches, limited fishing seasons, reduced fishery footprints and closures of low-density areas of scallops and areas with vulnerable marine ecosystems. This experimental fishery management process has been monitored and assessed over the last 9 years with outcomes including; improved stock biomass and resilience, improved harvest efficiency with better economic and environmental outcomes.

The management strategy provides a model for potential application in the wider territorial sea fisheries, and a mechanism for spatially integrating fisheries and conservation. A MPA was established during the recovery period, with the fishery included as one of five conservation areas. As a result economic and conservation objectives are achieved with mutual understanding, acceptance and benefits.

References:

Bloor, I.S.M., Duncan, P.F., Dignan, S.P., Emmerson, J., Beard, D., Gell. F.R., McHarg, K. and Kaiser, M.J. (2021). Boom not bust: Cooperative management as a mechanism for improving the commercial efficiency and environmental outcomes of regional scallop fisheries. Marine Policy, 132.

What's that got to do with the price of fish? Valuing the impacts of the North Sea sandeel fishery to show how natural capital accounting can help improve our seas

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This project developed a natural capital account of the sandeel fishery in the North Sea for Natural England as part of Defra's Marine Natural Capital Ecosystem Assessment (mNCEA) programme. We produced a baseline natural capital account, and accounts for two fisheries management scenarios: no sandeel fishing and reduced sandeel fishing effort.

The differences between the baseline and scenarios are derived from modelling using the Ecopath with Ecosim (EwE) model outputs, provided by Cefas.

The project has applied an extended balance sheet accounting method, (e.g., Sunderland et al. (2019), Lusardi et al. (2018)).

The result suggests that reducing or ending the sandeel fishery would allow sandeel stocks, the fish and seabird populations that feed on sandeel, and mammal populations to increase compared to the baseline scenario. The increases range between 6% and 27% for the no sandeel fishing scenario.

The account raises questions and highlights the need for further work to integrate natural capital account outputs into policy. Priorities for further work include:

- Expanding the modelling to generate aggregated results from several models.
- Calculating a baseline existence value for wildlife.
- Adding climate change sensitivity to the baseline.
- Adding further wind farm capacity.
- Modelling of impacts of displacement of sandeel fishing effort.
- Quantification of embodied carbon in species.

Remote Electronic Monitoring with cameras – underpinning sustainability?

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- We are in the midst of a nature and climate emergency. It is recognised that healthy oceans are vital for climate resilience and planetary health.
- International experts have identified overfishing as the biggest human impact on our ocean.
- It is therefore vital that we introduce concrete measures to support more sustainable fishing and help tackle the impact of fishing on both climate resilience and biodiversity loss including the incidental capture of marine wildlife in fisheries which is a critical threat for many species including seabirds, marine mammals, turtles and elasmobranchs.
- Many of these (setting sustainable catch levels and being accountable for them, minimising impact on marine environment including bycatch, robust data collection) can be supported by the adoption of Remote Electronic Monitoring with cameras (REM).

- This presentation looks at how REM is an established technology used in many fisheries around the world and how it could be rolled out with relative ease in UK fisheries with the right levels of funding and planning. It also looks at what UK REM application looks like and some of the reasons why this hasn't progressed further.

Session 13 The UK Fisheries – Future Prospects

Chair**: Helen McLachlan**, RSPB

The UK Joint Fisheries Statement

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The Fisheries Act 2020 includes 8 fisheries objectives which set the UK's strategic direction for delivering sustainable fisheries management. The four UK fisheries policy authorities (Secretary of State, Scottish Ministers, Welsh Ministers, and the Department of Agriculture, Environment and Rural Affairs in Northern Ireland) are developing a Joint Fisheries Statement (JFS) setting our policies to achieve or contribute to achieving the fisheries objectives, in accordance with the requirements of Act. The JFS a key element of our post EU Exit fisheries management framework and sets out our vision for world class sustainable fisheries in the United Kingdom. It is the first document of its type and represents a significant step forward in our ambitions now the UK is an independent coastal State.

The aim of this talk is to introduce the JFS and its place in the wider UK Fisheries Framework, and explain the next steps in its development and how stakeholders can input.

More questions than answers, the future for our inshore fisheries

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Whilst many elements of the larger scale fleet in the UK are thriving, the same cannot be said for the Under ten metre fleet. This sector makes up 79% of the fleet by number yet has access to only circa 2% of the national quota pool. This is despite the facts that we provide over 50% of catching related employment and provide many social and economic benefits to coastal communities.

Whilst five years ago, the majority of calls to our office related to the lack of quota, in more recent times, those increasingly desperate calls have been about the lack of fish on inshore grounds. My presentation highlights some of the reasons why this is the case, suggests that yet again, our sector in particular and indeed the catching sector in general is at a crossroads.

As a nation, we are either going to throw off the shackles of the EU's Common Fisheries Policy and reap the much vaunted promises of EU Exit [such as they are] mainly through the practical application of the Fisheries Act 2020 and the potentially revolutionary Sections within it - or the government will pay only lip service to the requirements of the Act, citing the excuse that we tied our own hands via the Trade and Cooperation Agreement, as the Secretary of State says, "we didn't get everything we wanted" and the demise of our inshore fleet will continue apace [700 fishing jobs were lost between 2019 and 2020].

Fisheries Innovation: Funding change that makes a difference

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An objective in many fisheries is to enhance its sustainability with the aim to minimise waste and unwanted catches, reduce environmental impacts, improve efficiency, and maximise sustainable fishing opportunities. Enhanced sustainability is the motivation for numerous fishery innovations, new approaches and technologies.

Presented here are recent examples of innovations designed to be applied at different phases of the fishing operation:

1. Selecting and deploying the fishing gear
2. Monitoring the fishing operation
3. Sorting and processing the catch
4. Reporting the catch, and
5. Informing on the decision on where and when to fish

These are only a few examples of the many innovations which demonstrate the level of motivation and potential to further enhance the sustainability of fishing practices. Also signposted are some national funding programmes to support innovation in UK fisheries.

Example innovations presented:

ARC-1XD Acoustic Release in Rope-less Lobster & Crab Fishery, New South Wales - YouTube
Vónin Shrimp Grid - YouTube
Cefas Using Artificial Light to Modify Behaviour of Fish, Sam Smith #FirstLightFromHome - YouTube
SafetyNet lights https://youtu.be/LLxIS0-g7HM
Marport https://mytimezero.com/tz-professional/trawl-positioning-module
The 'Game of Trawls': smart fishing nets could save millions of sea creatures | Euronews
https://deepvision.no/deep-vision/deep-vision
Marel SmartLine Grader for mackerel – Fast, accurate and hygienic - YouTube
New knowledge on stunning and bleeding fish (aquahoy.com)
https://www.youtube.com/watch?v=tsltWJmMgO8&t=2s
Optimar Stun And Bleed - YouTube
Funding Fish https://www.youtube.com/watch?v=gGQu1OcqoAY&t=28s
Seascope fisheries (with St Andrews University) https://www.youtube.com/watch?v=XKxtkDwnT7Q
UEA (with Cefas) https://youtu.be/V0d54FnyIOk
Global Fishing Watch https://www.youtube.com/watch?v=tKxCuW-WWng
https://info.batmap.co.uk/
Cefas https://www.cleancatchuk.com/
CFPO and Cefas spurdog bycatch https://cfpo.org.uk/science/

UK Funding programmes:

FaSS https://www.gov.uk/guidance/fisheries-and-seafood-scheme
FISCOT https://fiscot.org/
SIF https://www.seafoodinnovation.fund/
FISP https://www.gov.uk/guidance/uk-seafood-fund-fisheries-industry-science-partnerships-scheme

Can you generate public goods with public money through fishing and aquaculture?

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Exiting the EU allows the UK to unilaterally change the frameworks that govern its environment and natural resources. This opportunity is timely given the urgent need to address the biodiversity and climate emergencies, and deliver the necessary policy changes to meet associated international agreements. The UK's divergence from EU environmental policy has already begun. The new Agriculture Act uses the concept of "public money for public goods" (PMPG) to seemingly revolutionise direct agricultural subsidies, replacing the much-maligned funding mechanisms under the Common Agricultural Policy and making the provision of their replacement dependent upon actions delivering societal gain. However, the potential benefits of transposing this concept to marine fisheries and aquaculture are yet to be recognised despite similar criticisms of funding mechanisms under the Common Fisheries Policy. This paper therefore considers the key distinctions between our use of marine and terrestrial environments and how PMPG could be applied to fisheries and aquaculture. The findings suggest that some forms of aquaculture are well-placed to benefit from a 'marinising' of the PMPG concept. Currently, capture fisheries, because they do not have ownership over marine space and interact with the marine environment in an extractive manner, have a greater challenge to adapt their business models to receive public money under this framework.

Session 14 MPAs: From Paper Parks to real protection

Chair**: Joan Edwards**, The Wildlife Trusts

HPMAs progress & Management plans for every offshore MPA by 2024

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Marine Protected Areas (MPAs) and Highly Protected Marine Areas (HPMAs) will help prevent biodiversity loss. MPAs protect the marine environment whilst allowing sustainable use while HPMAs will allow biodiversity to recover to a higher level and provide enhanced conservation benefits.

The UK is at the forefront of marine protection and we have built a comprehensive network of MPAs and are now focusing on making sure they are protected properly. There are 372 Marine Protected Areas (MPAs) protecting 38% of UK waters.

All sites are protected through the planning and licensing regimes that cover activities such as dredging for aggregates and constructing offshore wind farms and there is an ambitious three-year programme to assess sites and implement byelaws, where necessary, to manage fishing activity in all English offshore MPAs. This will complement the good progress that has already been made in managing MPAs in inshore waters.

We will designate pilot HPMA sites that will support full biodiversity recovery. HPMAs will take a 'whole site approach' which means that we will protect all species and habitats within the HPMA boundary. We are currently shortlisting potential pilots and look forward to bringing these to consultation.

Progress toward well-managed MPAs and new HPMAs in Scotland: Marine Conservation Society perspective

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In July 2014, the Scottish Government designated 30 new nature conservation Marine Protected Areas (ncMPAs) under the Marine (Scotland) Act 2010 (for inshore territorial waters to 12 nautical miles) and Marine and Coastal Access Act 2009 (for offshore waters beyond 12nm). These new sites augmented the existing network of EU marine Special Areas of Conservation (SACs), increasing the area of Scotland's seas within the emerging MPA network from 12% to 23%. More detail on this was presented at Coastal Futures 2016.

Since then, Loch Carron urgent MPA was designated following scallop dredge damage to the sea loch and has since been made permanent; the vast West of Scotland MPA (the largest in Europe), four large long-awaited inshore MPAs for mobile species, including basking sharks, and seabed features, 12 marine bird SPAs and, most recently, the Red Rocks and Longay urgent MPA to protect a flapper skate egg-laying site have all been designated. Collectively, this network now covers 37% of Scotland's seas, but how much is actually protected in the water?

Following the consultation on fisheries management measures for the most vulnerable inshore MPAs and SACs in 2015, over 2,200km^2 of the inshore network were legally protected from bottom-towed fishing gear. However, a Marine Scotland Science paper concluded that only <0.6% of trawled inshore seabed is protected from this activity within the inshore MPAs. Fisheries management measures for the

remaining inshore sites, and to improve protection of vulnerable benthic Priority Marine Features (PMFs) beyond the MPA network, are still awaited.

Scotland was ahead of the curve on developing management measures for offshore sites, submitted to the EU, but these have been delayed. Most offshore sites shallower than 800m (deeper than which the deep sea access prohibits bottom-towed fishing gear) still await fisheries protection measures. With Scotland's Marine Assessment 2020 highlighting the many concerns regarding seabed condition, including particularly of biogenic habitats, still remaining, management measures for the rest of the network are urgently needed, as is effective monitoring and enforcement. Such measures need to protect those sites from damaging activities, such as bottom-towed fishing gear and developments in the wrong place, in order to meet international benchmarks of 30% of the sea being highly protected (by IUCN definitions). Until such time, the network can't be said to be adequately protected.

The Marine Conservation Society in Scotland helped develop with Save Scottish Seas partners an Ocean Recovery Plan for Scotland, launched December 2020, calling for at least 30% of Scotland's seas to be highly protected, a third of which (at least 10% of seas) to be fully protected, according to IUCN definitions. We therefore welcomed the Scottish Government/Scottish Greens agreement to protect at least 10% of Scotland's seas in Highly Protected Marine Areas (HPMAs, **NB: this would be akin to the IUCN *fully* protected category**) by 2026, four years ahead of a similar target in the EU biodiversity target. The Lamlash Bay Community Marine Conservation Area (a no-take zone) provides an excellent example to build on, but even this groundbreaking site is not legally protected "fully" from all extractive and damaging activities. We look forward to engagement in MPA processes to urgently complete management in the existing network and to contributing constructively to development of the new HPMA sites. The latter must be representative of all inshore and offshore habitats, and located in already damaged or diminished areas to contribute to ocean recovery, including of vital blue carbon habitats.

See:

Scottish Environment LINK Ocean Recovery Plan: OceanRecoveryPlan_spreads-1.pdf (scotlink.org) and film: https://youtu.be/o0m5reNnoko

Reflections on the Scottish Government/Scottish Green agreement: Agreement between Scottish Government and Scottish Greens must be next wave in ocean recovery - Scotlink

Marine (Scotland) Act 2010: http://www.legislation.gov.uk/asp/2010/5/pdfs/asp_20100005_en.pdf

Marine Scotland Marine Protected Areas page: Marine environment: Marine Protected Areas (MPAs) - gov.scot (www.gov.scot)

Marine Scotland Science paper on fisheries management in inshore MPAs: Are MPAs effective in removing fishing pressure from benthic species and habitats? - ScienceDirect

Scotland's Marine Assessment 2020: https://marine.gov.scot/sma/

Marine Protected Area Guide: Explore the World's Protected Areas (protectedplanet.net)

IFCAs News from the front line of marine conservation: from "*Paper Parks*" *to real protection*

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https://twitter.com/marinebill

I will present on how, through the Inshore Fisheries and Conservation Authorities (IFCAs), England has developed a world system of inshore fisheries and conservation management.

IFCAs are committees of local government. Local governance plays an important role in reconciling the competing interests in our coastal seas. The IFCA model provides a structure through which to balance the needs of different users, within the legal structures and frameworks provided by MPA legislation.

I will argue that the management developed by IFCAs in our coastal blue belt through the IFCA fisheries management measures are patently NOT Paper Parks; and the management measures are auditable and expansive and how we should be proud, but not complacent, about what we have achieved and reflect on the work yet to be done.

I will demonstrate a system that empowers local communities to 'sustainably' manage inshore waters; where the role of MPAs is a central pin in the conservation of our seas AND how YOU can and Communities do play a role.

30x30 and marine protected areas

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- The US and UK have both committed to 30x30, a promise to protect 30% of the ocean by 2030.
- But where does this 30x30 idea come from, what is the science, and what was the recommendation from the 2016 International Union for Conservation of Nature on which the goal is based?
- Both countries have made progress and have similar success and shortcomings in developing their 30x30 framework.
- What can both countries do to ensure that 30x30 is achieved as it was intended, and avoid "victory by accounting?"

Blog: How Marine Protected Areas Help Fisheries and Ocean Ecosystems:
https://www.americanprogress.org/article/marine-protected-areas-help-fisheries-ocean-ecosystems/

Blog: To Save Nature, We Must Protect 30 Percent of U.S. Ocean:
https://www.americanprogress.org/article/save-nature-must-protect-30-percent-u-s-ocean/

Blog: At G7, UK Urges Increase in Global Ocean Protections: https://www.pewtrusts.org/en/research-and-analysis/articles/2019/08/29/at-g7-uk-urges-increase-in-global-ocean-protections

Session 15 **Restoring Estuarine and Coastal Habitats (REACH) – Delivering Nature-Based Solutions at scale**

Chair**: Steve Hull,** ABPmer

Restoring Meadows Marsh and Reef: Progress and Potential

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Restoring Meadows, Marsh and Reef (ReMeMaRe) is a cross-Defra initiative, led by the Environment Agency, to support the restoration of our key estuarine and coastal habitats in England. ReMeMaRe has a mission to restore, through habitat creation, 15% of our current extent of our key estuarine and coastal habitats (such as saltmarsh, seagrass, native oyster reefs) by 2043.

There have been some positive signs of change in our saltmarsh and seagrass beds, and the number of restoration projects is increasing every year. However, pressures will continue to increase over the next few decades leading to further loss of habitats and ecosystem services.

This year, we have published handbooks and potential maps to support how to undertake restoration. There has been an increase in funding schemes that may seed further restoration on the ground, and there are new opportunities for restoration evolving as Net Gain, Landscape Recovery Scheme and others develop.

We next intend to define where we can do restoration, and when. In 2022, we will develop, with our partners, our ReMeMaRe strategy into a National Action Plan. Coupled with a spatial prioritisation process for restoration sites, we will be able to take that next step to scale up and achieve the 15% restoration target that we have collectively agreed is needed.

Coast to coast: nature-based solutions for climate, biodiversity and people

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- This important habitat for biodiversity and climate adaptation provides a significant opportunity for assisting multiple societal benefits.
- Nature-based solutions must be high-quality, well-designed and adhere to core principles, alongside urgent fossil-fuel phase-out.
- Intertidal habitats in the UK are at increasing risk of loss, and we need to see robust plans for the protection of existing habitats, together with habitat restoration and creation.

For more information you can watch the complete 10-minute coastal video or the full panel discussion from the COP26 event on YouTube.

The RSPB has also created an interactive storymap to illustrate the importance of intertidal habitats for climate and biodiversity, and highlights existing work in this space.

Multistate partnership working together to improve water quality and coast resilience

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The Chesapeake Bay is the largest estuary in the United States and its restoration effort serves as a model of effective governance, partnership, and adaptive management. The restoration effort of the Chesapeake Bay spans decades and is led by a partnership of federal, state, and local agencies called the Chesapeake Bay Program that work together to improve water quality and restore vital coastal habitats. The history and abundance of submerged aquatic vegetation (SAV) in the Bay tells the story of how environmental laws and policies, extensive monitoring, and state-of-the-art modelling tools helped facilitate its recovery from a state of degradation after centuries of development. Though despite the success in the recovery of SAV over several years, the impacts of climate change have led to setbacks in this recovery and appear to be a significant challenge in this effort. But despite the ups and downs, the Chesapeake Bay Program is a successful partnership that serves as an example of ecosystem and watershed management.

Keynote 6 Innovation, Recovery & Action Bob Earll, Coastal Futures & CMS

Chair: **Roger Proudfoot**, Environment Agency

What do we want? Action that delivers Multiple Benefits

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Introduction
In preparing this presentation I was keen to reflect themes arising from the conference and, in particular, the topic of change and 'what we want', which arise in a number of the sessions. This is the 29th Coastal Futures conference and it is the largest environmental coastal and marine event of the year in the UK. There has always been a strong commitment among this audience and what unites us as a community is a shared desire to enable change to meet the challenges we face. We know that some of these challenges are huge and global in scale and have rightly been framed in terms of emergencies, namely on climate change, our use of natural resources and the combined effect of these on biodiversity. Others that relate particularly to the UK are no less immediate or substantive. These include the increase in sewage pollution in our rivers and coastal waters, the fair allocation of UKs fishing resources, an issue always highlighted when super-trawlers arrive in our waters, coastal infrastructure and climate change, the ongoing issues arising from salmon fish farming and its projected growth or the projected increase in the growth of plastic production.

Change and innovation
When preparing my book (1) several years ago I interviewed speakers from this, and past conferences and their chapters focussed on the steps they had taken to try and change the status quo for the better. Many of those I interviewed framed their view of change in terms of innovation and if one explores this further the ubiquitous 'S' shaped curve is often used to explain what is being done (Google 'images of S shaped curve').

If you deconstruct this curve there are a number of key elements that are highly relevant to our work and the way, we view change; these include:

- the need for a very clear idea of what we want to change – one of the key themes of this event;

- measures and projects that will enable change;
- a clear view of the future – which is key to ideas like sustainability, and;
- a view of how quickly we expect change to occur and on what time scale.

What we don't want

Unfortunately the pace of change on many issues is glacial. It is not so much an 'S' shaped curve as flatlining, the status of the water environment being an example. I recently came across the phrase '*why winning slowly feels like losing'*; it has a strong resonance with many issues we discuss. This is leading to growing frustration on many fronts, not least where we seem to be going backwards on issues e.g. sewage pollution of rivers and at the sea. We have seen in covid that Government can act very quickly and how the science-policy model is often affected by many other factors – a point well illustrated by Larcombe's spoke wheel diagram (2).

Mrs Thatcher said that she learnt a great deal about Government from watching Yes Minister, where the senior civil servant Sir Humphrey's main role is to thwart Government action. Sir Humphrey's tactics and traps are a playbook for how to delay action and exemplified in real life, and illustrated with this example of Australia's approach to climate change interspersed with his narrative.

Another phrase comes to mind in this context, '*over analysis leads to paralysis'*. A number of our current ideas, net gain, blue carbon, natural capital – powerful as they are – fit perfectly into Sir Humphrey's playbook. Indeed one has to ask when we will ever see operational benefits of these ideas. Many of these ideas are only part of the solution.

It is set against this background of inertia and frustration that environmental groups try and prompt action often in ways which are innovative and gain public awareness and sympathy. Innovation takes many forms, for example, the Greenpeace action to drop boulders to highlight the lack of protection of MPAs, or actions of Extinction Rebellion and Insulate Britain to highlight climate change. At present there are a range of new 'funds' that are arising which could make a real difference. In a similar vein the way we frame issues can also be important for example UK's marine ***un***protected areas or the recent call by international scientists to halt the production of primary plastics by 2030.

Multiple benefits

The terms recovery and restoration have been the themes of the last two conferences. They frame what we want in a way that goes beyond the status quo. Most of the examples we have been discussing in this conference have been about recovery and restoration and have been focussed on changes to the way we think about coastal and marine space and the multiple benefits we might derive from this.

As I started preparing this presentation a Tweet arrived in my in-box with fantastic images of the marine life of Tristan da Cunha the giant marine protection zone which is one of UKs Overseas Territories. The Tweet pointed to the recent publication of a paper on blue carbon one of the key benefits, amongst others, to be derived from this MPA. In UK seas we know the multiple benefits that can accrue from managed realignment at the coast through many coastal and estuarine flood and coastal defence schemes and from marine protected areas and no-trawl zones. The benefits for biodiversity recovery (natural capital), blue carbon from undisturbed seabed, for static gear fisheries, aquaculture for shellfish and seaweed, jobs, well-being, flood defences etc are all too evident to see. In this regard the biggest opportunity we have is with offshore wind expansion especially if this includes no-trawl zones as has been exemplified in the Netherlands and Denmark. Taken together these are all great examples of what multiple benefits look like.

The elements of these large scale projects include:

- having a clear view of the future and the change we want;
- delivering action at scale;
- providing multiple benefits across all the capitals, natural, social and economic;
- the need for real money – public and private partnership;
- clear and open process – adaptive management, and;
- professionals and wider society acting *together.*

Conclusions

Elliott Norse, the eminent US marine conservationist in his chapter in my book said that we should be much more ambitious, aim to win and that only step change will do. In this regard I find one of Greta Thunberg's quotes particularly helpful, '*The one thing we need more than hope is action. Once we start to act, hope is everywhere. So instead of looking for hope, look for action. Then, and only then, hope will come.*' We are running out of time. We need to redouble our efforts to get change that will make a real difference for society and the environment *much faster*.

Notes

1. Marine Conservation: People, Ideas and Action Pelagic publishing

2. If you would like further information on any of the slides used in the presentation, please contact me bob.earll@coastms.co.uk