Coastal Futures 2020
Review and Future Trends

15th & 16th January
The Royal Geographical Society, London

Delegate Notes

With thanks to our Sponsors:

#CoastalFutures20 and follow us at @CF Conf

ADVERTISE YOUR VACANCIES, EVENTS & SERVICES WITH CMS

CMS Email Marketing

- Our service provides an engaging and cost effective opportunity of advertising job vacancies, training courses/conferences & reports/publications. (£150 plus VAT or the standard delegate fee for Events if this is more than £150 plus VAT)
- Your advert will reach 9000+ independent professionals, government bodies & charitable organisations in the sustainability, water, environmental and marine community who have signed up to receive our mailings
- We have been working with over 260 organisations for more than 16 years and in 2019 we circulated 329+ adverts

How it works:

1. The main service is provided by direct mailing your advert to our Jobs/Marine/Water contacts who have signed up to receive our mailings (*the most relevant list*)
2. The advert text is uploaded to the **CMS website** (*to the Jobs, News or Events column*)
3. The details are promoted in the CMS News every Tuesday and Thursday; these mailings reach 9000+ contacts
4. Feedback on the click and open rates is provided after the closing date

For more information or to discuss further please contact:
Jayne O'Nions: jayne.onions@coastms.co.uk | 07759 134801 or
Bob Earll: bob.earll@coastms.co.uk | 07930 535283

LET US ORGANISE YOUR CONFERENCE

If you would like to discuss how we can help with your conference administration or require any further information please contact Diana Hunt or Jayne O'Nions

conserve2016@gmail.com | 07759 134801

Welcome to the conference

This information gives the answers to some of the most frequently raised questions that arise at the conferences.

Wi-Fi: The code to access the open network is **Coastal Futures 2020**, no password is needed.

Twitter: If you're tweeting please use **#CoastalFutures20** and follow us at **@CF Conf**

Access to lecture theatre: The front doors to the lecture theatre will close when the conference starts, if you arrive after this time you will need to enter the theatre via the back doors downstairs or use the seats upstairs.

Questions – Bookings – Receipts – In-house information
If you have any questions during the event about bookings or finances, talk to **Diana Hunt** at the registration desk or for logistics queries, please visit the registration desk where someone will be available to help.

Timing: We will try to ensure that the conference runs on time to allow the allocated time for speakers and as importantly for discussion. A bell will be rung 5 minutes before the start of sessions.

Refreshment Breaks
In running hundreds of events in London we have used two main refreshment breaks during the day that enable us to split the sessions and breaks more evenly. A sandwich buffet is available in the first break and sweet course during the second.

Food
There is always ample food at the event and you can come back for more. Once you have collected your food ***could you move away*** from the serving table. Catering staff are on hand if you need anything, including extra drinks.

Special diets: These should be collected from the drinks station in the Main Hall.

Delegate notes: An electronic copy of the full delegate notes will be available on the Coastal Futures website from Wednesday 8th January. We will only be providing the programme and introductory notes in the delegate packs; you may therefore wish to print out the summaries so you can refer to them during the conference.

Networking & delegate lists: Delegate emails & twitter handles will be available on the Coastal Futures website from Wednesday 8th January to enable networking. You will also be able to talk to the speakers after each session.

Meeting Evaluation forms: There are evaluation forms on CF20. Please leave these at the registration desk along with your badge when you leave.

Conference Outputs: The conference outputs will be available shortly after the event on the **Coastal Futures** website; we will email the link to access the delegate notes, speaker presentations and other conference outputs.

Valuables: If you have anything you value keep it with you i.e. do not leave laptops unattended.

Before you leave: Check you haven't left anything in the conference hall. Please also take any leaflets or reports.

Programme

DAY 1 – Wednesday 15th January

The Climate Emergency and How We All Respond – Coasts on the Front Line

8.30 Registration and refreshments

9.25 **Session 1: Chair: Peter Barham**, Seabed User & Developer Group SUDG
9.25 **Welcome to the conference**

9.30 **Opening address** **Emma Howard Boyd**, Chair, Environment Agency

9. 50 **Climate change and the ocean – A call to action** **Professor Ralph Rayner**, Professorial Research Fellow, Centre for the Analysis of Time Series, London School of Economics

10.10 **Unstoppable sea level rise demands adaptation now** **John Englander**, President, Rising Seas Institute

10.35 **How do we communicate climate change** **Chris Rose**, Campaign Strategy

10.55 **How can psychology help with coastal and marine issues?** **Professor Sabine Pahl** University Plymouth

11.15 **Climate change – your views: What more can you do**? **Interactive session**
Emma McKinley, Cardiff University & **Rick Stafford,** Bournemouth University
11.35 First Break: Sandwiches and refreshments

12.15 **Session 2: Chair: Heidi Roberts**, ABPmer

12.15 **Coastal Governance and partnership working** **Nicola Radford**
Lincolnshire County Council & Coastal Communities Alliance

12.30 **The Coastal Based Approach** **Amy Pryor**, Coastal Partnerships Network & Thames Estuary Partnership

12.45 **Shoreline Management Planning and Action** **Nick Hardiman**, Environment Agency

13.05 **Coastal Local Authorities and the Climate Emergency** **Fernanda Balata** New Economics Foundation

13.25 **Place Based Funding at the Coast: Principles and Practice** **Bruce Horton** Environmental Policy Consulting

13.45 **Ganging up on the problem: the benefits, and challenges, of collaboration**
Katherine Yates, University of Salford

14.05 **Short presentations: Six x 3 min updates**

- **Marine citizenship: an interdisciplinary view** **Pamela M Buchan**, University of Exeter
- **The Marine CoLAB- Taking an experimental, values based and collaborative approach to communicating why our ocean matters** **Rosie Chambers**, Marine CoLABoration
- **Towards a Sustainable Future: Understanding the UK's Marine Social Science Community**
Emma McKinley, Cardiff University

- **Measure once, use many times – MEDIN and marine data sharing Charlotte Miskin-Hymas**
  Marine Environmental Data and Information Network (MEDIN)

- **'Mind the 'Change' Gap'! Are we ready to meet & adapt to change John Pepper**
  OceanWise Limited

- **Journey to the Sea: Celebrating the connection between land, sea and people**
  Harriet Yates-Smith, Mindfully Wired Communications

14.25 Second break and refreshments

15.05 **Session 3: Chair: Lissa Batey**, The Wildlife Trusts
20 minute presentations: 15 minutes for questions and 5 mins for Q&A

15.05 **Future development and growth in the offshore wind sector Will Apps**, The Crown Estate

15.25 **Is the projected scale of offshore wind development sustainable?**
Tania Davey, The Wildlife Trusts

15.45 **Offshore Seaweed and mussel farming; the possibilities of co-location with offshore wind**
Martin Syvret, Aquafish Solutions Ltd

16.05 **Marine Climate Change Impacts: Report Card 2020 Ella Howes**, Cefas

16.25 **Reducing Plastic Pollution: A Collaborative Approach from Source to Sea Jessica Hickie**
Programme Manager Plastics & Sustainability, Environment Agency

16.45 **Changing the Soundtrack of the Anthropocene Professor Steve Simpson**, Exeter University

17.10 **The view from Greenland, "ground-zero" for sea level rise John Englander**, President,
Rising Seas Institute

17.35 **Wine reception**

Delegates attending only Day 2 can attend the wine reception!

Day 2 – Thursday 16th January

Ocean Recovery and Restoration – The New Agenda

8.30 **Registration and refreshments**
9.25 **Session 4: Chair: Charles Clover**, Blue Marine Foundation
9.25 **Welcome to the conference**
9.30 **Opening Address Rebecca Pow**
Parliamentary Under Secretary of State for the Environment
9.50 **What do we want from our marine environment? Are we doing enough to deliver ocean recovery and resilience?**

We are at an interesting time in our thinking about the coastal and marine environment. Many things suggest that the time is right to reconsider our long-term vision and what we might need to deliver this. A number of ideas are contributing to this including:

- Business as usual or a time to rethink? Has the 2000s agenda & MCAA run its course?
- Do we need more ambition to achieve and implement what we want – recognising past failures?
- Development and growth of the blue agenda, e.g. offshore wind and farming – are we really doing enough?
- Brexit: An opportunity or going backwards?
- The Climate Emergency meeting the challenge or drifting to chaos?

This session will set the scene for the day – it is being developed collaboratively with **Mark Duffy** (Natural England), **Alec Taylor** (WWF-UK) and **Charles Clover** (Blue Marine Foundation); other inputs will be sought as will views from the audience. There will be a concluding discussion of the ideas raised during the conference at the end of the day.

10.10 **Independent Review into Highly Protected Marine Areas** **Richard Benyon**

10.30 **UK Marine Strategy assessment of biodiversity** **Ian Mitchell**, JNCC

10.50 **How super is 2020? Defra bills and global deals** **Richard Benwell**
Wildlife & Countryside Link

11.10 **The Welsh National Marine Plan** - **a Welsh perspective on marine planning**
Phil Coates, Welsh Government

11.30 "**Learning about marine planning… whether you want to or not**" **Rhona Fairgrieve**, Atkins

11:50 **Short presentations: Seven x 3 min updates**

- **Coastal Typologies: key socio-demographic evidence base for marine planning**
Tim Stojanovic, School of Geography & Sustainable Development and Scottish Oceans Institute, University of St Andrews

- **MMO Public Consultation on the Draft North East, North West, South East and South West Marine Plans West Plans** **Ed Wright**, Marine Management Organisation

- **Promoting biodiversity on marine artificial structures – building the evidence for marine planning** **Ally Evans**, Aberystwyth University and Ecostructure

- **Marine Ecosystem Services Optimisation Model: using Bayesian Belief Networks to evaluate the impacts of pressures on flows of services** **Vicky Morgan**, JNCC

- **Evaluation of Marine Protected Area Management Measures Concerning Fishing (MMO1172)**
Ophélie Humphrey, MarineSpace Limited

- **Project UK – Delivering Fishery Improvements in the North East Atlantic**
Matt Spencer, MSC Marine Stewardship Council

- **Progressing native oyster recovery: opportunities for offshore wind**
Morven Robertson, Blue Marine Foundation

12.15 First Break: Sandwiches and refreshments

12.55 **Session 5: Chair: Sandy Luk**, CEO, Marine Conservation Society

12.55 **The importance of UK kelp forests for fisheries habitat, biodiversity, carbon cycling and regional economies** **Dan Smale**, Marine Biological Association

13.15 **Challenges in Scotland: Doubling of fish farming, mechanical kelp harvesting & future of fisheries management** **Calum Duncan**, Marine Conservation Society

13.35 **The Fisheries Bill & sustainable fisheries – where are we and where do we need to go?**
Helen McLachlan, WWF-UK

13.55 **Low Impact Fisheries** **Chris Williams**, New Economics Foundation

14.15 **Inshore Fisheries – mapping the future** **Kirsten Milliken**, Seafish

14.35 **The developing programme of inshore fisheries and conservation management**
Delivering effective inshore fisheries and conservation management in the Southern IFCA District **Robert Clark**, Southern IFCA

14.55 **Short presentations: Six x 3 min updates**

- **A system for making asset registers for UK habitats below mean high water**
Paul Ivory, Joint Nature Conservation Committee (JNCC)

- **Developing a participatory approach to the management of fishing activity in UK offshore MPAs** **Louisa Jones**, JNCC

- **Developing the evidence-base to support climate-smart decision making on MPAs**
Stephanie Byford, JNCC

- **Monitoring: How do we get the best from an MPA network?** **Matthew Ferguson**, JNCC

- **Using marine biodiversity indicators to estimate the provision of ecosystem services**
Kate Wade, JNCC

- **Taking the UK MPA mapper beyond the boundaries** **Helen Woods**, JNCC

15.15 Second Break

15.50 **Session 6: Chair: Alec Taylor**, WWF-UK

15.50 **Net Gain – How can this be translated into practice?** **Peter Barham**, Seabed User & Developer Group SUDG

16.10 **REACH Programme** - **Restoring Estuarine and Coastal Habitats in the North East Atlantic** **Roger Proudfoot**, Environment Agency

16.30 -16.40 **What do we want? Reflections of the conference** **Charles Clover**
Blue Marine Foundation

16.40 - 17.05 Panel Discussion

17.05 **Conference Closes**

Background to Coastal Futures 2020

Bob Earll
Bob.earll@coastms.co.uk

The Climate Emergency

2019 may well go down as the year when we finally woke up to how serious the climate emergency is. Wildfires in the Arctic, California, Africa and the Amazon and to end the year on an unprecedented scale, the bushfires in Australia put images on to our screens daily. Changes to the ice sheets and glaciers and unprecedented melting of Greenland's ice sheet were also notable. A sixteen year old – Greta Thunberg – caught the public's imagination and raised the level of awareness by inspiring school strikes and putting world leaders to shame. Extinction Rebellion emerged to lead two major two-week climate actions in London and around the world involving thousands of people taking direct action. There was an almost never ending stream of high level reports around the COP25 conference warning us and a growing recognition that we are unlikely to meet the Paris 1.5 target. When considered in detail and given what it happening now in Australia these warnings are stark and profoundly depressing.

Climate change is happening now and its effects are becoming clearer day by day. This is no longer an issue just for climate change specialists since it will impact every part of our lives, wider society and environment. How we all respond to the growing awareness and reality is really important (Figure 1).

Against this background it seemed totally appropriate to devote the first session of CF2020 and a number of other talks to the climate emergency. These will spell out clearly the challenges and concerns but perhaps more importantly ***how we all need to respond***.

Figure 1. Yes, the news is bad, but how do we respond?

We are using one of the talks, by Emma McKinley, to seek your views – the entire audience – on what you are doing personally. This is likely to fall into three categories: the personal choices and actions you can take, what you do at work and then with wider audiences beyond work. We have collaborated on a wide ranging questionnaire to explore what professionals in the marine and water sector are doing before CF2020. Over 400 responses were received and will be used help us to help you do more.

One of my aims for the conference is that ***all delegates*** should be inspired to do more to act on climate change.

Change & the Future

In the soundings I take for Coastal Futures it was clear that there is a strong sense that we need to look at our actions over the next 10 years. The prolonged uncertainty over Brexit has affected this, as has the reality of the likely huge impact of climate change but there are other elements to this as well, these include:

- That the agenda and ideas of the early 2000s which culminated in the Marine & Coastal Access Act and its implementation over the last 10 years have run their course and need a major refresh.
- The public response to marine plastics and climate protests has shown that the general public *do* care and opinions and agendas are shifting.
- The clear need to think with more ambition, specifically around the delivery of GES if we are to see genuine recovery of our marine ecosystem; this is complemented by a fresh look at MPAs, HPMAs and reformed fisheries management. There is a developing view that we should have a greater regard for our natural resources, not least in relation to maintaining carbon sinks that mitigate climate change.
- Development pressures, for example, the ever growing demands of offshore wind x2, x4 or more, and proposed doubling in Scottish salmon farming will pose major questions and challenges. Should **farming seaweed and shellfis**h play a part in our efforts to sequester carbon as well as developing the blue economy?
- Recognition that there may need to be some compromises between objectives but that delivering ecosystem recovery requires integrated planning and delivery across all marine sectors.

These topics will be discussed by many speakers and in particular on the second day of the conference where we will also seek your views on this.

Brexit

The December 2019 Election confirmed that the UK will leave the European Union and so removing one element of uncertainty from this issue. There are, however, a number of aspects to what Brexit will entail including:

- Meeting the legislative deficit The Environment Bill, the Fisheries Bill and the Withdrawal Bill were all confirmed in the Queen's speech and are being covered in the conference. These will all entail a great deal of work by Government, its agency advisors and the NGOs.

- The reality of new administrative regimes and austerity The cut backs to Government environmental agencies through austerity over the last decade has been severe - 50% or more. Also staff have been lost to Brexit related work and managing the changing administrative arrangements caused by Brexit. One can't help but get the feeling that Brexit is sucking the life out of any other Government activity – not least the 25 year environment plan.

- The opportunities of Brexit There are those who still champion the 'opportunities' of Brexit. There are a wide range of possibilities but such is the workload of legislation and routine administration these opportunities seem far from being realised.

The Coast

The coast is on the front line of climate change effects and this is reflected in a variety of the presentations. Many local authorities, including coastal councils, have declared a 'climate emergency' but this begs the question of what this means in practice. Sea level rise will continue irrespective of our current efforts to curb CO2 emissions and this is one of the key elements being factored into current reviews of coastal flood risk and erosion strategies. The Shoreline Management Planning process is also being reviewed and refreshed. There is a growing recognition of the role of partnership and collaboration working at the coast and this helping to create a stronger coastal agenda to meet long-standing issues. The Coastal Based Approach (CoBA) is seeking to build on recent projects, not least the Pioneers, to set out how a systematic approach can be taken to

partnership working for the entire coast of England. Partnership and collaboration are also key to new approaches to place based funding which seeks to fund and deliver projects which deliver multiple benefits across all the capitals. How we might develop ambitious programmes for restoring our estuarine and coastal habitats is being covered by the REACH project lead by the Environment Agency.

Other themes

The impact of **plastics** in the marine environment have continued to be highlighted in 2019 and it seems that there is no ecosystem on earth which is free from plastics or microplastics. The Environment Agency has been working on a new and innovative programme on reducing plastic pollution using a collaborative approach from Source to Sea; Jessica Hickie will describe this. Since it was listed under the Marine Strategy Directive our knowledge of the impacts of **underwater sound** and how we might address this has been growing. Professor Steve Simpson will look at this but also how our understanding of natural levels of underwater sound can be used to encourage marine life and its recovery.

The rapid rise of **offshore wind** off the UK coast has been a remarkable success story and it now contributes significantly to our energy generation. In moving the UK towards Net Zero targets a big role has been pencilled in for offshore wind with figures of growth from the current position of x2 or x4 being cited. Meeting environmental requirements in the development of offshore wind has already been problematic and the presentations at the conference will look at the proposals for the future and their impacts.

The role of plants (**seaweeds, including kelp and sea grass**) in carbon sequestration and producing a range of high value product has been highlighted recently and the potential of kelp farming is being tested in various situations around the UK. Proposals for harvesting wild kelp forests in Scotland however, has proved to be a highly contentious issue. Work is also progressing on large scale mussel farms. Martin Syvret and Morven Robertson will explore the scope that these farming projects might have for future wind farm developments.

Work is continuing on **marine protected areas** and Richard Benyon will be speaking on his review group's work to explore Highly Protected Marine Areas; progress is being made with MCZ management as one of the key elements of the work of the IFCAs. The ground work on **marine spatial plans** is reflected in the programme and continuing to provide backdrop to how we manage our marine spatial resources; the new Welsh National Marine Plan will describe the progress made in Wales. The idea of **Net Gain** which arose from the 25 year plan is also explored in relation to how development might better offset its impact.

Fisheries management continues to be problematic and although some of the basic elements of a new settlement with Europe are known, it is also clear that fisheries are a pawn in the ongoing negotiations with Europe on trade. What the outcome of that will be will not be clear for some time. The fisheries bill will cover the basics but other ideas like, whether low impact fishing can be implemented (Chris Williams), how inshore fisheries can better be supported (Kirsten Milliken), or looking to ban trawling / dredging in inshore waters (Calum Duncan) can be put into practice remain to be seen.

Social sciences For many years the work on marine management and protection has been dominated by professionals from the natural sciences. Increasingly and importantly, given that understanding and managing people is key to many areas of work on coastal and marine environmental and sustainability problems, the role of social sciences is beginning to play a larger part in our activities. Sabine Pahl – psychology, Chris Rose – communications and Katherine Yates – collaboration & partnership, will be presenting to provide an insight into what these disciplines can add to our work.

DELEGATE NOTES

DAY 1 – Wednesday 15th January

The Climate Emergency and How We All Respond – Coasts on the Front Line

SESSION 1

Opening address: Coasts on the front line

Emma Howard Boyd
Chair of the Environment Agency, UK Commissioner to the Global Commission on Adaptation
E: ChairOfficeEA@environment-agency.gov.uk
@EmmaHowardBoyd

Climate change is the biggest challenge we face. It threatens our economy, environment, health, and way of life. Our coasts are on the front line, at huge risk from rising sea levels and extreme storms, but they are also one of our first lines of defence from these threats.

In 2019 the Environment Agency consulted on its draft National Flood and Coastal Erosion Risk Management Strategy which sets a vision for how the UK can be a nation ready for, and resilient to, flooding and coastal change – today, tomorrow and to the year 2100. The Environment Agency has also set itself the goal of becoming a net-zero organisation by 2030 – we all need to play our part in responding to the climate emergency and we want to help show other organisations what is possible. Also last year, the Global Commission on Adaptation published its flagship report, Adapt Now, which calls on the international community to accelerate adaptation to deliver human, environmental and economic resilience to climate change.

In this talk Emma will draw on these recent publications to ask what is the best possible coastal future we can hope for, and how can we make it a reality. As we look ahead to COP 26 which will be held in the UK in November, we must seize the opportunity to turn ambition into action and ensure adaptation and resilience are at the heart of how we manage our coasts for tomorrow's climate.

Environment Agency, Draft National Flood and Coastal Erosion Risk Management Strategy for England, https://consult.environment-agency.gov.uk/fcrm/national-strategy-public/user_uploads/fcrm-strategy-draft-final-1-may-v0.13-as-accessible-as-possible.pdf

Global Commission on Adaptation, Adapt Now: A Global Call for Leadership on Climate Resilience, https://gca.org/global-commission-on-adaptation/report

Climate change and the ocean – A call to action

Professor Ralph Rayner
Professorial Research Fellow, Centre for the Analysis of Time Series, London School of Economics and Political Science, Houghton Street, London, WC2A 2AE
T: +44 (0)20 7955 6015 M: +44 (0)7793 748636 E: r.f.rayner@lse.ac.uk

We stand at a critical point in responding to the existential threat posed by climate change. The ocean plays a central role in determining the extent of the risk to human populations and the terrestrial ecosystem as the repository for more than 90% of the excess heat in the climate system and the sink for up to 30% of anthropogenic carbon dioxide emissions since the 1980s. As well as impacting directly on ocean health, what happens as a consequence of this vast reservoir of excess heat and carbon will determine many of the impacts on the cryosphere, the atmosphere and,

ultimately, the land and human populations. The ocean is also the location of possible irreversible tipping points in the climate system. Actions over the coming decade will be pivotal in avoiding the risk of irreversible change and will determine the balance between mitigation and adaptation, including large scale geoengineering, as means of managing climate change impacts. The time for action is now.

My Twitter handle is #ralphrayner
The link to my LSE profile is http://www.lse.ac.uk/CATS/People/Ralph-Rayner-homepage

My two most relevant recent publications are:

Rayner R F (2019)
Incorporating climate change within asset management. In 'Asset management – whole life management of physical assets'. 2nd Edition. Editor, C Lloyd, London, Thomas Telford Press, ISBN 978-0-7277-3653-6. https://www.icevirtuallibrary.com/doi/10.1680/amse.61439.143

Rayner, R F, Jolly C and Gouldman C (2019)
Ocean observations and the Blue Economy, Frontiers in Marine Science. https://doi.org/10.3389/fmars.2019.00330

Unstoppable sea level rise demands adaptation now

John Englander
President, Rising Seas Institute
E: johnenglander1@gmail.com

- Why sea-level rise can no longer be stopped
- 5 Flood Factors + Erosion are different issues
- Planning for multi-meter sea level rise this century

Coastal planning now requires bold thinking. Regardless of our efforts to address climate change, rising sea level has passed the tipping point. Multi-meter sea level rise is now in our future. The rate of acceleration is increasing. The flooding effects from coastal storms, heavy rainfall, runoff, extreme tides, and rising seas, are easily confused. Smart solutions require that we understand them as different issues. Englander offers his "9 box matrix" as a useful framework for planning and adaptation with a margin of safety.

Royal Institution lecture
https://www.johnenglander.net/

Biography

John Englander is an oceanographer, consultant and leading expert on sea level rise. His broad marine science background coupled with explorations to Greenland and Antarctica allows him to see the big picture of sea level rise and its societal impacts.

For over 30 years, he has been a leader in both the private and non-profit sectors, serving as CEO for such noteworthy organizations as The International SeaKeepers and The Cousteau Society.

Today, Mr. Englander works with businesses, governmental agencies and communities to understand the risks of increased flooding due to rising seas, extreme tides, and severe storms, advocating for "intelligent adaptation". He is also the founder of the non-profit, Rising Seas Institute.

His bestselling book, *High Tide On Main Street: Rising Sea Level and the Coming Coastal Crisis*, clearly explains the science, the impending devastating economic effects and the opportunity to design for a more resilient future.
Mr. Englander is a Research Fellow at the Institute of Marine Sciences – UC Santa Cruz, a Fellow of the Institute of Marine Engineering, Science and Technology (IMarEST), and a member of several professional societies.

How Do We Communicate Climate Change

Chris Rose
Campaign Strategy
E: chris@campaignstrategy.co.uk

Don't just do green things. Turn your behaviour into an influencing campaign. Use opportunities and communication multipliers to magnify the impact of your pro-climate behaviours.

The new climate movement led by Greta Thunberg has turned 'climate' from an issue about the fate of the planet to the fate of our children. Its underlying power lies in the emotional leverage of children on parents. A heuristic operating across values groups.

We know a lot about what 'works' in climate communications. Once the challenge was to convince people it existed but now it's happening and people are convinced. Today's challenge is to drive change through proving feasibility not just urgency, and all our individual choices can help do that by proving public acceptance of change.

Despite what some say it does make a difference. The impact of household choices is evident in UK's shrinking carbon footprint. Government policy levers are reducing fossil fuel use and renewables have overtaken fossil fuels in electricity production.

With combined top-down and bottom-up effort we can hit the net zero UK target before 2050. Communicating individual behaviours to cause social contagion and applying those at local and national levels is vital to catalysing this change.

How can psychology help with coastal and marine issues?

Professor Sabine Pahl
School of Psychology, University of Plymouth, Drake Circus, Plymouth, PL4 8AA
E: Sabine.pahl@plymouth.ac.uk

Many environmental problems are entirely the consequence of human decisions and behaviours. This presentation will discuss how psychological insights and methods can help us understand drivers of behaviour such as motivations, perceptions, emotions and values that are arguably more powerful than knowledge or economic incentives alone. The presentation will illustrate how central the human dimension is to achieving both top-down and bottom-up change in existing socio-technical structures.

Drawing on a range of studies on microplastics, marine litter and sustainable behaviour, I will a) present data on societal perceptions of microplastics and marine litter, b) show how social and psychological factors are connected to behavioural intentions (e.g., perceived risk, values, social norms, nature connectedness), c) discuss how we can evaluate the effects of interventions (e.g., communication, education, citizen science).

I will argue that communications and interventions should be based on scientific research into human thought and behaviour and (of course) on scientific consensus regarding the problem, and I will illustrate problematic communications and interventions. Finally I will discuss some limitations and

challenges unique to studying the human dimension. I will finish by summarising how psychological thinking has recently been welcomed into policy at UK, EU and global level through science advice.

References / Links

Homepage: https://www.plymouth.ac.uk/staff/sabine-pahl

Pahl, S., Wyles, K. J., & Thompson, R. C. (2017). Channelling passion for the ocean toward plastic pollution. *Nature Human Behaviour.* DOI: 10.1038/s41562-017-0204-4.

Pahl, S., & Wyles, K. J. (2017). The human dimension: how social and behavioural research methods can help address microplastics in the environment. *Analytical Methods, 9(9)*, 1404–1411. DOI: 10.1039/c6ay02647h.

SAPEA, Science Advice for Policy by European Academies. (2019). A Scientific Perspective on Microplastics in Nature and Society, *Chapter 3*. Berlin: SAPEA. (available here: https://www.sapea.info/topics/microplastics/)

Hartley BL, Pahl S, Veiga J, Vlachogianni T, Vasconcelos L, Maes T, Doyle T, d'Arcy Metcalfe R, Öztürk AA & Di Berardo M 2018 'Exploring public views on marine litter in Europe: Perceived causes, consequences and pathways to change' *Marine Pollution Bulletin, 133*, 945-955.

Hartley, B. L., Pahl, S., Holland, M., Alampei, Veiga, J. & Thompson, R. C. (2018). Turning the tide on trash: Empowering European educators and school students to tackle marine litter. *Marine Policy, 96,* 227-234.

Climate Change – can we do more? Your Views

Emma McKinley
Cardiff University
E: mckinleye1@cardiff.ac.uk

Rick Stafford
Bournemouth University
E: rstafford@bournemouth.ac.uk

Bob Earll
CMS – Communications & Management for Sustainability
E: bob.earll@coastms.co.uk

As the conversation around climate change and climate action becomes increasingly urgent, there is a need to understand how individual and collective action can be harnessed to address some of the challenges facing the natural world. At a global scale, recent talks at COP25 recognised a disconnect between the urgent calls for action from the global science community and progress to limit the impacts of climate change, highlighting the complexity of galvanising widespread and meaningful action at a global scale. Indeed, COP25 concluded with a compromise deal and without reaching consensus[1] – climate change, therefore, remains at the forefront of the minds of many, both within and outside the scientific community. While much has been said about the individual actions that people can take to adapt to and mitigate against the impacts of our changing climate[2], and recent years have seen a rise in public engagement in environmental issues (for example, through the School Strikes for Climate[3] and the widely discussed Blue Planet 2 effect[4]), questions remains as to the actual scale and impact of this activism and the associated changes.

What are different communities and audiences currently doing to address climate change? Are we really seeing widespread change? If yes, what has triggered this response and how can it be harnessed? And if no, what more is needed to engender the multi-scale changes in policy and management needed to result in behaviour change at a more individual and societal level?

In the run up to Coastal Futures 2020, CMS and researchers from the Cardiff and Bournemouth Universities have collaborated to understand how the Coastal Futures, and wider CMS, audience are responding to climate change and the calls for urgent action. Drawing on the findings from an expert questionnaire (sent to the CMS Network with a total of 420 respondents), this interactive session will explore the views of an informed audience, examining current actions being taken by those most likely to be considered to be part of the 'converted' and highlighting challenges and barriers experienced by those within the Coastal Futures community. This will be an interactive session, requiring audience participation to draw out further discussion on key points raised, and to feed into a broader understanding of what more we can each be doing to address climate change and its impacts in the coming months and years.

(1) https://www.carbonbrief.org/cop25-key-outcomes-agreed-at-the-un-climate-talks-in-madrid
(2) https://theconversation.com/how-to-stop-climate-change-six-ways-to-make-the-world-a-better-place-115944
(3) https://globalclimatestrike.net/
(4) https://www.theguardian.com/commentisfree/2019/mar/25/plastics-revolution-marine-life

SESSION 2

Coastal Governance and Partnership Working

Nicola Radford
Senior Commissioning Officer (Regeneration), Lincolnshire County Council & Coastal Communities Alliance
T: 07500 992115 E: Nicola.Radford@lincolnshire.gov.uuk
www.coastalcommunities.co.uk @CoastalCA

The Background and purpose of the Coastal Communities Alliance and the current discussions around the Triumvirate.

Three major coastal fora currently exist in the UK – Coastal Partnerships Network, Coastal Communities Alliance and Local Government Association Coastal Special Interest Group. In 2017, we started to talk about what a joined up approach to coastal working might look like. We discussed how we could share knowledge, support each other's work by aligning messages and supporting strategies and collaborate on an annual national event to bring our members and audiences together to enable a truly integrated approach to solving issues shared across coastal communities throughout England.

I will talk about how we are working together to:

- develop a unified coastal voice and an integrated approach to management, development and life along the coast
- bring together our coastal champions, those people that work in coastal communities to strengthen the social, environmental and economic conditions for life
- increase collaboration and partnership working, improve efficiency, build capacity and develop new approaches to how we use, improve and manage the English Coast

Nicola Radford is a senior regeneration officer for Lincolnshire County Council.
She is the executive secretary of the Coastal Communities Alliance, a partnership of mainly local authorities which was formed to raise the profile of the socio-economic challenges facing coastal communities. In 2010 the Coastal Communities Alliance commissioned a detailed report and series of discussion essays into about challenges and opportunities for coastal communities The Coastal Communities Alliance produced a position paper on coastal regeneration and gave evidence at the recent House of Lords Select Committee into Seaside Towns. The Coastal Communities Alliance has also acted as an informal sounding board to the Ministry of Housing, Communities, and Local Government on the design of coastal initiatives like the Coastal Communities Fund and the Coastal Town Teams.

Nicola spends 50% of her role on coastal matters. The remainder of her time is spent co-ordinating the Greater Lincolnshire LEP visitor economy board, advising rural and coastal businesses on attracting

grants, and overseeing the development of a network of IT Hubs which help businesses adapt to digital technology.

Prior to working at Lincolnshire County Council Nicola was Economic Development Manager at East Lindsey, a coastal district council, and was a formally a funding manager in North East Lincolnshire

The Coastal Based Approach (CoBA)

Amy Pryor, Bob Earll, Natasha Bradshaw & Peter Barham
E: a.pryor@ucl.ac.uk, Natasha.Bradshaw@uwe.ac.uk, bob.earll@coastms.co.uk, peterjbarham@googlemail.com

The Proposal
The Coastal Based Approach (CoBA) is an idea for an approach to coastal governance drawn from the Catchment Based Approach (CaBA). The Catchment Based Approach was introduced by Government in 2010 to help deliver improvements to the water environment arising from the Water Framework Directive and other Government programmes. The benefits have been proven - it has facilitated better communication and delivery with stakeholders on a catchment scale and mobilised community engagement. With funding from Defra and support from the Environment Agency it has provided systematic coverage for all the English catchments. The Coastal Partnerships which have evolved since the early 1990s were one of the models for partnership working that CaBA was based on. The CoBA proposal* recognises the current challenges facing coastal communities which have been highlighted routinely by high level reviews.

The Coastal Based Approach would:
- provide a systematic approach to the whole coast of England
- strengthen partnership working to cover and build natural, social and economic capital
- use the existing governance framework to strengthen the way coastal agencies and organisations work together
- enable the considerable expertise and lessons of the Coastal Partnerships, Coastal Groups, Catchment Based Approaches and the Marine Pioneers (amongst others) to be applied to routine communication, programme delivery and collaboration.

This would provide clear benefits to Government and its agencies in the delivery of a wide variety of policies and programmes. These fall into three main categories:

i) Communication One of the key strengths of existing Coastal Partnerships are the strong communication links they maintain with key stakeholders operating across the land sea boundary. CoBA would facilitate the routine communication between Government, a huge range of stakeholders and coastal communities.

ii) Delivery of Government policies and programmes At any one time there are many Government and agency policies in play in operation at the coast; some current examples include the:
- 25 Year Environment Plan (local delivery)
- Coastal Concordat
- Consultation on water quality (was WFD)
- Flood and Coastal Erosion Risk Management Strategy

iii) Collaboration using partnerships to deliver projects with multiple benefits A normal practice across many sectors is to use partnerships in various forms to help deliver projects. CoBA Partnerships would be designed to deliver multiple benefits through strengthening long term collaborative effort.

This proposal is currently being taken forward with Government and its agencies in liaison with coastal practitioners.

*Copies of the proposal can be obtained from the authors who are attending Coastal Futures.

Shoreline Management Planning and Action

Nick Hardiman
Senior Coastal Adviser, Environment Agency FCRM Directorate
E: nick.hardiman@environment-agency.gov.uk

Catherine Wright
Director, Digital and Skills, Environment Agency FCRM Directorate
E: Catherine.wright@environment-agency.gov.uk

Managing coastal risk at the shoreline has received increasing profile across and beyond Government in the last year. High profile assessments by the Adaptation Sub-Committee of the Committee on Climate Change, the House of Lords Regenerating Seaside Towns Committee and the EFRA Committee review of coastal adaptation have complemented earlier strategic thinking by the National Infrastructure Commission, RSPB and National Trust on coastal management in a changing climate.

The national FCRM Strategy being drawn together by the Environment Agency now sets out the principles and measures we must collectively take to manage flood and erosion risk, and seeks to reflect the strong messages on planning, adaptation and resilience at the coast these many assessments have sent out.

A renewed FCRM investment programme will be an important element of delivering this Strategy. But the ambitious capital programme is only part of the story. Adaptation and resilience at the coast requires a concerted and sustained effort in strategic planning, engagement, research and monitoring. It also requires investment of a different kind: in some cases shaping a different future for a stretch of coast will require relocation, roll back, decommissioning or remedial work for the natural environment. This, as with so much set out in the Strategy, will need to be a truly joint effort across many parties.

The linchpin between the FCRM Strategy and this spectrum of activity at the coast is the Shoreline Management Plan. Twenty such plans provide the framework for decisions we make now about how we manage coastal risk – and therefore shape our coastal places – in England into the next century. Developed in 2006-2012, they are now undergoing a significant refresh to make sure they reflect the local and national priorities we now work to, and the evidence we have today. The Environment Agency is co-ordinating this work on behalf of the coastal risk management community embodied in Coastal Groups, as a commitment to ensure we maintain the SMPs as a living resource that everyone can engage with.

Involving new supplementary guidance on a range of issues, SMP-level 'health checks' and analysis on the governance and effectiveness of SMPs – all to be provided in July 2020 - this programme of work is also looking to ensure the Plans are more easily accessible and updatable online.

Coastal Local Authorities and the Climate Emergency

Fernanda Balata
Senior Programme Manager, Environment and Green Transition, New Economics Foundation
T: 0207 820 6389 E: fernanda.balata@neweconomics.org

This talk will cover the challenges and opportunities for coastal Local Authorities in responding to the climate emergency; and why deconstructing power inequalities is imperative to deliver the urgent and fair transition that is needed. Through a political economic lens, the talk will take a particular look at how coastal areas are disadvantaged in the UK context; what previous/current coastal policies and strategies (including the lack thereof) still have not got right; and how proactive, bold, locally-led industrial planning on the coast can help positively address climate, ecological, economic and social issues simultaneously. Just like the vast ocean at their doorstep, for decades now coastal communities seem to be 'out of sight, out of mind' to the UK economy. This geography of exclusion has trapped

coastal areas in a cycle of disadvantage. Since 2015, the New Economics Foundation — through the Blue New Deal initiative and its Centre for Coastal Economies — has been working with a vast network of people and institutions to identify and help drive solutions that deliver better jobs, increased wellbeing, climate resilience and a fairer economy for the coast. In 2019, the UK Government called a climate emergency. 2020 must start rolling out concrete climate action.

Webpage for NEF's Centre for Coastal Economies: https://neweconomics.org/campaigns/blue-new-deal
Blog 'Britain's coastal communities are threatened by climate change':
https://neweconomics.org/2018/05/coastal-communities-climate-change
Publications:
Balata, F., 2015. Blue New Deal: Good Jobs for Coastal Communities through Healthy Seas. New Economics Foundation, London
Balata, F., Vardakoulias, O., 2016. Turning Back to the Sea: A Blue New Deal to Revitalise Coastal Communities. New Economics Foundation, London.

Place Based Funding at the Coast: Principles and Practice

Bruce Horton
Environmental Policy Consulting
E: bruce@envpolconsulting.co.uk

This session will provide an overview of and background to the key concepts around place-based finance and delivery of multiple benefits. It will highlight how:

- Integrated, place-based initiatives (e.g. to deliver flood, water and biodiversity objectives) provide multiple benefits
- Working collaboratively in partnership and pooling resources means getting 'more for less'
- This applies to range of contexts (e.g. upland restoration, flood mitigation)

It will set out some of the principles around financing, including the need to identify and articulate the range of benefits, the beneficiaries (who the benefits accrue to), who can/should fund schemes, and some of the funding options available.

It will highlight how funding for schemes can be agreed and put in place, using a number of case study examples.

Ganging up on the problem: the benefits, and challenges, of collaboration

Katherine Yates
Lecturer, Global Ecology and Conservation, NERC Knowledge Exchange Fellow
University of Salford
T: 0161 295 2403 E: K.L.Yates@salford.ac.uk

Collaborations are fundamental to addressing marine and coastal management challenges, which are often immensely complicated, spanning multiple research disciplines, numerous management organisations, and diverse stakeholders' groups that frequently have competing interests. Adequate knowledge of the interconnected complexities of the system is essential to developing sustainable solutions and anticipating the possible consequences of different management options. Gaining, and importantly sharing, this knowledge generally requires bringing together diverse groups of expertise across the researcher – practitioner – stakeholder spectrum. Yet collaboration is not straightforward. Individuals and organisations have many different reasons for seeking collaborations, there are barriers

that impede potential collaborations from ever starting, and collaborations require ongoing investment to succeed.

In this talk I will explore the barriers and incentives to collaboration, particularly using findings from an ongoing project looking at collaborations between researchers and government practitioners. I will use examples to highlight what motivates attempts to develop collaborations and how easily those motivations can be diminished. This understanding of why researchers do or don't engage with practitioners, and vice versa, is central to improving the way we develop collaboration in the future. In particular, I will show that barriers can be both the obvious and the unseen, and I will offer suggestions to help maximise incentives and combat barriers. I will also explore some ongoing successful collaborations and the stories of how and why they succeeded to draw out key lessons.

In doing so I will not only remind you of the importance of collaborations for sustainable marine and coastal management solutions, but also the importance of the processes and activities that make collaborations possible. Ultimately, collaborations are like any relationship, they require time and energy, but also effective communication and trust to enable understanding between collaborations. There are no short cuts to developing productive collaborations, but there are ways to do so more effectively, and only by working together to address the big challenges in a holistic way will we move forward in a sustainable way.

Short presentations: Six x 3 minute updates

Marine Citizenship: an interdisciplinary view

Pamela M. Buchan
University of Exeter
T: 07764 492220 E: pb381@exeter.ac.uk Twitter: @Asterinidae

Accepting that we are in a climate emergency and are facing ecological breakdown, it is impossible to pretend that the many decades of legislation and public engagement on environmental matters have been effective in heading off these crises. As a proponent of democracy and public participation, it's my belief that environmental challenges can be improved (and even solved) through people changing their lifestyles and engaging in citizenship which provokes environmental action. And, more than that, without such public involvement, we will not address the emergencies we face.

This talk introduces my PhD research into the concept of marine citizenship. My research takes an interdisciplinary approach to understanding this awkward term and investigating what it means for people who are active marine citizens. The research is primarily inductive but draws on theories from environmental psychology, human geography and environmental law to frame the investigation, as well as bringing in my own experiences as a marine biologist and working in public engagement with science for nearly a decade. The research findings are understood through three key areas: Policy, People and Place.

Policy: this area looks at the external framework of marine citizenship. What the barriers and opportunities are; what has worked well; what the impacts and implications are of existing legislation into public participation in decision-making; and a look at the socio-economic systems around citizenship. It takes a view on the role of knowledge in environmental citizenship and the prevalence of the knowledge deficit model which promotes environmental education and awareness raising.

People: as well as general demographics, this area considers people's internal characteristics which influence them as marine citizens. It brings in theories of environmental attitudes, basic human values, and environmental identity, and looks at how these have been influential upon marine citizenship activity. Emergent factors, such as emotional experience are also considered.

Place: this area examines the question, why the sea. In this research, the sea is viewed as a type of place and theories such as place attachment, dependency, and identity are adapted to examine

the relationship between people and the sea and how this influences them to perform marine citizenship. Emergent data relating to experiential qualities of the sea are discussed here.

The research uses mixed methods, collecting quantitative and qualitative data from a population of active marine citizens, identified through their participation in local marine groups and the national citizen science project Capturing our Coast. Additional qualitative data comes from interviews, and ethnographic observation and shadowing of a sub-sample of marine citizens selected for their diversity in the variables described above. Data are integrated to give an holistic understanding of what marine citizenship is and how it is practised.

It is difficult to present findings from this large body of data in a three-minute talk, and at the time of the conference I will be synthesising the results. There are however some key findings emerging which challenge visions of marine citizenship as being a set of actions performed, instead altering the perspective of them to be an expression of a marine identity. This marine identity is connected to the feelings and sensations developed through experiences of the sea as a place, and marine citizenship is framed by the values marine citizens hold. At a local scale, policy interventions have the potential to facilitate marine citizenship actions by, for example, supporting the running of local marine groups and public initiatives which make actions easier to perform. But there is a larger scale which is harder to reach through individual actions, a space currently occupied by NGOs who could do more to engage a broader range of publics.

Viewing marine citizenship as an expression of marine identity reframes this concept as not one of awareness and knowledge promoting pro-environmental actions, but one of experience and value, and opens up questions about how to nurture a culture that develops marine identities.

Web-links and references

Buchan, PM University profile:
http://geography.exeter.ac.uk/staff/pgrstudents/index.php?web_id=Pamela_Buchan

Buchan, PM (2019) Understanding marine citizenship.
http://blogs.exeter.ac.uk/exetermarine/2019/12/06/my-exeter-phd-understanding-marine-citizenship-pam-buchan/

Buchan, PM (2019) Citizens of the Sea: defining marine citizenship. International Conference of Environmental Psychology. Talk available here:
https://www.researchgate.net/publication/336444551_Citizens_of_the_Sea_defining_marine_citizenship?ev=project

Buchan, PM (2019) 'We can all be citizens of the sea' in: *Plymouth White Papers: Marine.*
https://www.lukepollard.org/wp-content/uploads/sites/154/2019/04/Plymouth-white-papers-Final-Version.pdf

The Marine CoLAB- Taking an experimental, values-based and collaborative approach to communicating why our ocean matters

Rosie Chambers
Marine CoLAB Coordinator, Marine Conservation Society
T: 020 7012 1403 E: rosie.chambers@mcsuk.org @marine_colab

Evidence of the multitude of ways in which we benefit from the ocean is growing. However, information about how the ocean makes life possible and worth living is not widely communicated understood. We need to build a more ocean-friendly society where people share an understanding of our inextricable connection with the ocean and act to safeguard the benefits it provides.

The Marine CoLABoration (CoLAB) aims to increase collaborative action and explore how to communicate the value of the ocean more effectively. Participants across the CoLAB share a belief

that we can accelerate progress towards an ocean-friendly society by collaborating and placing value at the heart of shaping solutions. We hypothesise that uncovering and communicating the value of the ocean in all its rich diversity connects with people's deeply held, personal and shared values and leads to better and faster ocean conservation. Our vision is for an ocean that is healthier and where the full range of ocean and human values are reflected in individual and collective decision making.

Towards a Sustainable Future: Understanding the UK's Marine Social Science Community

Emma McKinley
Cardiff University
E: mckinleye1@cardiff.ac.uk

As management of our global seas and coastlines becomes ever more complex, and awareness of the impact of societal behaviour on our seas has grown, there has been increasing recognition of the value of marine social science research and practice within marine and coastal management in the UK. In response, this Defra funded project examined current marine social science research activity and capacity across the UK, with a view to supporting the development of future social science priorities for Defra, wider UK government and the social science community more broadly. The project sought to:

- Increase awareness and collaboration of existing social science currently being undertaken within a UK marine and coastal context.
- Create an Expert Directory highlighting key academics, research centres and areas of research expertise.
- Identify social science research themes, evidence gaps and priorities in the context of the UK seas and coasts.
- Examine existing capacity and explore challenges and opportunities within the current marine social science research landscape in the UK.
- Identify potential areas for closer multi- and inter-disciplinary research and collaboration with international centres of excellence and other research bodies where appropriate.

Through a multi-phase approach, the project carried out an overview of marine social science research and activity in the UK, engaging with approximately 240 stakeholders (159 questionnaire respondents and approximately 80 workshop delegates in Edinburgh, London, Cardiff and Belfast) from the marine social science community, and related researchers and practitioners to develop our understanding of key trends and activities currently being undertaken.

Measure once, use many times - MEDIN and marine data sharing

Charlotte Miskin-Hymas
Marine Environmental Data and Information Network
T: 023 8059 6255 E: charmisk@bodc.ac.uk www.medin.org.uk

The Marine Environmental Data and Information Network (MEDIN) is the hub for UK marine data and promotes sharing of and improved access to that data. MEDIN's vision is that all UK marine data are Findable, Accessible, Interoperable and Reusable (FAIR). Recently published, MEDIN's new Business Plan sets out three strategic goals to help deliver this vision. These include MEDIN providing tools and services that benefit the entire UK marine community; delivering the technical infrastructure (Data Archive Centres, metadata standards and portal) required to ensure FAIR UK marine data; and fostering an open data management culture, global collaboration and partnerships.

MEDIN is an open partnership with partners representing government departments, research institutions, private companies and Non-Governmental Organisations (NGOs). Marine data are expensive to collect and always unique in relation to time and geographical position. There are wide commercial, scientific and conservation benefits to be gained from working together to share and properly manage these data.

A cost benefit analysis of MEDIN was conducted earlier in 2019 and results showed an impressive benefit to cost ratio of 8.2. It concluded that MEDIN is a valuable service which enhances the ability of marine-focused organisations to effectively conduct their activities and support their aims.

MEDIN provides:
• Secure long-term management of marine data sets at specialist data centres.
• Improved access to over 14,900 marine datasets.
• An agreed set of common standards for sharing marine data, maintained and supported by partners, to enable easy discovery and re-use of data.
• Expertise on best practice data management for marine data.
• Free data management workshops around the UK.
MEDIN is funded by a consortium of sponsors and is hosted by the British Oceanographic Data Centre at the National Oceanography Centre in both Liverpool and Southampton.

MEDIN portal: https://portal.medin.org.uk/portal/start.php

Mind the Change Gap

John Pepper
Chairman, OceanWise
T: +44 7733266597 E: john.pepper@oceanwise.eu

The pace of change in the World is greater than at any time in the past. We are witnessing the 4th Industrial Revolution which has given us the Internet of Things (IoT) and Artificial Intelligence (AI). The marine sector is conservative by nature, making adoption of change a slow process which could result in us falling further behind in adopting change. We need to be more 'nimble' in our thinking.

Change can be transformational, radical, incremental, process/system driven or structural (at a personal and organisational level); and result from environmental forces, business strategy, directional focus, legislation or future skills needs. Responding to change represents a challenge!

When presented with 'change' people embark on a 'process of transition'. This journey will vary from person to person taking from a few seconds many months to reconcile. In some cases, it cannot be achieved and the willingness to accept the new way of doing things unachievable.

To deliver successful complex change, communication is vital in order to create a clear vision of the future with skills needed, incentives for success, resources and a robust action plan. If any one of these are missing, failure may well result.

www.oceanwise.eu

Journey to the Sea: Celebrating the connection between land, sea and people

Harriet Yates-Smith
Mindfully Wired Communications
T: 07950462532 E: harriet@mindfullywired.org

This talk will show a short film teaser to promote the exciting six-part film series developed as a collaboration between North Devon UNESCO Biosphere Reserve, WWF, Sky Ocean Rescue, National Trust and the Environment Agency. The films were created by Mindfully Wired Communications and Nina Constable Media.

The first film of the series will launch online to the public on the 22nd January 2019, and then one will launch each week for the next five weeks. The films celebrate the incredible connection between land, sea and people, showcasing North Devon's natural assets and all the ways we benefit from them. On this Journey to the Sea, from the streams on Dartmoor to the seas around Lundy Island, we will meet people along the way whose lives and livelihoods are intrinsically linked to North Devon's waterways.

Social media channels: @UKSEAS_project, @NDevonBiosphere, @mwcmarine, @ninaconstable

SESSION 3

Future development and growth in the offshore wind sector

Will Apps
Head of Energy Development, The Crown Estate
T: 020 7851 5000 E: will.apps@thecrownestate.co.uk W: thecrownestate.co.uk

Offshore wind has confirmed its place as a key component of the future decarbonised energy systems of the UK and elsewhere. As a result of the Offshore Wind Sector Deal in 2019, firm policy exists to enable 30 GW of deployment by 2030, a fourfold increase in the current operational fleet.

Government's commitment to net zero greenhouse emissions by 2050 looks likely to again draw heavily on role of the offshore wind. Following the recent General Election, the Queen's Speech set-out ambitions to increase the 2030 deployment trajectory to 40 GW. The Committee on Climate Change considered more than 75 GW of deployment could be required to support achievement of 'net-zero'.

This presentation by Will Apps, Head of Energy Development at The Crown Estate, will provide an overview of the UK portfolio. It will summarise the current project pipeline and talk to the challenge of finding a balance between future energy needs and the wide range of interests in the marine environment that will central to achieving long-term sustainable growth of the offshore wind sector.

Web-links and/or references:

Offshore Energy - The Crown Estate website (including link to offshore wind portfolio project listing):
https://www.thecrownestate.co.uk/en-gb/what-we-do/on-the-seabed/energy/

A sustainable clean energy future – The Crown Estate website
https://www.thecrownestate.co.uk/en-gb/what-we-do/on-the-seabed/energy/a-sustainable-future-for-offshore-wind/

Round 4 Leasing – The Crown Estate website (including a link to a summary Information Memorandum):
https://www.thecrownestate.co.uk/en-gb/what-we-do/on-the-seabed/offshore-wind-leasing-round-4/

Is the projected scale of offshore wind development sustainable?

Tania Davey
Living Seas Sustainable Development Officer, The Wildlife Trusts
T: 01507 528388 M: 07825 808848 E: tdavey@wildlifetrusts.org

The Wildlife Trusts recognise that climate change poses one of the biggest threats to wildlife and will push species to their ecological limits. Therefore, we support action to tackle climate. However, we are already seeing the decline in some of our marine habitats due to existing offshore wind farm development. If not correctly planned and managed, the scale of cumulative impacts on marine habitats and species from offshore wind farm development to meet net zero by 2050 could be devastating. Action to tackle climate change should not be at the expense of wildlife and future development at sea must use the right technology in the right location.

Offshore Seaweed and mussel farming; the possibilities of co-location with offshore wind

Martin Syvret Mem.MBA
Aquafish Solutions Limited - www.aquafishsolutions.com
M: +44 (0) 7966 461810
E: martin@aquafishsolutions.com Skype: mlqs01
LinkedIn: http://www.linkedin.com/pub/martin-syvret/19/448/768

In 2013/14 a shellfish aquaculture study was undertaken by a Project Team led by Aquafish Solutions Ltd. on behalf of the Shellfish Association of Great Britain (SAGB) regarding the potential for co-location with offshore wind farms (OWFs). This Welsh EFF project was designed to investigate the co-location potential taking into consideration the needs and requirements of all marine users. The final report covered marine aquaculture species options and techniques, policy drivers and guidance, co-location case studies, a review of marine licensing and permissions, an operational guidance manual, planning tools and a protocol for developing aquaculture in OWFs. The final report is available through the SAGB's Publication Section:
http://www.shellfish.org.uk/files/Literature/Projects-Reports/Project-Ref-ID-71-Co-location-Project-Ver.FR1.1.pdf

Given that there are potential plans to greatly increase the scale of renewable energy production through OWFs, then it would appear that there is a greater need than ever before to ensure that consideration of co-location is built into the planning and licensing of all new offshore renewable energy installations. This Coastal Futures presentation will seek to give an update on the current situation and realities with respect to progress towards co-location of aquaculture with the offshore renewable energy sector. Other aspects that will be considered in this presentation are the wider ecosystem services and benefits that increased production of shellfish and seaweed through co-location may offer.

Marine Climate Change Impacts: Report Card 2020

Ella Howes
Marine Climate Change Impacts Partnership
E: office@mccip.org.uk
Twitter @MccipOrgUK #ReportCard2020

The United Kingdom Marine Climate Change Impacts Partnership (MCCIP) brings together scientists, government, its agencies and NGOs to provide co-ordinated, impartial information and advice on climate change impacts and adaptation around UK coast and seas.

The MCCIP Report Card 2020, launching at Coastal Futures, provides the latest update on scientific understanding of climate change impacts on UK coasts and seas. More than 150 scientists from over 50 leading research organisations have contributed to this comprehensive, community view on the range and scale of physical, ecological and societal impacts of climate change. In total 26 topics over three themes are reported on – these themes are 'Climate of the Marine Environment', 'Impacts on Healthy and Biodiverse Seas' and 'Impacts of Climate Change on Society'. For the first time, MCCIP reports on the impacts of climate change on oxygen, cultural heritage, and transport and infrastructure. Importantly, this Report Card draws on the evidence gathered within 26 scientific reviews also commissioned by MCCIP. This talk will highlight the work of MCCIP and describe some of the key headlines and emerging issues from the newly launched report card.

Web-links
http://www.mccip.org.uk/

Reducing Plastic Pollution: A Collaborative Approach from Source to Sea

Jessica Hickie
Programme Manager Plastics & Sustainability, Environment Agency
E: Jessica.hickie@environment-agency.gov.uk

In 2018 the Environment Agency set up a new team to tackle plastic pollution, based in the SW with a National remit. Over halfway through the initial 3 year project, this talk will describe the work of the Environment Agency on reducing plastic pollution with a focus on the first 18 months of the Plastics and Sustainability team's work, outcomes and future plans.

Why the Environment Agency?

We are an organisation of 10,000 people all working to protect our environment and who look after 35,000km of rivers – the arteries to the sea. Resolving the problem of plastics is not something we can do in isolation. We work with young people, community groups, academics and representatives from industry and water companies with the vision of making plastic pollution a thing of the past.

Some areas of our work are:

- Reducing plastics reaching land, waterways and shorelines.
- Promoting better and innovative environmental practices in business and a reduction in plastic waste from the start of the manufacturing process.
- Increasing local engagement to change public behaviour and encourage more community action to tackle pollution collaboratively
- Inspiring young people to engage with Science Technology and Engineering and Mathematics (STEM) subjects to follow a career that can help find solutions to our most pressing environment issues

Finding Opportunities within the Environment Agency

We work with a variety of teams within our organisation to identify where the opportunities are to reduce plastic waste and to drive a circular economy. There are many teams working on this already who increase our evidence base, challenge our supply chain and look after our river and coastal environments.

Learning from others

The team is based in the SW of England, with hundreds of miles of coastline and an engaged population, passionate about our oceans. The first year was spent finding a new role within our existing remit, finding new ways of working and learning from businesses and communities about the challenges of reducing avoidable plastic waste. In 2019 we prioritised collaborative action on plastics escaping into the environment from agriculture and fishing, and developed strategies to engage with young people, using plastics as a "hook" to inspire the next generation to take STEM subjects leading them into environmental careers.

What next?

We have begun to scale up efforts made in the SW to a National level within our organisation and externally across the country, to reduce avoidable plastic waste through positive behaviour change. In 2020 we begin a 3 year INTERREG project with 17 English and French partners across the South coast of England and North coast of France. These projects will result in increased engagement with the marine environment and collaborative action to protect it from plastic pollution.

Changing the Soundtrack of the Anthropocene

Prof. Steve Simpson
Professor of Marine Biology & Global Change, Biosciences, University of Exeter, UK
T: +44 (0) 7900551883 E: S.Simpson@exeter.ac.uk
Twitter: @DrSteveSimpson

Far from the *Silent World* of Jacques Cousteau, the development of underwater recording equipment means we now realise that the ocean is full of sound, giving us new understanding about animal behaviour, and tools to help us better manage the oceans.

In this talk, marine bioacoustician and fish ecologist **Prof. Steve Simpson** will discuss:

- how sound helps larval fish and invertebrates to choose the best home
- the role of vocal communication in courtship, territoriality and anti-predator defence
- how by listening underwater we can learn more about ocean health
- the worrying rise in marine noise pollution from transportation and construction
- the ecogrief caused by the recent devastating bleaching on the Great Barrier Reef
- the growing determination of acousticians to manage noise pollution
- the possibility of turning acoustic knowledge into tools for habitat restoration

For more information about the work of his group, see Steve's website:

http://biosciences.exeter.ac.uk/staff/index.php?web_id=Stephen_Simpson

and watch a BBC Earth film about his work with *Blue Planet II*, or his recent TEDx talk:

https://www.youtube.com/watch?v=POITH02VVrw&pbjreload=10

https://www.youtube.com/watch?v=Z8XxAfGBcOo

Further Reading

Gordon TAC, Radford AN, Davidson IK, Barnes K, McCloskey K, Nedelec SL, Meekan MG, McCormick MI, Simpson SD (2019) **Soundscape restoration enhances fish community development on degraded coral-reef habitat.** *Nature Communications* 5414. www.nature.com/articles/s41467-019-13186-2

Mars F, Simpson SD, Kleypas J (2019) **An interdisciplinary approach to coral reef restoration.** Nature Outlook: Physical Oceanography. *Nature* 575:7782. www.nature.com/articles/d42473-019-00337-8

Gordon TAC, Radford AN, Simpson SD (2019) **Support for scientists grieving lost nature.** *Science* 366:193. https://science.sciencemag.org/content/366/6462/193.1.abstract

Gordon TAC, Harding HR, Wong KE, Merchant ND, Meekan MG, McCormick MI, Radford AN, Simpson SD (2018) **Habitat degradation negatively affects auditory settlement behavior of coral reef fishes.** *Proceedings of the National Academy of Sciences USA* 115:5193–5198. https://www.pnas.org/content/115/20/5193

Simpson SD, Radford AN, Nedelec SL, Ferrari MCO, Chivers DP, McCormick MI, Meekan MG (2016) **Anthropogenic noise increases mortality by predation.** *Nature Communications* 7:10544. www.nature.com/articles/ncomms10544

Simpson SD, Purser J, Radford AN (2015) **Anthropogenic noise compromises antipredator behaviour in European eels.** *Global Change Biology* 21: 586–593. https://onlinelibrary.wiley.com/doi/abs/10.1111/gcb.12685

The view from Greenland, "ground-zero" for sea level rise

John Englander
President, Rising Seas Institute
E: johnenglander1@gmail.com

The melting ice sheets and glaciers on Greenland are breaking records, accelerating sea level rise. Using stunning visual images from his latest Greenland expedition in September 2019, John Englander presents the big picture for global sea level rise, drawing upon more than three decades of visits to the Polar Regions.

https://www.johnenglander.net/

DAY 2 – Thursday 16th January

Ocean Recovery and Restoration – The New Agenda

SESSION 4

What do we want from our marine environment? Are we doing enough to deliver ocean recovery and resilience?

Mark Duffy
Principal Adviser Fishers, Natural England.
E: mark.duffy@naturalengland.org.uk

We currently enjoy a spectrum of "goods & services" provided by our seas e.g., minerals, fishing, energy, carbon sequestration, recreation etc. and seek to utilise them in a sustainable manner. In parallel we seek to progress separate conservation measures specifically aiming to bring about the protection of threatened species and habitats. However, all sectors including the conservation sector could be accused of cakeism [1] where we all single-mindedly progress our own objective and consciously rank it above all the others. Lack of integrated delivery across sectors leads to unnecessary competition and invariable suboptimal use of our marine resources. All of these actions combined are not delivering the marine ecosystem recovery we all agree is needed (as shown by recent report on MSFD progress).

As we make even greater demands on our marine environment it is clear that we need to do something different if we are serious about ecosystem recovery; we need to jump off that particular hamster wheel if we are to see the scale of restoration sought. It is time to holistically evaluate what we most want from our seas (over the longer term), and that in availing of these goods & services we should do so in a manner that facilitates and expedites ecosystem recovery. This is different to the traditional approach of just mitigating damage, in that we need to see *net environmental benefit*. In addition we need to much better integrate our proactive conservation measures with how we sustainably exploit our seas.

Against a backdrop of a features-based approach and our historic dependency on MPAs to "fix the marine environment" we now need to re-evaluate this philosophy and recognize that in isolation this network will never attain that goal. We must operate at a much wider scale hence the requirement to integrate conservation measures with exploitative actions. This change can be illustrated with some examples:

(i) Optimising the use of low trophic order fish.
On day 1 we will have heard about the effect climate change will have on the marine environment. However, let's turn it around and start thinking about what can the marine environment do for the climate e.g. through the planned expansion of offshore renewables including wind. Isn't this something we should generally be *welcoming*? It's a qualified yes, as it too has negative environmental impacts ranging from cabling damage through to bird strike and displacement. By managing those fisheries that impacted birds depend on as prey it may be possible to improve seabird productivity sufficiently to *more* than compensate for predicted increases to seabird mortality arising from the cumulative effects of offshore renewable energy developments. So post EU exit we can better use *our* marine fisheries resources to better meet society's specific long-term needs. Further by rebuilding the sandeel population we can improve the resilience of the wider marine food web benefitting the populations of those fish that we seek to eat. Hence there is a possibility for offshore wind to deliver a net environmental gain.

(ii) What do we *most* want from our seabed?
There are many goods and services we enjoy from our sedimentary seabed habitats e.g., biogeochemical cycling, provision of aggregates, demersal fish (taken via static and mobile gear), marine biodiversity etc. But the provision of these services overlap may compete with one another. Our seas act as a sink for 50% of the Carbon produced. But what happens that Carbon? Marine

sediments are a significant global store for Carbon, and much of that is biogeochemically cycled by the living epibenthos. Some of these species are of high commercial value and specifically targeted e.g., *nephrops* whilst others such as echinoderms are incidental bycatch and are often discarded damaged.

The role this epibenthos (and that of the structural integrity of marine sediments) plays in the flux of carbon out the water column has been recognised for some time now, but its significance has not been accurately measured. But what is clear is that beam trawling, scallop dredging and suction dredging will significantly alter the fabric of the seabed and probably of its ability to capture and store carbon. Some of these biotopes have already been modified and therefore are probably operating at suboptimal rates in storing carbon.

Seabed Integrity is an MSFD descriptor and demersal trawling has been identified as one of the factors hindering attainment of the sought-after state. We have not really begun to scrutinise what actions are necessary, but a shift from mobile to static gear e.g., creeling for nephrops *might* be a more sustainable alternative.

(1) To expect to achieve something that is beyond the realm of reality

What do we want from our marine environment? Are we doing enough to deliver ocean recovery and resilience?

Alec Taylor
Head of Marine Policy, WWF UK
E: ataylor@wwf.org.uk

2019 was the year that the world increasingly woke up to the fundamental ways in which the ocean has been changed by climate change and direct human pressures, and the profound consequences, including for the UK, of failing to address this for the future.

For example, dead zones around the UK mean the potential for sustainable fisheries could collapse by 35% in the North Sea by 2050 even in a low emission scenario (IPCC SROCC), while the cost of coastal damages could reach 0.8% of UK GDP each year by 2050 (WWF, 2020, in prep).

The final sentence of the IPCC's Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC)'s Summary for Policymakers could not be clearer: "*Realising this potential [for ocean climate resilience] depends on transformative change. This highlights the urgency of prioritising timely, ambitious, coordinated and enduring action. (very high confidence)*". The more ambitious and urgent the response, the greater the benefits and the lower the risks and costs of inaction.

This is not just a statement of the obvious but a fundamental challenge to "business as usual" marine management in the UK, and requires a change in mind-set from relying on the ocean to support us if we get it right eventually to needing to act now and at scale.

Ocean recovery is a huge political opportunity for global leadership, and also a credibility issue as the UK seeks ocean protection commitments on the global stage. Public, business and political interest in ocean issues is at an all-time high.

UK seas can be the hero in the climate fight, both to help mitigate and adapt. Seagrass, for example, captures carbon 35 times faster than tropical rainforests[1] at the same time as being critical nursery habitats to a fifth of the world's major fisheries, while in the UK a square metre of sediment stores more carbon than peatlands.[2] Offshore renewable energy is now cheaper than the wholesale price of electricity[3], and properly managed, fish stocks could deliver income and livelihoods for generations to come.

As a new decade approaches and we miss the deadline to achieve Good Environmental Status, as well as to reverse the loss of biodiversity and deliver sustainable fish stocks, this year's Coastal Futures comes at a pivotal moment. The catalysts of the climate and nature emergencies, Brexit and global profile on ocean issues (including leading up to COP26 in Glasgow) could mark a rare opportunity for profound change and to reset the dial on ocean recovery.

It is time for us all step back and ask some fundamental questions of the ways in which we govern and regulate our UK seas in the context of such profound change. It is WWF's increasing view, for example, that current marine legislation is fragmented, does not speak to the climate crisis, and will not drive recovery or restoration at the scale or pace necessary to bring UK seas back to life. Something bigger, bolder and which responds to the climate crisis as a golden thread is needed.

These are all questions and issues which I hope will be seeded into your minds for subsequent presentations.

[1] https://www.swansea.ac.uk/press-office/latest-news/onemillionseedstobeplantedinuksbiggestseagrassrestorationscheme.php
[2] https://www.bbc.co.uk/news/uk-scotland-highlands-islands-43049001
[3] https://www.carbonbrief.org/analysis-record-low-uk-offshore-wind-cheaper-than-existing-gas-plants-by-2023

Independent Review into Highly Protected Marine Areas

Richard Benyon
Chair of the HPMA Review
E: richard@RichardBenyon.com / HPMAReview@defra.gov.uk

The UK is at the forefront of marine protection and now has more than 40% of English waters designated as marine protected areas (MPAs). Although Government has made progress in applying management measures in inshore waters there has been continued interest in the concept of HPMAs.

HPMAs would represent the upper end of environmental protection we could put in place in our waters. They would be places where human activities with the potential to cause damage are prohibited. HPMAs could play a role in allowing areas of England's seas to recover and thus provide a benchmark against which to measure this environmental recovery following removal of damaging human practices.

In June 2019, the Government commissioned an independent Review to recommend whether and how HPMAs could be introduced in areas of sea within the UK government's competence. Whilst independent from Government, it is supported by a small Secretariat team from within Defra.

The review's advisory panel has met five times and held a month-long public consultation or "Call for Evidence", in October. The Panel has been on several visits around the country to hear from sea users and intends to conduct a series of roundtables with different stakeholder groups.

Web-links:

- https://www.gov.uk/government/publications/highly-protected-marine-areas-hpmas-review-2019/highly-protected-marine-areas-review-terms-of-reference
- https://consult.defra.gov.uk/marine/highly-protected-marine-areas-call-for-evidence/

UK Marine Strategy assessment of biodiversity

Dr Ian Mitchell
MSFD Species Senior Advisor, JNCC, Inverdee House, Baxter Street, Aberdeen, AB11 9QA
Direct Dial: 01224 266573 M: 07790 937410 E: ian.mitchell@jncc.gov.uk
Skype: ianmitchelljncc

In October 2019, Defra published the most comprehensive assessment of the state of the UK's seas to-date: Marine Strategy part one: UK updated assessment and Good Environmental Status. The report concluded that the UK has "made good progress towards achieving Good Environmental Status (GES)". This was based on an assessment of 60 indicators describing the state of biodiversity and fish stocks and the pressures being exerted by human activities. My presentation will concentrate on the biodiversity aspects of the assessments which JNCC led with CEFAS and University of Plymouth, in close collaboration with other organisations via the UK Healthy and Biological Diverse Seas Evidence Group.

For marine biodiversity, the report concluded that "there is a mixed picture for marine mammals, fish populations, seabed habitats and food webs" and "more is needed to understand and protect bird populations." I will present results from the indicators that that were developed and assessed as part of the UK Marine Strategy. Further details on the UK assessments can be found on the new Marine Online Assessment Tool (MOAT) portal.

How super is 2020? Defra bills and global deals

Richard Benwell
CEO, Wildlife & Countryside Link
E: Richard@wcl.org.uk

The Government intends to play a leadership role in delivering strong environmental deals in 2020. Global goals for marine biodiversity, targets for protection of the High Seas, and new ambition for blue carbon storage and sequestration are all on the table.

Yet with UNLCOS, CBD and UNFCCC just round the corner, lots of serious technical and political issues remain that could scupper the chances of strong multilateral agreements.

So, what should we be hoping for in Super 2020 and how can the UK Government best prepare itself to lead?

The answer is a combination of effective diplomacy, public engagement and domestic credibility.

This session will focus on the Environment Bill as the centrepiece of the Government's post-Brexit environmental legislation. It will ask whether key provisions on targets, enforcement and principles are robust enough to provide the Government with the considerable authority and political capital needed to make a success of 2020.

The Welsh National Marine Plan (WNMP) - a perspective on marine planning

Phil Coates
Marine plan Implementation and Evidence manager
Welsh Government, Llys Y Ddraig, Penllergaer Business park, Swansea SA4 9NX
T: 0300 025 2437 E: Phil.Coates@gov.wales marineplanning@gov.wales

Marne planning has come about due to the increasing congestion of our seas and through the need to plan more systematically about what we might like to see and where, rather than rely upon "first come, first served"; and to inform and be informed about marine policy making.

The Marine and Coastal Access Act (MCAA) 2009 gave rise to the UK Marine Policy Statement (MPS) (2011) which is the UK Framework for developing marine plans. Each devolved administration has developed its own marine plan that reflects the activities and policy priorities in its area taking account those activities that are reserved to UK level (such as Defence).

Part 3 of MCAA relates to marine planning and part 4 to marine licensing - decisions on which relate to marine planning. Collectively (and with other parts of MCAA and other integrated legislation) they will contribute to the sustainable development in the UK marine area.

Additionally, Welsh Government has under the Government of Wales act (2006) a legal duty to sustainable development. This has been further enhanced and clarified through adoption of the Wellbeing Future Generations act (2015) and sustainable management of natural resources through the Wales Environment act (2016) to assist in making balanced decisions.

The WNMP has been developed since 2014 in accordance with the above legislation and was published and came into effect on 12th November 2019. Extensive consultation took place throughout the development process which was informed by a Sustainability Assessment (SA) and a Habitats Regulations Assessment (HRA) at plan level. Its development was informed by the active involvement of a Stakeholder Reference Group (MPSRG) which continues to inform plan development and, since August 2018, a Decision Makers Group (MPDMG) comprising Relevant Public Authorities (RPA) who have a statutory duty to implement the WNMP.

Like other marine plans, the WNMP has an overall Vision and plan level objectives. More specific policies are established both at general and specific sector levels. Collectively they identify the priorities for management of the Inshore and Offshore regions of Welsh seas. The policies and objectives provide the "line of sight" between decisions that are taken and delivery of the overall Vision for managing Welsh seas and in a way that their effectiveness can be monitored (which is a statutory duty on the marine plan authority e.g. Welsh Ministers).

Sector policies are either supporting (of the development of that sector) or safeguarding (offering a degree of protection to that sector in that area). General policies apply across the whole of Welsh seas – where appropriate. When taking decisions, a Relevant Public Authority must consider all policies that apply to that decision and act in accordance with the WNMP as a whole (unless relevant considerations indicate otherwise).
The WNMP emphasises the importance of considering sound evidence in decision making and in applying a proportionate and precautionary approach. Accordingly a marine evidence audit has been undertaken (Marine Evidence Report) and an overall Marine Evidence Strategy and a marine planning portal developed.

The presentation by Phil Coates will *briefly* outline the content and intent of the Welsh National Marine Plan (WNMP) with further information and links provided in the delegate notes for those that wish to know more.

Having introduced the WNMP, he will offer some personal perspectives on marine planning, the processes involved and what planning hopes to achieve.

Web-links and/or references to marine planning in Wales:
Overall link to marine planning in Wales documents
Welsh National Marine Plan (WNMP)
Marine Evidence Report and refresh (see Evidence via link)
Welsh Marine Evidence Strategy (2019 – 2015)
Marine planning portal
NRW – Introducing Sustainable management of natural resources
NRW – Natural resource management

Learning about marine planning… whether you want to or not!

Rhona Fairgrieve
Principal Environmental Consultant, Atkins, 200 Broomielaw, Glasgow, G1 4RU
T: 0141 220 2388 E: rhona.fairgrieve@atkinsglobal.com

To mis-quote Malvolio in Shakespeare's 'Twelfth Night', "Some are born marine planners, some achieve marine planning, and some have marine planning thrust upon them." In whichever camp you find yourself, remember the first part of this amended exhortation: "Be not afraid of marine planning!"

As Maritime Spatial Planning (MSP) has developed in the last decade, so have the ways of explaining it to stakeholders. The **MSP Challenge** is an attempt to address the complexities of marine planning at a spatial scale using an interactive and 'game-based' approach. Within a fictionalised shared sea basin, the tool enables consideration of economic, ecological and social drivers in pursuit of the sustainable development of marine resources. It enables participants to assess the interactions and synergies that can take place between different marine-related activities operating in the same areas, in multiple dimensions, and to consider if those interactions are positive or neutral or are in competition or conflict with each other. It allows consideration of whether, or to what extent (via spatial planning or other management measures), such activities could be permitted.

The idea of a 'serious game' that enables learning-by-doing has gained credibility in recent years, having been pioneered by the Government of the Netherlands when engaging with their own stakeholders in their approach to marine planning in the southern North Sea in the early 2010s. The board-based version being demonstrated during Coastal Futures 2020 was originally invented for the Netherlands' Presidency of the European Council in 2016 but was subsequently developed under the EU SIMCelt project[1] and for IOC UNESCO in relation to the upcoming Decade of Ocean Science. Different editions allow consideration of particular issues, such as regional marine planning within a shared sea basin subject to a national marine plan or linkages with the UN's 17 Sustainable Development Goals. The strategic, role-playing approach within a tactile and light-hearted, though immersive, format allows an entry-level introduction to MSP for those with an interest in the subject but some, little or no previous knowledge of it.

During the first day of Coastal Futures 2020, delegates are invited to come and take the MSP Challenge in demonstration and explanation sessions during the long breaks. Your views and experiences will be captured and will feature in the second day's presentation on the use of the MSP Challenge as an innovative stakeholder engagement tool in the UK, Europe and globally.

Abspoel, L., Mayer, I, Keijser, X., Warmelink, H., Fairgrieve, R., Ripken, M., Abramic, A., Kannen, A., Cormier, R., Kidd, S. (2019). Communicating Maritime Spatial Planning: The MSP Challenge approach. *Marine Policy*. https://doi.org/10.1016/j.marpol.2019.02.057

[1] Supporting Maritime Spatial Planning in Celtic Seas (SIMCelt), www.simcelt.eu
See http://www.simcelt.eu/wp-content/uploads/D9_Stakeholder-Engagement-at-Local-Transboundary-Level.pdf

Short presentations: Seven x 3 minute updates

Coastal Typologies: key socio-demographic evidence base for marine planning

Dr Tim Stojanovic
School of Geography & Sustainable Development and Scottish Oceans Institute,
University of St Andrews.
T: 01334 463948 E: tas21@st-andrews.ac.uk

A coastal typology (also called a geodemographic profile) is a classification of coastal settlements or areas, based on their socio-demographic characteristics. It commonly uses data from the UK census (collected every decade) sometimes other data, drawing on variables such as: age, household composition, employment status, deprivation, health, car ownership, demographic change, and/or diversity. By using statistical methods, one can group places into categories which are more or less like one another. The key goal of this approach is to understand coastal places better, so that planning and policy can meet their needs. From the 'Coastal Futures' perspective, virtually every marine activity makes some landfall, so understanding the impacts of marine development entails improving the social evidence base.

Coastal typologies are not without their limitations. One of these is that they represent coastal places statically 'as they have been' not dynamically for 'how they are evolving' or 'what they aspire to be.' Here we report the development of a coastal typology in collaboration with Marine Scotland, led by ESRC doctoral researcher Paula Duffy (Duffy and Stojanovic, 2018) and recently launched on Marine Scotland MAPs NMPi https://marinescotland.atkinsgeospatial.com/nmpi/. We sought to advance the approaches taken in England (MMO, 2011) and Wales (OCSI, 2015) by preparing a dynamic typology that explores rates of change across the 2001-2011 census and looking at some of the significant socio-demographic processes such as migration, mobility and immobility. The result is a typology of 149 Scottish coastal localities with populations over 1000, based on two levels with 13 sub-groups.

What use can this social evidence base have in marine planning and management?
From a high-level policy perspective, coastal typologies provide an evidence base to engage with public perceptions of coastal change- for example, the recent House of Lords Select Committee on Regenerating Seaside Towns (2019), or a debate such as 'are fishing communities in decline?' Taking the latter hypothetical question, our typology suggests that along the Scottish coast, whilst some port and fishing towns on the periphery are struggling due to isolation; other towns formerly famous for their fishing have been renewed as dormitory commuter or retirement settlements; and yet other towns which have a previous industrial coastal heritage (e.g. shipbuilding/industry) are struggling to recover from economic downturns. The typology illustrates the spatial diversity of patterns.

From a strategic marine planning perspective: a coastal typology may be used to: baseline the social character of a marine area; provide a framework for social impact assessment; or assist marine planners to think about the breadth of engagement they are getting from types of coastal communities in their plan development. Furthermore, if regularly updated, this is the kind of evidence base against which certain policies might be judged. For example, England's South Plan Policy S-SOC1 is about promoting social benefits- is this happening?

From a technical licensing and regulation perspective, developers or regulators might use coastal typologies to highlight the 'social sustainability' of proposals. One example is the argument for a particular (needy) coastal town to service a proposed offshore windfarm development.

Whilst government agencies have anecdotal evidence of the use of typologies in many of the above ways, it remains to be seen whether these are really informing the political process in a way which leads to sustainable outcomes.

References

Duffy, P. D., and T. A. Stojanovic (2018) The Potential for Assemblage Thinking in Population Geography: Assembling Population, Space and Place. *Population, Space and Place* 24(3).

http://dx.doi.org/10.1002/psp.2097 See sections 4-5 of this paper for details and maps of the typology. The rest of the paper is a rather more theoretical discussion which might interest academic geographers or demographers.

Marine Management Organisation (MMO) (2011) Coastal typologies: detailed method and outputs. A report by Roger Tym and partners, & OCSI. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/312722/se_typologies.pdf

Oxford Consultants for Social Inclusion (OCSI) Ltd Development (2015) Development of a Coastal Community Typology for Wales. https://gov.wales/development-coastal-community-typology

MMO Public Consultation on the Draft North East, North West, South East and South West Marine Plans

Ed Wright
Marine Planner, Marine Management Organisation
E: Edward.wright@marinemanagement.org.uk

The Marine Management Organisation is producing eleven marine plans to manage the seas around England on behalf of Defra as required by the Marine and Coastal Access Act 2009. Four plans have already been completed and published (the East Inshore and Offshore Marine Plans in 2014 and the South Inshore and Offshore Marine Plans in 2018). The remaining seven are at the draft stage having been developed with stakeholders over the last three years. In early 2020 the drafts of all these plans will be open to comment through a formal consultation process lasting 12 weeks. The aim of this talk will be to briefly describe the journey of these plans up to draft consultation, to encourage people to respond to the consultation and share it with their networks and to explain how to do this.

The talk will also provide a brief update on some of the other work taking place within the marine planning team including a new digital mapping service called Explore Marine Plans and details of our marine plan monitoring work.

Links:
www.gov.uk/government/collections/marine-planning-in-england
https://www.gov.uk/guidance/explore-marine-plans

Promoting biodiversity on marine artificial structures – building the evidence for marine planning

Dr Ally Evans
Aberystwyth University & the Ecostructure Project
T: 01970 622327 E: ally.evans@aber.ac.uk
www.ecostructureproject.eu

Ocean sprawl is the spread of artificial structures in the marine environment. Given the potential environmental impacts of ocean sprawl, there is considerable interest in finding ecologically-sensitive design options for building structures such as sea defences and harbour walls. The principles of 'eco-engineering' and 'green infrastructure' are embedded in planning practice for terrestrial development and wetland restoration. In marine planning, however, eco-engineering of *blue-green* infrastructure remains an emerging (yet popular) concept. In the UK, despite a growing policy pull to incorporate biodiversity enhancements in marine structures, a range of proof-of-concept evidence that it is possible to achieve, and strong stakeholder support, there are still few examples of truly and purposefully designed blue-green artificial structures. I outline the barriers that remain and present our strategy to promote the shift from research-driven experimentation to implementation of blue-green

infrastructure as part of marine planning practice. I highlight the research we are undertaking through the Ecostructure project to strengthen the evidence base for methods of enhancing biodiversity on marine artificial structures, and importantly, what we are doing to package and communicate this evidence in a useful format.

Ecostructure is a collaboration between Aberystwyth University, Bangor University, Swansea University, University College Dublin and University College Cork. The project is part-funded by the European Regional Development Fund (ERDF) through the Ireland Wales Cooperation Programme 2014-2020.

Marine Ecosystem Services Optimisation Model: using Bayesian Belief Networks to evaluate the impacts of pressures on flows of services

Vicky Morgan
Joint Nature Conservation Committee
T: 01733 866830 M: 07964 110283 E: vicky.morgan@jncc.gov.uk

The talk will summarise progress and how MESO is being tested and refined.

MESO's objective
MESO is a tool that can help businesses, managers and regulators evaluate the environmental impacts of proposed marine developments. It allows businesses to compare possible impacts at an early stage of planning, to weigh up different options, and submit better-informed, more sustainable proposals. The tool could inform, for example, oil and gas decommissioning or the construction of pipelines or offshore windfarms. Managers and regulators of MPAs can use it to interrogate the effects of reducing different pressures.

Its potential contribution
Once successfully tested, the tool can contribute to mainstreaming a Natural Capital Approach into implementation of marine policies, plans & management frameworks. It will allow timely decisions, saving businesses delay and money, and contribute to sustainable marine growth. It will support managers and regulators to maintain or improve provision of natural services.

Key points of MESO
- Extends impact beyond biodiversity to consider ES and hence wider benefits to society
- Simple, transparent, built on a wide base of reliable literature from ecosystem-function research
- Cheap and practical compared to big academic models
- Accessible, can be hosted on-line and is simple to run
- Traceability of pathway from pressures to impacts on services
- Aggregates species into functional groups, linked to pressures and flow of services, based on robust and comprehensive evidence; this is a novel approach
- The model is being tested by specialists and potential users and is likely to be refined in response
- Links to JNCC work on MPAs and wider natural capital work

What does MESO do?
- Reveals Ecosystem Service (ES) provision and allows comparison of effects of different activities
- Identifies direction and relative magnitude of impacts on ecosystem services
- Enables decision-makers to understand and consider provision of and impacts on ESs
- Allows comparison of different interventions, for example to maximise ESs or meet other policy needs
- Covers five common sea-floor habitats
- Is quick to use and can easily be run multiple times with different scenarios
- Can be used for MPA-specific assessment or at broader scales

What does MESO not do?
- Account for new impacts to already degraded habitats; starting point assumes good condition
- Cover mosaic habitats; is currently not spatially refined

- Predict recovery rates: outputs represent a snapshot of immediate impacts
- Consider pressures at a range of intensities
- Include feedback effects

Future development
- Can extend to other habitats and mosaics
- Flexibility to incorporate spatial and temporal components
- Can be adapted to include different pressure intensities

How tool and work can support Environmental Impact Assessments
- Can scope & quantify unmitigated impacts
- Has the potential to significantly reduce time and effort on assessing habitat impacts
- In time, may be used as a standard approach for underpinning EIAs

Evaluation of Marine Protected Area Management Measures Concerning Fishing (MMO1172)

Ophélie Humphrey
Marine Environmental Consultant, MarineSpace Ltd, 8 Thorpe Road, Norwich, Norfolk, NR1 1RY
T: +44 (0) 1603 446151 E: ophelie.humphrey@marinespace.co.uk https://www.marinespace.co.uk/

This presentation gives an overview of the recently completed MMO1172 project **Evaluation of Marine Protected Area Management Measures Concerning Fishing**. The project was undertaken by MarineSpace Ltd. and its associates Dr Rob Blyth-Skyrme and Prof. Dickon Howell on behalf of the MMO.

The question: A network of marine protected areas (MPAs) is one mean by which the UK seeks to protect the marine environment while also enabling sustainable use of its seas. Often MPAs and fishers occupy the same space in the marine environment. In instances where fishing activity is not compatible with an MPA's conservation objectives, management measures may be implemented to limit adverse effects on those features. Are there gaps in the management toolbox of the current English fisheries management regime?

The approach: The project sought relevant global examples of successful approaches and measures of managing fisheries in MPAs to use as case studies in order to inform recommendations for fisheries management in English MPAs. An initial management needs assessment was undertaken through stakeholder structured interviews, supported by a literature review, to help target the searches and assessment of case studies.

Case studies were sought from countries comparable in context to England e.g. geography, economic development etc. Case studies focused on managing the interaction between identified difficult-to-manage features (benthic reefs, highly mobile species (fish and marine mammals) and ephemeral / dynamic environments) and fishing activities (towed and static gears). Areas of good practice from other countries were found for most gear–feature interactions, though it was not possible to identify any case study demonstrating specific management of static fishing gear on ephemeral / dynamic species and habitats.

The output: Based on lessons learned from the case studies, management measures recommended for further consideration include:

- use of technologies such as remote electronic monitoring, and high-resolution vessel monitoring systems,
- changes to ways of working including industry engagement, marine spatial planning, seeking measures have benefits to fishermen or are not disproportionately restrictive

- improving information for e.g. location of sensitive habitats, recording of bycatch or limiting fishing footprint to historical
- use spatial and non-spatial measures in combination e.g. technical controls, observer programmes or reduction of ghost fishing.

It should be acknowledged that the current fisheries management regime in England is considering many of these approaches already. These recommendations should serve to strengthen areas of work that are already ongoing and to provide further impetus for development of measures in areas that are not currently being addressed.

Web-links and/or references
The complete MMO1172 report can be found at
https://www.gov.uk/government/publications/evaluation-of-marine-protected-area-management-measures-concerning-fishing-mmo1172

Project UK – Delivering Fishery Improvements in the North East Atlantic

Matthew Spencer
Marine Stewardship Council
T: 07495773082 E: matthew.spencer@msc.org

The presentation will be about Project UK, a collaborative project that is working towards sustainable fisheries across the UK. It stems from the success of Project Inshore and uses MSC FIP tools and the MSC pre-assessment process as a gap analysis to determine areas of improvement and developing Action Plans for a Credible Fishery Improvement Project.

Within the presentation Project UK Stage 1 and 2 FIPs will be talked at depth. Project UK Stage 1 was the first group of fisheries to be developed as FIPs. Stage 2, building on the successful implementation of Stage 1, is a second group of fisheries to be identified to form FIPs. The success of this model, through proof of concept, reflects the growing desire and interest for change within the UK seafood and fishing industry for a continued move towards a sustainable future for UK fisheries.

Project UK Stage 1 FIPs
- North Sea plaice & lemon sole, demersal trawl, beam trawl & seine
- Channel scallops, dredge
- Western & Channel monkfish, demersal trawl, beam trawl & gill net
- Southwest crab & lobster, pots

Project UK Stage 2 FIPs
- King Scallop – North Sea, West of Scotland and Irish Sea, dredge
- Nephrops – North Sea, West of Scotland and Irish Sea, demersal trawl and creel/pot

All information and documents from each of the FIPs is available on FisheryProgress.org, the global FIP tracking database.

https://fisheryprogress.org/
https://www.seafish.org/article/project-uk-fisheries-improvements

Progressing native oyster recovery: opportunities for offshore wind

Morven Robertson
Senior UK Projects Manager, Blue Marine Foundation
morven@bluemarinefoundation.com

The offshore wind sector in the UK is expanding rapidly and is set to occupy significant areas of the coastal zone, creating opportunities for partnership with conservation and fisheries initiatives. Recognition of the role windfarms have in enhancing both biodiversity and fisheries when appropriately managed and designed, is growing worldwide. In the North Sea, the expansion of the sector is offering an opportunity to concentrate native oyster restoration in offshore windfarms. Competition for space has already driven restoration initiatives in Holland to conduct feasibility studies.

Learning from these existing studies Blue Marine Foundation, together with *Ørsted,* are in the process of conducting a feasibility study to inform a small-scale trial at Gunfleet Sands windfarm, Essex. The project is aimed at enhancing inshore oyster populations within the Blackwater, Colne, Roach & Crouch MCZ. This talk will cover work to date in Europe, progress towards a 2020 small scale trial and implications for UK wide offshore wind farms.

SESSION 5

The importance of UK kelp forests for fisheries habitat, biodiversity, carbon cycling and regional economies

Dan Smale
Marine Biological Association of the United Kingdom, The Laboratory, Citadel Hill, Plymouth PL1 2PB, UK
E: dansma@mba.ac.uk @DanSmale1

Kelp forests are distributed along a quarter of the world's coastlines. In the UK alone, kelp stands are found along ~12,000 miles of coastline and occupy an area of up to 19,000 km^2, comparable to the combined area occupied by seagrass meadows, salt marshes and native trees on land. As ecosystem engineers, kelps support high levels of primary productivity, elevated biodiversity and provide complex and extensive habitat for a wide range of organisms including fisheries species, sea birds and mammals. Despite some pioneering ecological studies conducted in the 1960s and 1970s, kelp forests in the UK have been historically understudied, especially compared to other regions such as Australia and California, which has resulted in critical knowledge gaps pertaining to management, conservation, carbon cycling and responses to environmental change. However, public attention, commercial interest and research efforts in UK kelp forests have intensified in recent years. Here, I provide an overview of the value of these ecosystems for biodiversity, fisheries species and carbon cycling with particular focus on conservation, cultivation, management and climate change.

Key references

Smale, D. A., M. T. Burrows, P. J. Moore, N. O' Connor, and S. J. Hawkins. 2013. Threats and knowledge gaps for ecosystem services provided by kelp forests: a northeast Atlantic perspective. Ecology and Evolution 3:4016–4038.

Smale, D. A. 2019. Impacts of ocean warming on kelp forest ecosystems. New Phytologist online early.

Smale, D. A., and P. J. Moore. 2017. Variability in kelp forest structure along a latitudinal gradient in ocean temperature. Journal of Experimental Marine Biology and Ecology 486:255-264.

Burrows, M. T., D. A. Smale, N. O'Connor, H. Van Rein, and P. Moore. 2014. Developing indicators of Good Environmental Status for UK kelp habitats. JNCC Report No. 525, SAMS/MBA/QUB/UAber for JNCC, JNCC Peterborough. pp. 80.

Burrows, M. T., C. J. Fox, P. Moore, D. A. Smale, I. Sotheran, A. Benson, L. Greenhill, S. Martino, A. Parker, E. Thompson, and C. J. Allen. 2018. Wild Seaweed Harvesting as a Diversification Opportunity for Fishermen. A report by SRSL for HIE, pp. 171.

Challenges in Scotland: Doubling of fish farming, mechanical kelp harvesting & future of fisheries management

Calum Duncan
Head of Conservation Scotland, Marine Conservation Society, Suite 7 CBC House,
24 Canning Street, Edinburgh, EH3 8EG
T: 0131 633 4001 M: 07841 985 595 E: calum.duncan@mcsuk.org

Calum Duncan is Head of Conservation Scotland for the Marine Conservation Society, establishing the Scotland conservation programme for MCS in Edinburgh in April 2000. For over 12 years, Calum has also steered the Save Scottish Seas coalition of Scottish Environment LINK Marine Group members that campaigned to secure the Marine (Scotland) Act 2010 and subsequently for its delivery, including new Scottish Marine Protected Areas, a National Marine Plan and Regional Marine Plans. The MPA process highlighted the overlap with fisheries management which is an area of work MCS in Scotland has also been involved with.

As we enter a new decade, despite some welcome progress made on developing the MPA network, protecting the most vulnerable inshore MPAs and introducing the National Marine Plan, deadlines in 2010, 2015, 2016 and 2020 will have been missed to halt the decline of biodiversity, establish ecologically coherent MPA networks and ensure our seas are in Good Environmental Status. A series of reports in 2019 highlighted that we are in the midst of inter-linked climate, nature and ocean emergencies and that doing business as usual has led us to this point. The next decade must have ecosystem, including ocean, restoration at the core of all decision-making and nothing short of transformative change in how we do business in and around the sea, from fisheries and aquaculture management to plastics manufacture and transport, is needed to deliver that at the scale necessary. This talk will provide a snapshot of the debate in Scotland on the future of fisheries management, fish farming and mechanical kelp harvesting viewed through the prism of the ocean crisis and the need to meet the latest Sustainable Development Goals, to which Scotland was among the first nations in the world to commit.

Through the ongoing Save Scottish Seas campaign, Calum has been at the forefront of helping develop research and policy on marine conservation in Scotland, including making the case for new Scottish MPAs, their multiple use, non-use and indirect values, their effective management and the overarching concept of Seafloor Integrity. See https://www.scotlink.org/our-work/our-seas/marine/ for further details. He also contributed to an Oxfam-led report on Scotland's progress against the UN Sustainable Development Goals with a chapter on SDG14 Life Below Water : http://uwsoxfampartnership.org.uk/wp-content/uploads/2019/06/On-Target-July-2019-Web-FINAL.pdf and the State of Nature 2019 Scotland report: https://www.nature.scot/sites/default/files/2019-10/State-of-nature-Report-2019-Scotland-full-report.pdf

The Fisheries Bill & sustainable fisheries – where are we and where do we need to go?

Helen McLachlan
Fisheries Programme Manager, WWF UK
E: hmlachlan@wwf.org.uk
Tw: @HelenMcLachlan2

In July 2018 Defra published their white paper on '*Sustainable fisheries for future generations*'. This was followed shortly in October 2018 by the introduction to Parliament of the Fisheries Bill. Prior to the publication of the Bill environmental NGOs had set out some key principles which they considered central to sustainable fisheries management and it was against these that they rated the offerings of the Fisheries Bill.

In this presentation I will run through some of these key asks and how the Bill addressed them (or not). Not to provide too much of a spoiler many of them were lacking including, fundamentally, the commitment to set sustainable fishing levels as the Bill revoked this CFP commitment. As a result in its original iteration the Bill was far from the gold standard for fisheries management that the Secretary of State at the time claimed it would be. It was in fact regressive when compared to the CFP.

Throughout 2019 report after report identified just how poorly we have been managing our marine environment, revealing that we are failing to meet 11 of the 15 indicators of the Marine Strategy and the achievement of Good Environment Status (GES). The importance of ocean health for combatting climate resilience came unto sharper focus. In response to increasing alarm over climate change governments across the world declared a climate emergency, including here in the UK. Meanwhile the Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES) report identified that biodiversity and ecosystem services were deteriorating worldwide and that overfishing represented the biggest human impact on our oceans. It is clear that if we are to build climate resilience and recover ocean health we need to integrate the management of fisheries into the wider ocean agendas and make systemic changes with urgency and ambition in order to deliver climate smart fishing and effective protection of key marine areas, habitats and species.

We need to stand back and ask whether what is currently being offered across current and proposed legislation is both urgent and ambitious enough to bring about the much needed recovery of our ocean and its ability to tackle climate change, and in turn secure a management system that will deliver sustainable, productive businesses and a healthy, biologically diverse marine environment, benefitting our oceans and the coastal communities dependent on them for a sustainable livelihood.

Looking at existing UK marine legislation it is fragmented, fails to reflect the ocean's role in the climate fight and does not have a clear obligation to achieve recovery of our oceans. In addition our marine environment is not prioritised in the way that other environmental concerns are embraced by policy teams. The draft Environment Bill doesn't specifically cover marine while fisheries management is siloed from other marine management with little consideration given to its wider ecological impacts. Should we for example as a first step make ocean recovery a legal requirement with a strengthened obligation to achieve and surpass GES, supported by a suite of specific, timebound measures? What is clear is that business as usual cannot be an option.

Low Impact Fisheries

Chris Williams
New Economics Foundation
E: Chris.Williams@neweconomics.org

A wide variety of fishing gears are used to catch fish and shellfish in the UK and these gears are constantly evolving, with a focus on trying to reduce fuel use, catches of non-target species and any negative impacts on marine habitats. Even for the same species in the UK, there may be several major fishing techniques such as pots, nets, hooks, and trawls that use different amounts of energy (fuel) and have differing impacts on the target / non-target species and wider marine ecosystem. The impacts of fishing gears on seabed ecosystems are a central component in *ecosystem-based fisheries management* and the *ecosystem approach* to fisheries management (guiding objectives of both the Fisheries White Paper and the 25 Year Environment Plan)[1]. The impacts on seabed features and species of different gear types is also a key consideration in the development of management measures and byelaws for Marine Conservation Zones (MCZs) and other Marine Protected Areas (MPAs)[2].

The 25 Year Environment Plan commits to sustainable fisheries and an approach, which prioritises the marine environment: "*Beyond our coastlines, we must do more to protect the seas around us and marine wildlife…We will develop a fishing policy that ensures seas return to health and fish stocks are replenished. We will also extend the marine protected areas around our coasts so that these stretches of environmentally precious maritime heritage have the best possible protection*".

"*This 25 Year Environment Plan…calls for an approach to agriculture, forestry, land use and fishing that puts the environment first*".[3]

How fishing opportunities are allocated, and whether low-impact criteria are applied, has always been up to national governments, but the Brexit vote and drafting of new fisheries legislation has seen the UK government discuss this idea seriously for the first time. Specifically, the Fisheries White Paper states:

"*We want an efficient but sustainable industry. Technological advances have driven greater efficiency and modern smaller boats are able to catch far more fish than previously. We will therefore consider new criteria to define low impact inshore fishing vessels to replace the current 'under 10 metre' category.*"

"*We will consider a targeted scientific trial using an effort (days at sea) based regime in place of a quota regime for some low impact inshore fisheries.*"

"*If evaluation of the outcomes shows that such approaches are successful with the low impact inshore fleet, consistent with our commitment to sustainable fishing, then we will give careful consideration to further selective trials for deployment of effort based regimes or alternative hybrid models in other parts of the demersal fleet.*"

"*Defra and MMO can use this opportunity to review how the English inshore fleet, many parts of which could be viewed as relatively low impact (such as artisan fishers with close ties to their coastal communities), is managed and regulated. Instead of the current 'under 10 metre' category we will consider a variety of potential options including limits to engine power and restrictions on where such vessels can fish. This approach supported by vessel monitoring and electronic catch-reporting could allow us to provide increased fishing opportunities, or lighter regulation, for those involved in low impact fishing activity. At the same time, it would be necessary to monitor the potential cumulative impact of medium impact vessels.*"[4]

The Fisheries White Paper makes extensive mention of the need to favour low-impact fisheries, but these are not defined and therefore this ambition cannot be met without having objective, transparent and measurable criteria. Without a definition of low-impact fishing[5] , the bold statements

in the Fisheries White Paper and 25 Year Environment Plan will be hollow and of no consequence for those fishers who use low-impact fishing methods. Indeed, the Fisheries Bill Clause 20 specifically legislates for allocation based on social, environmental and economic criteria.

The presentation will focus on NEF research and advocacy since 2011 on social, environmental and economic criteria, applied to fisheries in the EU[6, 7], UK[8, 9, 10] or both[11].

NEF have recently been awarded a Defra contract to 'co-design the principles for defining low impact fishing' with the English fishing industry, which will also be presented.

[1] Defra (2018) Sustainable fisheries for future generations https://www.gov.uk/government/consultations/fisheries-white-paper-sustainable-fisheries-for-future-generations/sustainable-fisheries-for-future-generations-consultation-document
[2] UK Government Guidance (2014) Understanding marine conservation byelaws: How byelaws are made and what they protect. https://www.gov.uk/guidance/marine-conservation-byelaws
[3] Defra (2018) 25 year environment plan https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf
[4] Defra (2018) Sustainable fisheries for future generations https://www.gov.uk/government/consultations/fisheries-white-paper-sustainable-fisheries-for-future-generations/sustainable-fisheries-for-future-generations-consultation-document
[5] Article 4 of the CFP provides a definition of 'low impact fishing': '"low impact fishing' means utilising selective fishing techniques which have a low detrimental impact on marine ecosystems or which may result in low fuel emissions, or both;" https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1380&from=EN
[6] SOCIOEC project (2015) Final Report Summary - Socio economic effects of management measures of the future CFP. https://cordis.europa.eu/project/rcn/101825/reporting/en
[7] Nieto & Blomeyer Sanz (2015) Criteria for Allocating Access to Fishing in the EU https://www.researchgate.net/profile/Fernando_Nieto4/publication/275347471_Criteria_for_Allocating_Access_to_Fishing_in_the_EU/links/5539e6e20cf226723aba3643/Criteria-for-Allocating-Access-to-Fishing-in-the-EU.pdf
[8] Williams, Carpenter (2015) NEF working paper on sea bass (*Dicentrarchus labrax)* and article 17 of the reformed Common Fisheries Policy (CFP) https://www.researchgate.net/publication/284430910_NEF_working_paper_on_sea_bass_Dicentrarchus_labrax_and_article_17_of_the_reformed_Common_Fisheries_Policy_CFP
[9] Williams et al. (2018) Who gets to fish for sea bass? Using social, economic and environmental criteria to determine access to the English sea bass fishery. Marine Policy. https://www.researchgate.net/publication/324075041_Who_gets_to_fish_for_sea_bass_Using_social_economic_and_environmental_criteria_to_determine_access_to_the_English_sea_bass_fishery
[10] Williams and Carpenter (2016) NEF working paper The Scottish Nephrops fishery: Applying social, economic, and environmental criteria https://neweconomics.org/uploads/files/Griffin-Nephrops-latest.pdf
[11] Eigaard et al (2016) 'Estimating seabed pressure from demersal trawls, seines, and dredges based on gear design and dimensions', ICES Journal of Marine Science, Volume 73, Issue suppl_1, 1 January 2016, pp 27–43. https://academic.oup.com/icesjms/article/73/suppl_1/i27/2573989

Inshore Fisheries – mapping the future

Kirsten Milliken
Economics Project Manager, Seafish
T: 0131 524 8668 E: Kirsten.Milliken@seafish.co.uk #FutureOfOurInshoreFisheries

A collaborative approach is underway to reshape UK Inshore Fisheries Management.

October 2019 marked the first staging post of the journey. A pivotal event was held in London and attended by the fishing industry, recreational fishers, government agencies, NGOs and the research community to discuss issues and possible solutions in inshore fisheries management. Drawing on the expert knowledge, personal experience and ideas of the events participants the Project Steering Group are now preparing a set of recommendations for a future blueprint of UK inshore fisheries management.

This initiative marks a step-change, not only in what we manage but how we manage our inshore fisheries. Drawing lessons from examples of successful fisheries co-management from around the world the group aim to bring together stakeholders to pilot alternative approaches and reform inshore fisheries management in the UK.

We undoubtedly have a challenge ahead – to deliver a world class inshore fisheries management system, one that is capable of ensuring our fisheries, our marine environment and our coastal communities are thriving – but as attendance at the October 2019 event showed, we also have the appetite and the willingness to succeed.

The developing programme of inshore fisheries and conservation management
Delivering effective inshore fisheries and conservation management in the Southern IFCA District

Robert Clark
Chief Officer, Southern Inshore Fisheries and Conservation Authority (IFCA), Unit 3, Holes Bay Park, Sterte Ave West, Poole, BH15 2AA
T: 01202 721373 El: robert.clark@southern-ifca.gov.uk
Web: www.southern-ifca.gov.uk

In this talk I will cover the progress made by Southern IFCA to transform management of Inshore in the coastal waters of Hampshire, Dorset and the Isle of Wight. I will present on the progress made by the Authority in the management of Marine Protected Areas and the lessons learnt from this process. In particular, with regards to the need to implement strategies to reconcile economic incentives and conservation objectives, I will discuss the role and importance therein of policy, community engagement and compliance. In the context of the progress made by the IFCA, I will reflect upon the ongoing and forthcoming challenges and opportunities associated with, amongst other things; changes in the wider fisheries management regime, the nature and extent of IFCA resources and the continued opportunities for collaboration (and in particular co-management).

Background
The Marine and Coastal Access Act, 2009 amongst other things, established a new system for the management of inshore fisheries and in 2011, in English coastal waters (to six nautical miles), IFCAs were formed. There are ten IFCAs in England; the IFCAs are committees, or joint committees (as is the case in Southern IFCA) of local government. The IFCAs are governed by Members who are either appointed by the local authorities that fund the IFCA, appointed as representatives of statutory bodies (Natural England, Environment Agency or the Marine Management Organisation), or appointed as General Members on their individual merit, for their skills or knowledge relevant to inshore fisheries and conservation management.

The vision of IFCAs is to "lead, champion and manage a sustainable marine environment and inshore fisheries, by successfully securing the right balance between social, environmental and economic benefits to ensure healthy seas, sustainable fisheries and a viable industry."

The primary duty of IFCAs is to manage the exploitation of sea fisheries resources and in performing this duty the IFCAs must:

(a) seek to ensure that the exploitation of sea fisheries resources is carried out in a sustainable way,
(b) seek to balance the social and economic benefits of exploiting the sea fisheries resources of the district with the need to protect the marine environment from, or promote its recovery from, the effects of such exploitation,
(c) take any other steps which in the authority's opinion are necessary or expedient for the purpose of making a contribution to the achievement of sustainable development, and
(d) seek to balance the different needs of persons engaged in the exploitation of sea fisheries resources in the district.

With regards to the duties of IFCAs and Marine Protected Areas (MPA), amongst other things, IFCAs must seek to ensure that the conservation objectives of any Marine Conservation Zone (MCZ) in the

district are furthered and the Conservation of Habitats and Species Regulations, 2017 require IFCAs to exercise their functions which are relevant to nature conservation, including marine conservation, so as to secure compliance with the requirements of the Habitats Directive and the Birds Directive.

Further reading

Humphreys, J, and Clark, RWE. (eds.), 2019. Marine Protected Areas. Science, Policy and Management. Elsevier, Oxford. Available online https://www.elsevier.com/books/marine-protected-areas/humphreys/978-0-08-102698-4

Defra, 2018. Inshore Fisheries and Conservation Authorities: conduct and operation 2014 to 2018. Available online https://www.gov.uk/government/publications/fisheries-and-conservation-authorities-conduct-and-operation-2014-to-2018

AIFCA 2019 Management of Inshore Marine Protected Areas by the IFCAs 2011 to 2018. Available online http://www.association-ifca.org.uk/Upload/MPA/AIFCA%20Leaflet-2019%20v15-hires.pdf

Birchenough, S, Clark, RWE, Pengelly, S., Humphreys, J. 2019. Managing a dredge fishery within a marine protected area. Resolving environmental and socio-economic objectives. In Humphreys, J, and Clark, RWE. (eds.), 2019. Marine Protected Areas. Science, Policy and Management. Elsevier, Oxford.

Burton, S., 2019 Marine Protected Areas, the importance of positive partnerships and stakeholder engagement for delivering environmental outcomes in an estuary. In Humphreys, J, and Clark, RWE. (eds.), 2019. Marine Protected Areas. Science, Policy and Management. Elsevier, Oxford.

Clark, RWE., 2019. Enforcement Capabilities and Compliance in English Marine Protected Areas; the art of the possible. In Humphreys, J, and Clark, RWE. (eds.), 2019. Marine Protected Areas. Science, Policy and Management. Elsevier, Oxford.

Short presentations: Six x 3 minute updates

A system for making asset registers for UK habitats below mean high water

Paul Ivory
Joint Nature Conservation Committee
T: 01733 866975 E: Paul.Ivory@jncc.gov.uk

We are developing a system for generating Natural Capital asset and risk registers, and maps, which combines existing data and evidence sources in a system capable of generating products at a variety of scales and scope, linking benthic habitats to flows of services and beneficiaries. Initial outputs for a pilot cover the North East Marine Planning Area in the southern North Sea. This short talk will introduce the work and progress so far.

Developing a participatory approach to the management of fishing activity in UK offshore MPAs

Louisa Jones
Joint Nature Conservation Committee
T: 01733 866938 M: 0773 9692947 E: louisa.jones@jncc.gov.uk

The seas around the UK are home to some of the most biologically diverse habitats and species in Europe. However, UK marine biodiversity and the services this provides to society are under threat. Marine Protected Areas (MPAs) are one of the ways in which the UK's marine biodiversity might be effectively conserved for future generations, while seeking to enable the sustainable use of resources.

The Joint Nature Conservation Committee have been working on a two-year European Marine Fisheries Funded project with partners in the Marine Management Organisation, Natural England, the National Federation of Fishermen's Organisations and Bangor University exploring participatory processes for establishing, evaluating and adapting fisheries management measures in offshore MPAs that include sedimentary habitats as protected features.

This talk will summarise how the project has brought together the fishing sector, regulators, scientific advisors and academic researchers to explore the challenges of managing sedimentary habitats in MPAs. Importantly, the project has focussed on mechanisms for enabling the fishing sector to engage positively with the management process and bring their perspectives and knowledge to the table. The main deliverable of this project is an 'MPA Management Toolkit', which will be published on JNCC's website in March 2020.

Developing the evidence-base to support climate-smart decision making on MPAs

Stephanie Byford
Joint Nature Conservation Committee
T: 01733 866943 E: stephanie.byford@jncc.gov.uk

MPA networks have been put in place across the UK to help safeguard marine biodiversity and the services it provides to society. They have been established to represent the range of marine biodiversity within our waters where appropriate and this includes many habitat types that play an important role in offering 'nature-based solutions' to mitigating the impacts of climate change such as the sequestration of atmospheric carbon. If managed in an effective and equitable way, MPAs can help marine ecosystems to adapt and enhance resilience to climate change by virtue of the fact that wider damaging activities are controlled.

JNCC have been working with Defra and the Marine Biological Association of the United Kingdom to undertake a project to start to develop the evidence-base to improve our understanding of the sensitivity of MPA features to the pressures associated with climate change and the role of MPA features themselves in supporting mitigation and adaptation to climate change. This talk will present an overview of the approach undertaken and present the draft outputs from it.

Monitoring: How do we get the best from an MPA network?

Matthew Ferguson
Joint Nature Conservation Committee
T: 01733 866968 E: matthew.ferguson@jncc.gov.uk

The UK MPA network presents an opportunity to protect our seas against a rising tide of climate change and anthropogenic pressure. Now that monitoring of the UK inshore and offshore MPA network is well underway, JNCC is seeking to answer the question of how we monitor the network and what questions we should be asking to get the best from the effort put into monitoring. This has raised further questions on how we design surveys, collect samples and analyse it to maximise our understanding of the condition of the network and ensure it delivers in the future. JNCC have been collaborating with CEFAS and Marine Scotland Science to tackle these issues and develop the future of the UK MPA monitoring in joint and offshore waters. This talk will present on this work, focussing on the challenges and future of the programme.

Using marine biodiversity indicators to estimate the provision of ecosystem services

Kate Wade
Joint Nature Conservation Committee
T: 01733 866875 E: kate.wade@jncc.gov.uk

There is an increasing drive from policy, such as through Defra's 25 Year Environment Plan, to incorporate the natural capital approach into how the environment is assessed and managed, to both conserve the environment and enhance the ecosystem services it provides. Biodiversity indicators can provide useful information on ecosystem service provision, in addition to biodiversity status, providing a cost-effective method for measuring ecosystem service provision.

We will present a methodological framework which utilises existing marine biodiversity indicators to assess the status of marine ecosystem services, aggregating outputs from lower habitat levels (e.g. EUNIS level 4) to wider habitat levels (EUNIS level 3). Through developing existing matrices that link ecosystem components with ecosystem services, and identifying related biodiversity indicators, we can identify where indicators can provide a plausible link to ecosystem service provision. We are using the assumption that the capacity of an ecosystem component to deliver an ecosystem service is based on extent and condition. The framework provides a flexible way to use existing data and indicators, identifies and allows for data gaps and the incorporation of new information once available.

Taking the UK MPA mapper beyond the boundaries

Helen Woods
JNCC
T: 01224 266575 E: Helen.woods@jncc.gov.uk

JNCC has revamped its MPA mapper – an interactive online resource presenting spatial data for all Marine Protected Areas (MPAs) in UK and Crown Dependency waters. The mapper displays the boundaries of MPAs across the whole of the UK, Isle of Man and Jersey, and presents the spatial distribution of designated features in offshore MPAs. Although the mapper already displays the impressive scale of our MPA network, the next stage in its development (and for the MPA network itself) will be to expand into management measures, particularly for fisheries. The implementation of management measures continues to present a complex challenge in the marine environment, and EU Exit is set to change how fisheries are managed, especially in offshore waters. Whatever form these

measures take going forward, we aim to visualise the bigger picture by using our mapper to track the ongoing development of the MPA network alongside broader management measures. By developing the MPA mapper we plan to create a tool that is useful for understanding MPAs and beyond. We welcome suggestions from Coastal Futures delegates to continue making our mapper useful to them.

SESSION 6

Net Gain – How can this be translated into practice?

Peter Barham
Seabed User and Developer Group, www.sudg.org.uk
peterjbarham@gmail.com

SUDG is looking at ways in which net gain could be adopted as a principle which will both benefit marine industries and the environment. Our thinking is predicated on the understanding that if net gain is going to become part of the development process, then it is better for industry to be involved in developing how that should take place.

An option that SUDG is trying to develop is not one where mitigation and compensation (the mitigation hierarchy) are kept distinct from net gain, but towards one where net gain is treated as an opportunity to provide more than compensation, so that the environment is not just protected but improved regardless of whether work takes place in designated areas or outside them. Logically, this should also apply on an ecosystem wide basis, acknowledging that some species require access to terrestrial, marine and intertidal habitats for complete well-being. We are increasingly referring to this as 'ecosystem enhancement'.

It is clear that such an approach could only be successfully applied by developing new ways of working rather than simply adjusting the way we currently deliver outcomes. None of what is suggested replaces the existing legislative obligations; instead, it creates an opportunity where development can contribute to better ecosystem management through delivery of the mitigation hierarchy and subsequent net gain in a proportionate manner. Such an approach could ensure that development has a material and significant impact in helping to meet GES and other agreed environmental targets and avoid the potential for net gain to be described as 'greenwash'; where actions would simply be delivered without context and without addressing clearly understood issues.

Restoring Estuarine and Coastal Habitats in the North East Atlantic

Roger Proudfoot & Ben Green
Environment Agency, Kingfisher House, Goldhay Way, Orton Goldhay, Peterborough, PE25ZR T: 0203 0256182 M: 07799 582719
E: roger.proudfoot@environment-agency.gov.uk, ben.green@environment-agency.gov.uk

A cross Defra initiative, ReMeMaRe (Restoring Meadow, Marsh and Reef) is underway across the Defra Marine Outcome System and the salty 6 (Environment Agency, Management Organisation, Natural England, Joint Nature Conservation Committee, Centre of Environment, Fisheries and Aquaculture Science and Defra) with support from the Crown Estate and IFCAs too to draw together current activity attempting to restore estuarine and coastal habitats in England. The initiative also has a UK and international dimension through the REACH conference (Restoring Estuarine and Coastal Habitats in the NE Atlantic).

The presentation will update delegates on progress to date and the developing plan for the future. The initiative aims to extend beyond government organisations, drawing in expertise and support from industry, NGOs and academia in partnership, collaborating to restore important habitats in our estuaries and at the coast with a particular focus upon saltmarsh, sea grass and oyster reef. The focus is on practical intervention rather than natural restoration through reduced pressure, though providing

the right water quality and morphological conditions, both now and in the future, is recognised as being of major importance in ensuring restoration successful. The talk will also be set in the context of us wanting to re-think how we manage and protect the water environment through creation of a new overarching Water Story. The challenges and choices within River Basin Management Plans are out for consultation and their role in promoting more restorative action locally will be highlighted.

Progress with ReMeMaRe to date will be presented and highlight key findings from the 2019 REACH conference and the follow on "Developing Blue Restoration" workshop. We will set out our vision and future direction as we remember how our seas used to be, help to inspire their restoration and regain important habitats that will increase our resilience in the face of the climate emergency and ecological crisis.

Find the outputs from the 2019 REACH conference here:

https://ecsa.international/event/2019/restoring-estuarine-and-coastal-habitats-north-east-atlantic-reach-north-east-atlantic-0

Find our Challenges and Choices consultation here:

https://consult.environment-agency.gov.uk/environment-and-business/challenges-and-choices/