

# MERIKA Activities at SAMS

## Environmental, social, economic and cultural aspects of the marine environment



SAMS MERIKA TEAM



Inverness 2<sup>nd</sup> November 2016  
Scientific Advisory Board

# Outline

- Group
- Research
- Mobility
- Project proposals
- Papers

# MERIKA Staff

## Centre for Society and the Sea



Jasper Kenter



Denise Risch



Lucy Greenhill



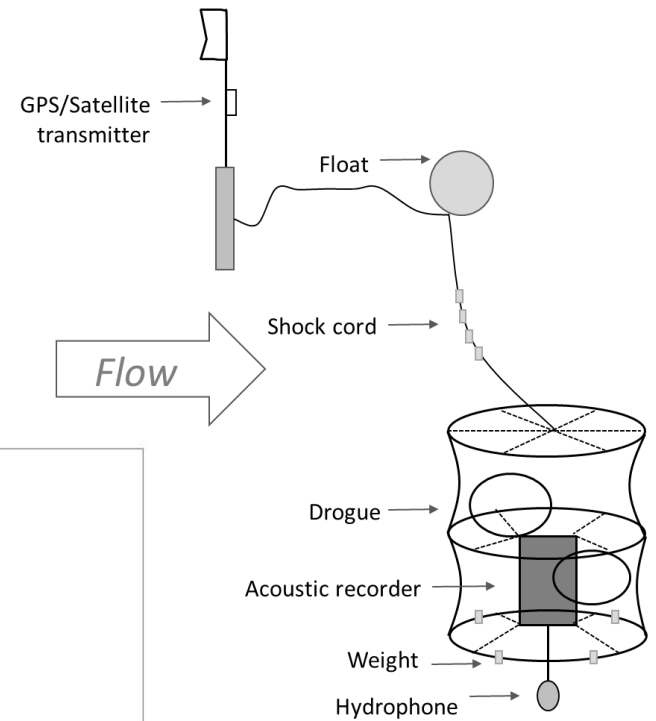
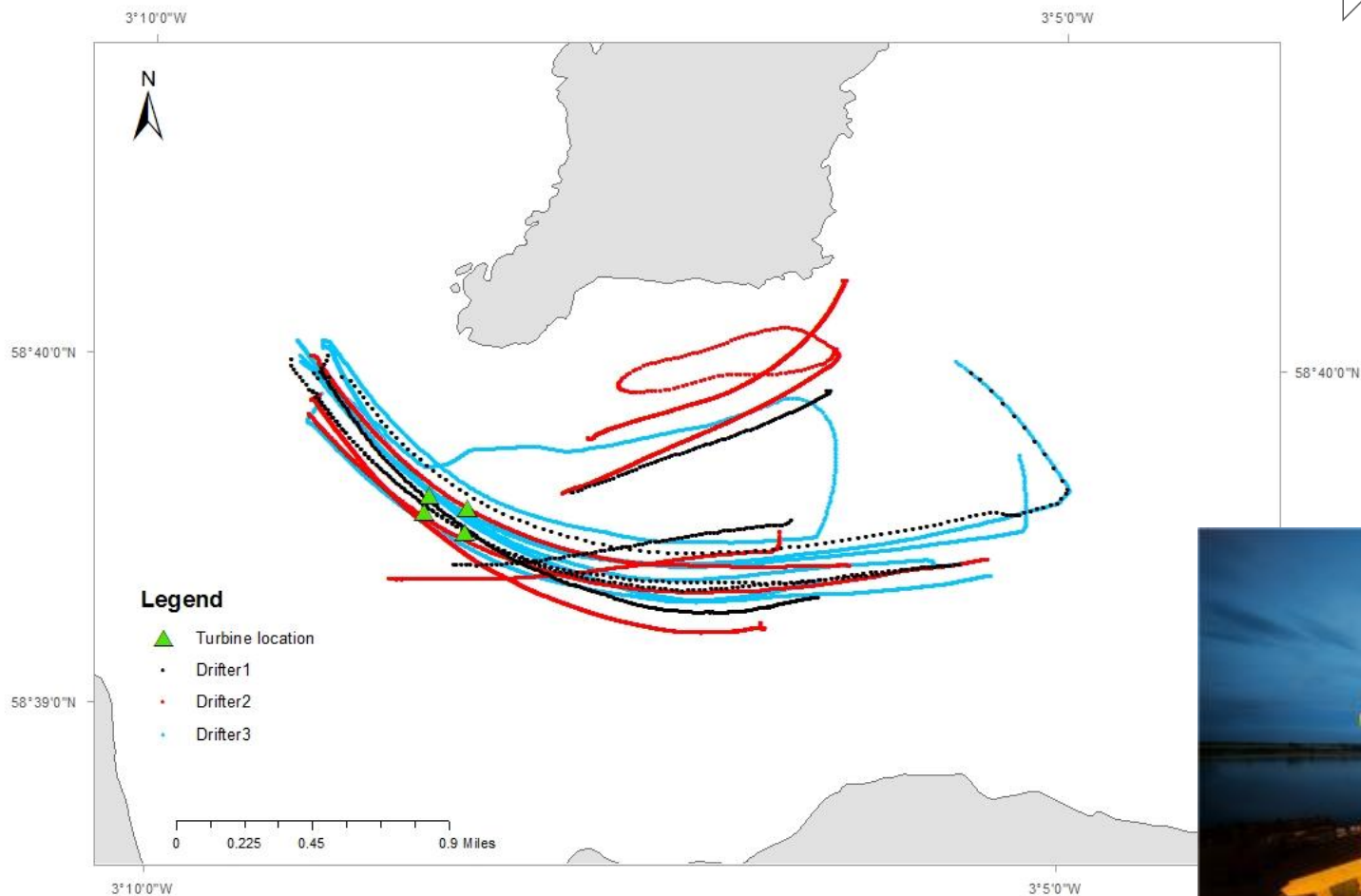
Suzi Billing



Simone Martino



# Ambient Noise Assessment at MeyGen Deployment Site using Drifting Hydrophones





## How do we understand and incorporate 'shared' and 'cultural' values into planning marine activities?

*Dr Jasper Kenter, Ecological Economist*

- Most social impact assessments and cost-benefit analyses take a top-down approach, primarily focussing on economics
- This risks missing out on important shared and cultural values that communities express in relation to the environments in which they live
- These values can be elicited through **shared social processes**



“To deeply resolve conflicts between nature conservation and exploitation, we need valuations that result from and are integrated with transformative processes that bring together different voices to develop shared understandings of conflicts between different ecosystem services and shared values around how to resolve them.”

# Conceptual System Model

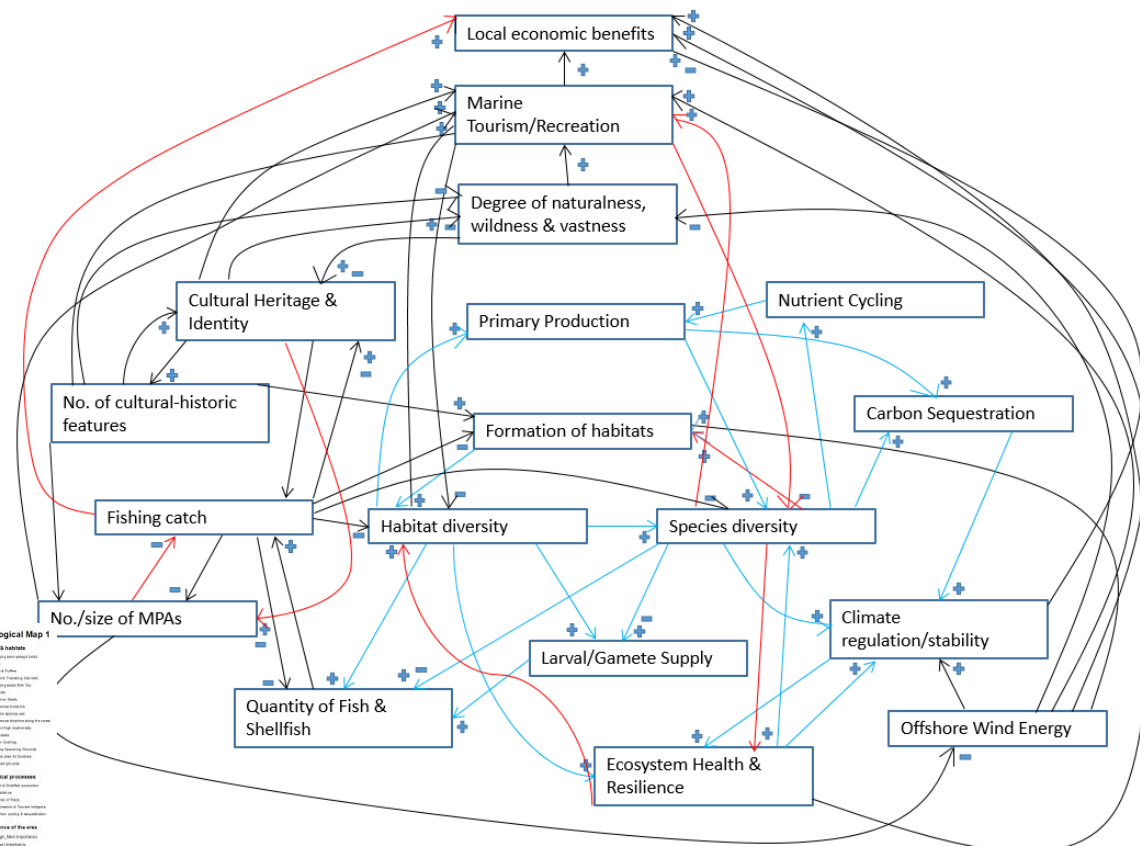
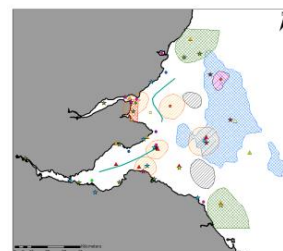
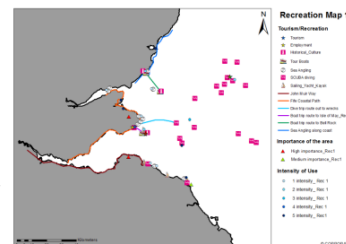
- Building a conceptual picture of the social-ecological system
- Looking at interactions between ecosystem services, activities, benefits and drivers of change (wind farms, MPAs, fisheries policy)

- Social learning
- It's not about drawing a perfect model, but about the discussion

## Firth of Forth Case Study



Energy security and climate change =>  
**Offshore Renewables**



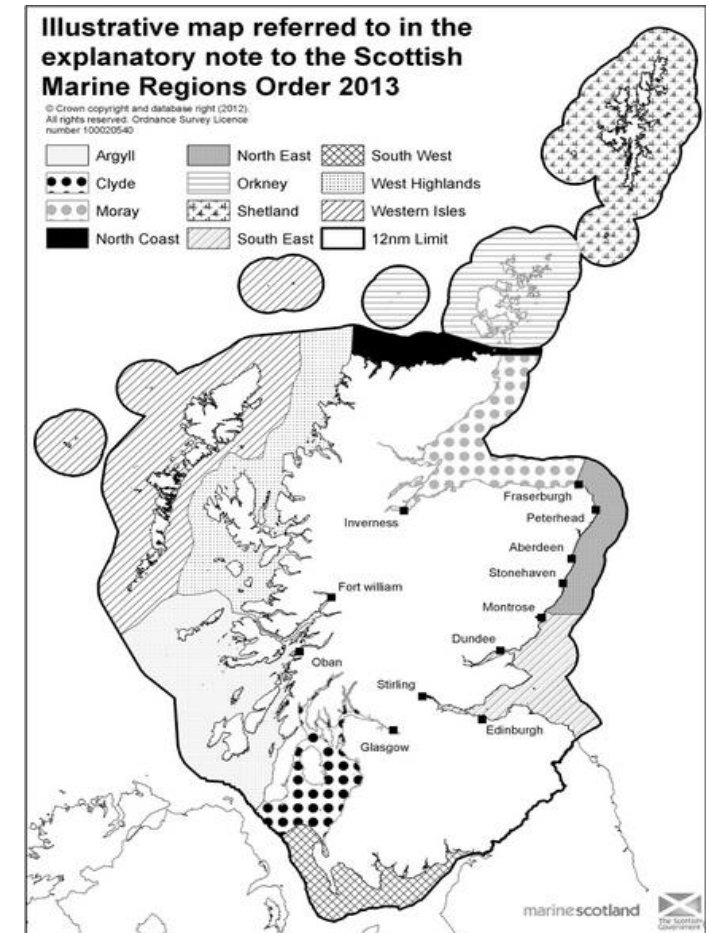




# Marine Spatial Planning and Governance

*Lucy Greenhill, Policy and Governance*

- ▶ Provide better engagement of local communities to facilitate conflict management and co-use to optimise resource use
- ▶ How does MSP enable adaptive governance in marine activities (to address complexity / uncertainty)?
- ▶ How does MSP relate to other concepts (ICZM, EBM, EA, AM) – report with MERIKA partners
- ▶ ACIDCOAST Project: How does marine governance respond to climate change? A comparison between Scotland and Norway.





## Local scale management and societal interactions of marine activities

*Dr Suzi Billing, Social Scientist*

- Societal perspectives co-location of aquaculture and MRE devices on exchange with Nord University
- Creating case study links in local societal perspectives on renewable energy and aquaculture between Norway and Scotland for potential funding via Norwegian Research Council



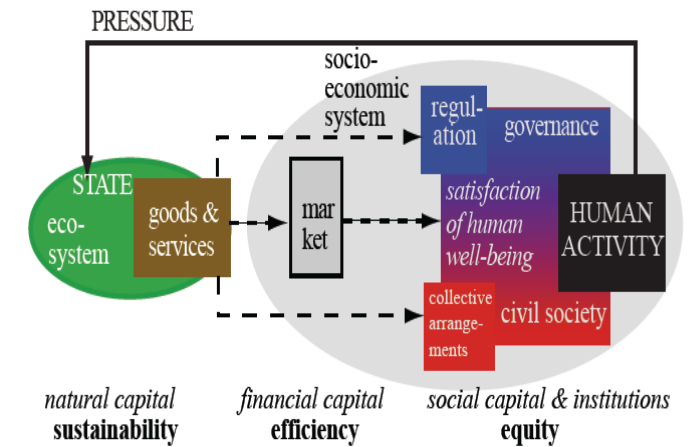




## Cost Benefit Analysis and Ecosystem Services

*Dr Simone Martino, Environmental Scientist and Resource Economist*

- Integrating economics with social and institutional norms in a social-ecological system for ecosystem services provisioning (including marine renewables)
- Review from published information costs of deploying different MRE devices and cost of MRE production per GW
  - Cost Benefit Analysis to a non-specific case study to assess probability that investing in MRE provides at least 10% return with and without the inclusion of environmental externalities (carbon, fisheries, water use)
- Exploring the application of **consumer theory** to establish the combination of renewable /non renewable energy production at local scale (proposal for MSc student)



Tett & Sandberg, 2011

Mobility

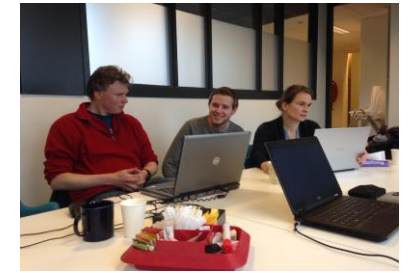
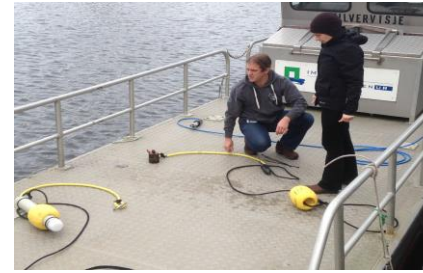
# Mobility overview - the socio-economic team

- Jasper:
  - NUIG (Galway, Ireland), focus: grant writing
  - IMARES (and Wageningen, VU, Leiden), Jasper; focus: grant writing, dissemination, networking
- Simone and Suzi:
  - University of Nord (Bodo, Norway) (networking, grant writing)
- Lucy:
  - University of Nord (Bodo, Norway) (networking, grant writing)

# Mobility overview

## CetRens Team SAMS

- Visit to IMARES - February 2016
  - knowledge exchange
    - impacts of underwater noise and renewables on marine mammals and fish
  - Data analysis and paper planning for 2015 research exchange
    - fish and marine mammal behaviour in high tidal flow areas using passive and active acoustics
  - Collaboration on acoustic sensor comparison research
  - Development of joint research proposal on the impact of acoustic deterrent devices (ADD) used in the Scottish Aquaculture Industry on porpoise distribution
    - proposal was successful and field research was carried out September/October 2016
- Visit from Wavec – May 2016
  - Collaborative ambient noise measurements at the Meygen tidal turbine site



# Funding proposals



# Social and environmental impacts of wind energy

- Consortium with IMARES (lead), SAMS, HZG, NUIG
- Building H2020 proposal on prep work done by NUIG and SAMS for Atlantic Area Programme (AAP)
  - Unfortunately IMARES has withdrawn last minute, and not enough time for us to take over
- Recycling content potentially for AAP proposal with NUIG next year (but always challenging to find match funding)
- Understand externalities associated with ecosystem service impacts to different stakeholders
- Quantify and mitigate the risk to different stakeholders of renewable energy deployment

# Cultural heritage of European coastal and maritime regions

- EU H2020 proposal, €2.5m, 2 stage, 1<sup>st</sup> deadline Feb 2017
- University of Aalborg (lead), SAMS, UHI Centre for Tourism, QUB, Wageningen, Nord University (=MERIKA partner), Breste,
- What are the interrelations between cultural and natural heritage?
- What are the **risks** to cultural heritage from development of renewables, aquaculture, tourism development, urban sprawl, demographic issues etc.
- How can cultural heritage assets be harnessed for sustainable economic development (cultural capital)

# Marine Ecosystems Research Programme (MERP) WP3

- Building on MERP WP1-2 (past two years) where SAMS played a major role, two sub proposals worth total \$1.25k
- SAMS budget £300k for intensive 17 month project
  - no competing proposals so (almost) 100% chance of success
- Developing coupled *social-ecological and bio-economic models* for assessing trade-offs between fisheries, conservation, tourism, aquaculture – SAMS undertaking West Coast of Scotland Case Study

# Hywind and Ecoreef

- ▶ Hywind: Developing an Approach for Decision Support in Siting Floating Offshore Wind Development

UHI are developing a proposal with Statoil to identify areas suitable for further offshore floating wind development in Scotland, integrating physical, social and ecological constraints. Further phases will evaluate the potential for co-location of activities at floating wind farm sites



- ▶ ECOREEF: develop a tool to support ecosystem based management by authorities, policy makers, researchers and industrial developers in areas of marine renewable energy parks in Europe



# MARINFORSK proposal

Creating case study links in local societal perspectives on renewable energy, aquaculture and other marine sectors in fjords/ lochs between Norway and Scotland for potential funding via RCN – waiting outcome



Bodo 'community hill', Norway. Source: Billing (2016)



# MarshPES proposal

MarshPES is a 2-years innovation project proposal to exchange science for:

1. creating tools for carbon valuation;
2. starting a market analysis of carbon and co-benefits for the initialisation of an **innovative PES to protect saltmarshes**

- Pilot: Firth of Forth
  - Scale up: UK
- Costs: 125K
- Partners: CEH, Newcastle, DEFRA, Firth Forum

# Proposals 2016 (CetRens Team SAMS)

- Collaboration with Albatern on measuring the acoustic signature of the WaveNet wave energy converter; funded by Wave Energy Scotland
- Collaboration with Loughborough University to measure the acoustic signature of the high frequency components of a EK60 echo sounder; funded by Marine Scotland and SMRU
- Collaboration with Loughborough University and IMARES: Impacts of low-frequency ADDs on harbour porpoises; funded by SARF
- EU INTERREG proposal 'COMPASS' to monitor Marine Protected Areas and Species of the regional seas between Ireland, Northern Ireland and Scotland (5 year project with several SAMS led WPs, including noise and marine mammal monitoring; project approval expected soon)
- Collaboration with Belfast University: Impact of boat noise on Galapagos sea turtles; submitted to Darwin fund
- Expression of interest for environmental monitoring work for Open Hydro
- Expression of interest for environmental monitoring work for Vattenfall

Papers

# Special issue: Shared, plural and cultural values - Jasper

- Special issue in *Ecosystem Services* (impact factor: 4.3) to be published in November, edited by Jasper Kenter
- 11 of 15 papers by Jasper (6 lead author)

“Key themes include the formation and institutionalization of shared values through socialization, formal and informal deliberation; deliberative alternatives for value-aggregation; understandings and critiques of deliberation; and interrelations between values, place and identity.”

# Lucy

- *Where does marine spatial planning fit? Exploring the relationship between marine spatial planning and other marine governance concepts (Lead: Lucy)*
- Authors: Greenhill, L, Kenter, J.O., Kannen, A, Martino, S, Sanderson, H, Stojanovic, T, Tett, P
- *Analyse relationship of concepts between EA, ES, ICZM and MSP, identifying key overlapping features and differences, to develop agreed understanding on the added value of the individual concepts*



# Simone

- *How does economics fit into social-ecological aspects of marine and coastal ecosystem management?* (Lead: Simone; P. Tett, J. Kenter, deadline January 2017)
  - Discussed at MASTS Annual Science Meeting 19-21, 2016, Glasgow.
- ESP Marine Working Group opinion paper from a community of research and practice – improve science-policy communication (lead: Valia Drakou, BREST)
- Invitation from the editor of *Animal Conservation*
  - Economic valuation for animal protection (Simone and Jasper –deadline March 2017)

# Suzi

Diffused Inclusive Community Entrepreneurship Paradigm

Title: A transformational paradigm for marine renewable energy development

Accepted in: Energy Research and Social Science (Elsevier Journal)

Local stakeholder involvement

Creating local demand for energy  
locally-appropriate energy scenarios



Mainland Orkney. Source: Billing (2014)

# CetRens Team SAMS

## Publications:

- Final report EU MaRVEN project: **Thomsen et al. (2016)** *MaRVEN – Environmental Impacts of Noise, Vibrations and Electromagnetic Emissions from Marine Renewable Energy, prepared for European Commission, Directorate General for Research and Innovation*
- Book chapter in book on Ecoacoustics: **Risch & Parks (2016)** *Biodiversity assessment in freshwater and marine biomes using ecoacoustics*

## Manuscripts in preparation:

- **Risch & Wilson:** *Underwater noise signature of the PLAT-O platform fitted with Schottel tidal turbines*
- **Risch & Wilson:** *Underwater noise signature of a Wave Energy Converter (WaveNet, Albatern)*
- **Risch et al.:** *Characterization of ambient noise in high tidal flow habitats around Scotland*
- **Findlay & Ripple et al.:** *Large-scale mapping of ADDs used in Aquaculture on the west coast of Scotland*