



# **MASTS Annual Science Meeting 2012**

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**11-13 September 2012 at Heriot Watt University Conference Centre**

## ***“Oceans and Society – 21st Century Challenges”***

The purpose of the meeting is to bring together the Marine Science community to discuss the science that MASTS supports and ensure integration with relevant policy makers and stakeholders. The meeting will include scientific oral presentations and e-posters, discussion groups and networking opportunities. The major objective of the meeting is to enhance communications and recognise opportunities for further cooperation.

The MASTS ASM 2012 will be structured around the three broad research themes of MASTS:

- Dynamics and Properties of Marine Systems
- Productive Seas
- Marine Biodiversity, Function and Services

## **Day 1: Tuesday 11<sup>th</sup> September 2012**

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| 9.00-9.30   | Coffee and Registration   |
| 9.30-9.40   | Opening by Prof David Paterson (MASTS Executive Director) & Dr David Lusseau (MASTS ASM Organising Committee Chair) |
| 9.40-10.00  | Invited Speaker: Prof Peter Tyack, St Andrews University <i>“The effects of noise on marine life”</i>               |
| 10.00-10.10 | Dr Stuart Cunningham: MASTS Research Theme Leader for <i>“Dynamics and Properties of Marine Systems”</i>            |
| 10.10-10.20 | Prof James Turnbull: MASTS Research Theme Leader of <i>“Productive Seas”</i>  |
| 10.20-10.30 | Prof Teresa Fernandes: MASTS Research Theme Leader of <i>“Marine Biodiversity, Function and Services”</i>           |
| 10.30-10.45 | Question time for MASTS Research Theme Leaders  |
| 10.45-11.15 | Coffee  |

11.15-12.15 Science Session 1: Marine Biodiversity, Function and Services (Session Chair: Dr William Sanderson)

- *“What lies beneath: probing the cultural depths of nature conservation conflict in the Outer Hebrides”*. **Ruth Brennan** (SAMS)
- *“Seasonal cycling of DMSP in a Scottish maerl bed”*. **Heidi Burdett** (Glasgow)
- *“The Sun, the Moon and the Sea: Effects of Geophysical cycles on reproductive rhythmicity and catchability of an exploited crab”*. **Karen Diele** (Napier)
- *“How demographically different are reef coral species?”* **Maria Dornelas** (St Andrews)
- *“Managing Loss: Can we predict the future?”* **Kate Gormley** (Heriot Watt)

12.15-12.30 Question time for Science Session 1

12.30 -1.15 Buffet Lunch

1.15-2.00 E-poster Session 1 and Networking opportunities

	Screen 1	Screen 2	Screen 3	Screen 4	Screen 5
1.15-1.25	M. Al-Shaeri	Corinne Baulcombe	Eileen Bresnan	Fiona Culhane	Virginia Echavarri Bravo
1.30-1.40	Claire Gollety	Corinne Baulcombe	Iain Hannah	Jenni Kakkonen	Flora Kent
1.45-1.55	Spike Lewis	Jen Loxton	Lisette Victorero	Adam Chivers	Ruth Fletcher

2.00-3.00 Science Session 2: Marine Biodiversity, Function and Services (Session Chair: Dr John Baxter)

- *“Acclimation of the cold water coral *Lophelia pertusa* to predicted rises in atmospheric CO<sub>2</sub> and sea temperatures”*. **Seb Hennige** (Heriot Watt)
- *“Total lipid and fatty acid composition of the amphipod *Hirondellea dubia* (Lyssianasidae) from hadal depths within the Kermadec Trench, SW Pacific”*. **Nichola Lacey** (Aberdeen)
- *“Buffering of calcium carbonate changes by red coralline algae (maerl) in response to projected oceanic pCO<sub>2</sub> enrichment”*. **Nick Kamenos** (Glasgow)
- *“A cross-ecosystem study investigating how the quantity and quality of organic matter influence benthic carbon cycling”*. **Dan Mayor** (Aberdeen)
- *“Ecological communication in the age of the internet”*. **Paul Tett** (SAMS)

3.00-3.15 Question time for Science Session 2

3.15-3.45 Coffee

3.45-4.15 Invited Speaker: Dr Michele Prinsep of Waikato University, New Zealand  
*“Treasure from the Depths: Chemical Prospecting in the Marine Environment”*

4.30-5.30 Science Session 3: Marine Biodiversity, Function and Services (Session Chair: Dr Andrew Blight)

- “Synergistic effects of temperature and pCO<sub>2</sub> on photosynthesis, respiration and calcification in the free-living coralline algae *Lithothamnion glaciale*”. **Penelope Donohue** (Glasgow)
- “Stable isotope probing of hydrocarbon-degrading bacteria during the Deepwater Horizon oil spill” **Tony Gutierrez** (Heriot Watt)
- “Development of community structure and ecosystem functioning of restored saltmarshes in the Eden estuary”. **Kate Wade** (St Andrews)
- “Scottish seamounts: an offshore resource of biological diversity, ecosystem processes and services”. **Lea-Anne Henry** (Heriot Watt)
- “The use of a Phytoplankton Community Index to study the phytoplankton community in Loch Creran, a Scottish sea loch”. **Callum Whyte** (Napier)

5.30-5.45 Question time for Science Session 3

5.45-5.50 Day One Closing Remarks (Prof David Paterson & Dr David Lusseau)

6.00-7.00 E-poster Session 2 and Networking Reception sponsored by SARF.

	<u>Screen 1</u>	<u>Screen 2</u>	<u>Screen 3</u>	<u>Screen 4</u>	<u>Screen 5</u>
6.15-6.25	Fiona McIntyre	Enrico Pirotta	Joanne Porter	Sonja Rueckert	James Thorburn
6.30-6.40	Laura Wicks	Andisheh Bakhshi	Lyndsay Brown/Eileen Bresnan	Silje-Kristin Jensen	Nick Kamenos
6.45-6.55	J Moreno Navas	Georgios Ntegiannis	Berit Rabe	David McKee	C Sower

7.30-late ASM Conference Dinner

## Day 2: Wednesday 12<sup>th</sup> September 2012

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9.00-9.30 Invited Speaker: Ken Macdonald (BBC Science Correspondent) “*The Media and Science: Oil and Water?*”

9.30-10.30 Science Session 4: Interactions between human activities and top predators (Session Chair: Dr Elizabeth Masden)

- “The relative importance of fisheries and oceanography for the distribution of breeding fulmars”. **Ewan Edwards** (Aberdeen)
- “Marine bird behaviour in a high-energy tidal environment: the implications for wet renewable energy schemes”. **Alexandra Robbins** (Glasgow)
- “Understanding benthic productivity on artificial structures: maximizing the benefits of marine renewable energy devices”. **Sally Rouse** (SAMS)

- *“Turbulence, diving seabird and fish behaviour over a tidal turbine structure: a first look”*. **Beth Scott** (Aberdeen)
- *“Developing an index to assess the vulnerability of seabirds to marine renewable energy developments”*. **Helen Wade** (UHI)

10.30-10.45 Question time for Science Session 4

10.45-11.00 *“Introduction to the Centre of Expertise for Waters”* (CREW) Prof Bob Ferrier, James Hutton Institute

11.00-11.30 Coffee

11.30-12.45 Industry-led Session (Session Chair: Moya Crawford)

- *“What the fishing industry needs of science and scientists”* **Mike Park**, Chief Executive, Scottish White Fish Producers Association Limited
- *“What the decommissioning industry needs of science and scientists”* **Win Thornton**, VP Decommissioning BP
- *“What the insurance industry needs of science and scientists”* **Tom Rutter**, Aquaculture Manager, Sunderland Marine Mutual Insurance Company

12.45-1.30 E-poster session 3 and Networking opportunities

	<u>Screen 1</u>	<u>Screen 2</u>	<u>Screen 3</u>	<u>Screen 4</u>	<u>Screen 5</u>
12.50-1.00	Gordon Bell	Kevin Brady	Andrew King	Marlene Lorgan	Sasha Maguire
1.05-1.15	Bruce McAdam	Lauren McWhinnie	David Cotton	David Mills	Nick Pooley
1.20-1.30	Bruce McAdam	Douglas Tocher	Robert Wilson	Adam Hughes	Deborah Dawson

1.30-2.15 Buffet Lunch

2.15-3.30 Science Session 5: Productive Seas (Session Chair: Dr Bruce McAdam)

- *“The rise of North Sea hake: ecological impact and implications for fisheries management”*. **Alan Baudron** (Aberdeen)
- *“Marine climate change impacts: Making our evidence user-friendly”*. **Paul Buckley** (MCCIP)
- *“Northern shelf anglerfish: a new assessment and advice for sustainable fisheries management”*. **Paul Fernandes** (Aberdeen)
- *“Modelling diet composition dynamics among North Sea predatory fish using a length-structured partial ecosystem model”*. **Chris McCaig** (Strathclyde)
- *“Investigating sea lice dispersal in Loch Linnhe”*. **Nabeil Salama** (MSS)
- *“Target strengths of two abundant mesopelagic fish species”*. **Ben Scoulding** (Aberdeen)

3.30-3.45 Question time for Science Session 5

3.45-4.15 Coffee

- 4.15-5.15 Science Session 6: Interactions between human activities and top predators  
(Session Chair: Dr Bernie McConnell)
- *“Population genetics of Northeast Atlantic basking sharks reveals spatial structuring and low diversity”*. **Lilian Lieber** (Aberdeen)
  - *“From Physics to Behaviour: A study of Weddell seals and their oceanographic environment”*. **Lars Boehme** (St Andrews)
  - *“Assessing the impact of seismic surveys on small cetaceans”*. **Kate Brookes** (Aberdeen)
  - *“The Scottish Acoustic Marine Mammal Observatory Phase 1: Monitoring marine mammals around proposed windfarm sites”*. **Luke Rendell** (St Andrews)
  - *“Assessing population level impacts of pile-driving noise from offshore windfarm construction”*. **Paul Thompson** (Aberdeen)
- 5.15-5.30 Question time for Science Session 6
- 5.30-5.45 Conference Closing Remarks and Student Poster Prize Giving (Prof David Paterson & Dr David Lusseau)
- 5.50-7.30 E-posters, Networking and Bar.
- 6.00-7.00 Movie screening of “The PhD movie: Piled Higher and Deeper”

# Day 3: Thursday 13<sup>th</sup> September 2012

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The third day of the MASTS ASM is for associated meetings, seminars, training sessions and workshops. Further details of the workshops are below, and details of how to participate will be issued shortly.

<b>Room</b>	<b>Lunchtime (12<sup>th</sup>)</b>	<b>Morning (13<sup>th</sup>)</b>	<b>Afternoon (13<sup>th</sup>)</b>
Carnegie A		Marine Strategy Framework Directive (MSFD) – what does it mean for you? (9:00-12.30)	Mobilising Data on Scotland's Marine Environment: MEDIN interaction with Scottish Agencies and Scientists (14:00-16:00)
Carnegie B		Terrawatt Closed Project Meeting (9:00-16:00)	Terrawatt Closed Project Meeting (9:00-16:00)
Wardlaw		Fisheries Economics Workshop (10:00-12:00)	UKFEN meeting (13:00-16:00)
Bruce A	International Collaborations and Networking meeting (12:45-13:45)	Unmanned Aerial Vehicle Workshop (09:00-14:00)	Unmanned Aerial Vehicle Workshop (09:00-14:00)  The Future for Scotland's Marine Economy (14:15-16:15)
Lecture Theatre		Entering a post-installation era: Data collection needs and opportunities presented by Scottish offshore wind farms Workshop (09:00 – 13:00)	

If you would like to attend one or more of these workshops please register at the links provided below.

All delegates will also be required to register for the ASM itself. Please follow the link below to do this. We hope that delegates will be able to attend all three days of the MASTS ASM, but there is a day delegate rate option (£45) if you are only able to attend for the workshop day on Thursday 13th.

[http://onlineshop.st-andrews.ac.uk/browse/extra\\_info.asp?compid=1&modid=2&prodid=272&deptid=28&catid=36](http://onlineshop.st-andrews.ac.uk/browse/extra_info.asp?compid=1&modid=2&prodid=272&deptid=28&catid=36)

## **MASTS International Collaborations and Networking**

**Organiser:** Professor Hamish Mair, 0131 451 3314, [j.m.mair@hw.ac.uk](mailto:j.m.mair@hw.ac.uk)

**Rationale/Background information/Programme details:** Some International collaborations and networking through MASTS are already happening but this meeting should inform the MASTS community and interested others of what is happening/planned, and there will be discussion time to bring up other ideas for such future activities.

**Expected Outcomes/Outputs:** New ideas to be aired and considered for further development by MASTS working group and EC.

Delegates should register for the “International Collaborations and Networking Workshop” at: <http://www.eventbrite.co.uk/event/4064677560>

## **TeraWatt (Closed Project Meeting)**

**Organiser:** Prof Jon Side, 01856 850605, [j.c.side@hw.ac.uk](mailto:j.c.side@hw.ac.uk)

**Rationale/Background information/Programme details:** TeraWatt is a £1m project funded by the EPSRC through its Marine Challenge Fund. The project formally began on 22nd February 2012 and will run for 36 months. The project will develop sophisticated computer models designed to help streamline the licencing of wave and tidal energy devices by minimising their impacts on the marine environment. The TeraWatt consortium will work closely with marine renewables developers and regulators throughout the project which has been designed to specifically respond to the needs of Marine Scotland Science, the organisation responsible for providing scientific advice to the licensing authority.

**Expected Outcomes/Outputs:** Quarterly meeting of researchers involved in the MASTS consortium

## **Fisheries Economics Workshop**

**Organiser:** John Anderson & Hazel Curtis, Seafish. 0131 524 8664, [h\\_curtis@seafish.co.uk](mailto:h_curtis@seafish.co.uk)

**Purpose:** To identify key knowledge gaps and research requirements in the field of fisheries economics that could help to improve the management of capture fisheries in the UK/EU

**Objectives:** To identify:

1. Key economic data deficiencies and potential for better use of existing data
2. Specific knowledge gaps
3. Ways in which better economic understanding could feed into more sustainable fisheries management
4. Possible research requirements and priorities

5. Where do we go from here – what does this mean for further research in Scotland and the UK?

**Output:** A brief report including any specific recommendations which will be made publicly available. A rapporteur(s) will be appointed before the meeting to record key points and compile the report.

**Proposed Format:**

- Introductory presentation (Hazel Curtis) outlining current state of the art – what data is collected at UK /EU level and how is it used.
- A Government perspective on available statistics and what additional data/analysis would be helpful in terms of policy/regulation.
- Linking market economics with an ecosystem approach.

Depending upon numbers, either remain as plenary and address each of the questions above through facilitated discussion or split into smaller groups to address subsets of the questions set as objectives.

Delegates should register for the “Fisheries Economics Workshop” at:  
<http://www.eventbrite.co.uk/event/4005257834>

## **UK Fisheries Economics Network Meeting**

**Organiser:** Hazel Curtis, 0131 524 8664, [h\\_curtis@seafish.co.uk](mailto:h_curtis@seafish.co.uk)

**Rationale/Background information/Programme details:** To tie-in with MASTS / UKFEN workshop on morning of 13th September so that fisheries economists can easily attend both meetings and encourage good attendance to the MASTS / UKFEN workshop.

**Expected Outcomes/Outputs:** UKFEN holds two meetings per year for general business in addition to any *ad hoc* topic-specific workshops that are organised. There is chance for members to share current and upcoming work and related activities, discuss specific research or data issues with fellow analysts, plan future work and report on completed work.

## **The Marine Strategy Framework Directive – what does it mean for you?**

**Organiser:** Dr Simon Greenstreet, 01224 295417, [Simon.Greenstreet@scotland.gsi.gov.uk](mailto:Simon.Greenstreet@scotland.gsi.gov.uk)

**Rationale/Background information/Programme details:** The Marine Strategy Framework Directive (MSFD) will have a profound influence on the way that human activities in the marine environment are managed and regulated. The MSFD lists 11 attributes (Descriptors) of marine ecosystems and requires that good environmental status (GES) be achieved for each of these by 2020. Major milestones in the implementation of the MSFD include the selection of indicators and setting of targets by 2012, the setting up and initiation of the monitoring programmes required to support the chosen indicators by 2014, and the



implementation of management measures by 2016 necessary to achieve GES by 2020. This meeting seeks to define the science activities that will be necessary over the coming decade to support this ambitious timetable. The main focus will be on the so-called biodiversity Descriptors: D1 the conservation of biodiversity; D4 food webs; and D6 seafloor integrity. However, an opportunity for input on the other descriptors, especially where there are less well established programmes e.g. litter (D10) and noise (D11) will also be provided.

**Expected Outcomes/Outputs:** Brief report outlining likely avenues of research required to support implementation of the MSFD and provide the scientific evidence necessary to justify the measures adopted to attain GES.

Delegates should register for the “MSFD Workshop” at:

<http://www.eventbrite.co.uk/event/4063343570>

### **Mobilising Data on Scotland’s Marine Environment: MEDIN interaction with Scottish Agencies and Scientists**

**Organiser:** David Cotton, 07919 966335, [dcott@oceannet.org](mailto:dcott@oceannet.org)

**Rationale/Background information/Programme:** The aim will be to look at marine data flows from collection by agencies / other bodies to dissemination for wider use. This will include looking at the generation and publication of metadata and the take up of MEDIN data standards.

**Expected Outcomes/Outputs:** An understanding of the level of take up of MEDIN resources by Scottish bodies collecting marine data, identification of priority data sets / collections to target, and a provisional work plan for ensuring these data are archived and made available for re-use.

Delegates should register for the “MEDIN Workshop” at:

<http://www.eventbrite.co.uk/event/4064757800>

### **MASTS – Unmanned Aerial Vehicle(UAV) Workshop**

**Organiser:** Philip Anderson, [Philip.Anderson@sams.ac.uk](mailto:Philip.Anderson@sams.ac.uk)

**Purpose:** MASTS will be holding a workshop to explore the use of UAVs for marine science purposes. The capacity to utilise light-weight, low-cost UAV platforms to carry a variety of scientifically useful payloads is offering novel opportunities for marine research. It is likely that groups within MASTS will be seeking to develop this capacity and we are keen to take a co-ordinated approach in terms of skills and technology development.

The workshop will provide an opportunity to:

- identify the sorts of scientific questions that this technology might address;
- gain an understanding of the state of the art;
- understand operational issues and;

- network with colleagues who already have experience with UAVs or wish to develop it.

**Draft Programme:**

- Establishing a MASTS “User Group” – defining the scientific questions that UAVs might address
- A general introduction from Dr Phil Anderson.
- A series of brief (5 minute) presentations from members of the MASTS community with interests in using UAVs
- UAV Platforms – capability today and tomorrow
- A series of 15 minute presentations from marine researchers (UK and International) with experience of using UAVs
- CAA and Commercial Air Space: using Light UAS in coastal and inshore regions
- A series of brief presentations covering the regulation and use of UAVs for scientific purposes together with practical insights into the operation and testing of UAV platforms
- Instrumentation: From snap shots to ArcGIS
- Examples of sensory payloads used on UAVs
- Panel discussions: UAS Hubs and Spokes?
- MASTS wishes to assist the formation of a UAV user community with the Scottish marine research environment. How might this vision be achieved?

**Output:** A brief report will be produced to capture the main points from the presentations, recommendations and actions emerging from the workshop.

Delegates should register for the “MASTS AUV Workshop” at:

<http://www.eventbrite.co.uk/event/4064894208>

**Entering a post-installation era: Data collection needs and opportunities presented by Scottish offshore wind farms**

**Organiser:** Elizabeth Masden, 01847 889672, [elizabeth.masden@thurso.uhi.ac.uk](mailto:elizabeth.masden@thurso.uhi.ac.uk)

**Purpose:** Round three and Scottish Territorial Waters offshore wind farms are entering the consenting phase, with some already submitting environmental statements and others planning to do so shortly. This moves the focus of scientific studies beyond baseline data collection for consent applications. As these developments enter the construction phase they provide the opportunity to assess the effects of offshore wind farms on marine predators and to realise whether predictions of potential impacts were adequate. They also provide the opportunity for more generic research on how different species respond to different actions or stressors. To assess impacts however, requires methods which can detect change in these environments. It will also require collaboration to ensure that opportunities to collect data from multiple species groups are not missed.

During this workshop we will focus on marine predators and aim to discuss the adequacy of methods for assessing effects/impacts whilst developing a network of parties interested in collaborating on data collection at offshore wind sites.

### **Workshop Outline:**

1. Introductory presentation on the aim of the workshop
2. Invited Speaker
3. Break-out groups
4. Groups report back
5. General discussion

### **Expected Outcomes/Outputs:**

1. Identify key opportunities for carrying out studies at offshore wind farms
2. Determine what are the key data gaps
3. Gauge appetite and content for a wider workshop on post-consent monitoring for wind, wave and tidal technologies
4. Agree on the timing and scope of further activities to determine appropriate methods, funding, etc.

Delegates should register for the “Data collection needs and opportunities presented by Scottish offshore wind farms Workshop” at:

<http://www.eventbrite.co.uk/event/4065664512>

## **The Future for Scotland’s Marine Economy**

**Organiser:** Richard Slaski, Secretariat, Scottish Aquaculture Research Forum, 01738 788179, [r.slaski@sarf.org.uk](mailto:r.slaski@sarf.org.uk)

**Purpose:** The purpose of this workshop is to take an overview of the economic aspirations of the various marine industry sectors (established and emerging) and consider opportunities for strategic synergies in the way science and public and private sector investment might work together to ensure we strike a sustainable balance of exploitation against the resilience and capacity of natural systems to supply resources - all against a backdrop of increasing demand and climate change.

**Background:** Energy and food security will be fundamental drivers for marine science, but sectors such as transport and recreation also need marine science to help them develop sustainably. Scotland is in many ways at the forefront of marine energy production through established and emerging fossil fuel extraction and marine renewables development in particular. Aquaculture is pivotal to the rural economy of some areas within Scotland and is likely to expand into the production of other non-food products and services through biofuels, marine biotechnology and genomics. Scotland's capture fishery remains one of the largest in Europe and its long term survival will hinge upon the development of sustainable fisheries management founded on good science. Utilising products from aquaculture and capture fisheries, Scotland’s seafood processing sector is also a vital and evolving part of our marine economy. Increasingly, science, industry, policy and regulation will need to be better harmonised to ensure that competing demands for marine resources can be properly managed. A focus on the regional ‘geography’ of our marine industries is essential: communities and the infrastructure and skills they possess (or currently lack) will increasingly represent the delivery centres for the marine economy in the future. The

marine environment intersects with the freshwater one, and future developments and ambitions will need to take account of the entirety of Scotland's aquatic environment.

**Proposed Format:** A workshop format, with initial overview presentations of the marine sectors and their growth potential, followed by a structured discussion session identifying key challenges and looking for areas of synergy between sectors. The discussion will focus on how science can address some of the key challenges, but also on how science can be integrated with a strategic approach to public and private sector investment.

**Outputs:** A brief report of proceedings together with any specific actions or recommendations.

Delegates should register for the "Future for Scotland's Marine Economy Workshop" at: <http://www.eventbrite.co.uk/event/4071648410>