



# MASTS

## 4<sup>th</sup> Annual Science Meeting

3-5 September 2014 – Heriot Watt University Conference Centre

**"MAKING WAVES"**

Register now: <https://www.eventsforce.net/standrews/27/home>

CROSS DISCIPLINARY MEETING

TECHNOLOGY EXHIBITORS

WORKSHOPS

BRINGING TOGETHER THE MASTS COMMUNITY

BROADENING KNOWLEDGE

DISCUSSION GROUPS

NETWORKING

E-POSTERS

OPPORTUNITY TO MEET A BROAD RANGE OF INDUSTRY REPRESENTATIVES

ADDRESSING REGULATION AND POLICY ISSUES

# MASTS

## 4<sup>th</sup> Annual Science Meeting 2014

This cross-disciplinary meeting brings together members of the marine science community, with the aim of promoting and communicating research excellence and forging new scientific collaborations. The cross-disciplinary nature of the event as well as the high calibre of the selected talks means that scientists can broaden their knowledge in marine science as well as benefit from expertise and ideas gained in a range of fields other than their own.

---

Science presentations and E-poster Sessions will take place on the first two days (Wednesday 3<sup>rd</sup> and Thursday 4<sup>th</sup> September), together with Plenary Speakers and opportunities to network. On the third day (Friday 5<sup>th</sup>), the venue will host a number of meetings and workshops.

# DAY 1

Wednesday 3<sup>rd</sup> September 2014

09.00 – 13.00      **Utilisation of technical diving as a tool in the study of mesophotic ecosystems  
(taking place as a workshop in the Wardlaw Room)**

08.50 – 09.20      **Coffee and Registration**

09.20 – 09.30      **Opening by Prof David Paterson** – MASTS Executive Director

## 09.30 – 10.45      **MASTS Science Session 1**

(Chair: Nichola Lacey). Talks are 12 minutes each.

- **Bhavani Narayanaswamy** (SAMS)  
Hidden diversity: Coral/carbonate – faunal associations
- **Ruaraidh McPike** (Strathclyde)  
Long-term trends in UK ex-vessel fish prices and the impact of imports, exports and aquaculture production
- **Alice Doyle** (Stirling)  
Light to Dark: Investigating novel pathways linking photoperiodic cues to the brain-pituitary-gonad axis in Atlantic cod
- **Vanessa Trijoulet** (Strathclyde)  
Development of a bioeconomic model of seal impacts on West of Scotland fisheries
- **Thomas Linley** (Aberdeen)  
The absence of abyssal *Coryphaenoides* spp. (Macrouridae) in the northern South Fiji Basin and depth range flexibility in *Bassozetus* sp. (Ophidiidae) in their absence
- **David McKee** (Strathclyde)  
Ocean colour remote sensing for inshore and marine energy applications

10.45 – 11.00      **Question time for Science Session 1**

# DAY 1

11.00 – 11.45

## Coffee break, networking and E-poster Session 1

- **Pablo Diaz** (screen 1)  
Seasonal variation of *Emiliana huxleyi* morphology at an ecosystem monitoring site off the east coast of Scotland
- **Kerry Smith** (screen 2)  
High performance liquid chromatography (HPLC) and fluorometric analyses of phytoplankton pigments at a Scottish coastal ecosystem monitoring site
- **Pamela Walsham** (screen 3)  
High Frequency Monitoring of Carbonate Chemistry Parameters (Total Alkalinity and Dissolved Inorganic Carbon) at a Scottish Coastal Monitoring Site to understand seasonal and inter-annual variation
- **Rebecca Grieve** (screen 4)  
Can marine renewable installations provide a new niche for priority seabed habitats?
- **Richard Shelmerdine** (screen 5)  
Using AIS to inform Marine Spatial Planning and marine industries
- **Marie-Lise Schläppy** (screen 6)  
Comparing manual and computer-assisted benthic cover estimations from underwater imagery for offshore wind farms impact assessment
- **Derek Connor** (screen 7)  
Investigating the use of Fast Repetition Rate Fluorometry (FRRf) to study phytoplankton physiology in optically complex oceans

11.45 – 12.15

## Updates from MASTS Theme Leaders and/or Success Stories – highlights from the community projects/case studies

12.15 – 12.30

**Internships – the student perspective** by Ewan Edwards, Penne Donohue & Flora Kent

12.30 – 13.00

## Invited speaker: Dr Richard Sanders

Head, Ocean Biogeochemistry and Ecosystems Group, NOC, Southampton

13.00 – 13.45

## Lunch and networking

# DAY 1

13.45 – 15.45

## SPECIAL SESSIONS

Auditorium	Carnegie A Room	Carnegie B Room
<b>Marine Biogeochemistry</b>	<b>Valuing coastal and marine ecosystem services: European perspectives</b>	<b>The future for MPAs and their management</b>
Session Champion: <b>Dr Nick Kamenos</b> (Marine Biogeochemistry Forum Convenor)	Session Champion: <b>Prof Nick Hanley</b> (MASTS Professor and Coastal Zone Forum Convenor)	Session Champion: <b>Dr William Sanderson</b> (MASTS Reader)
Session information: 5 min introduction, followed by 10 presentations (10 mins duration) and an open 15 minute discussion to conclude (this may slightly linger into coffee break).	This special session has been designed to promote interactions between researchers in Finland, Scotland and Ireland, and to present current research of relevance to the broader MASTS community.	Session information: 5 min introduction, followed by 7 presentations (15 mins duration) and an open discussion to conclude (this may slightly linger into coffee break).
<b>The decomposition of the Faroe Shetland Channel circulation: application of POMP to a 20-year time series</b> Bee Berx (Marine Scotland Science)	<b>Valuing water recreation in Europe using travel cost method and meta-analysis</b> Ahtiainen Heini and Lankia Tuija (Agrifood Research Finland)	<b>Integrating monetary and non-monetary valuation of cultural ecosystem services provided by marine protected areas</b> Jasper Kenter (SAMS & University of Aberdeen)
<b>Priming effects and microbial interactions during lignocellulose degradation in marine sediments</b> Evina Gontikaki (University of Aberdeen)	<b>Distance decay in valuing the water quality of Baltic Sea – an international case study</b> Artell Janne (Agrifood Research Finland)	<b>New studies cast doubt on the legitimacy of the conservation status of Sabellaria spinulosa reefs: A case study that demonstrates the importance of evidence to support MPA design</b> Bryony Pearce (Pelagica Ltd)
<b>Linking carbon and iron cycles by investigating transport, fate and mineralogy of iron-bearing colloids from peat-draining rivers – Scotland as model for high-latitude rivers</b> Christian Schröder (University of Stirling)	<b>Coupled element cycles in optimal eutrophication management</b> Antti Iho and Lassi Ahlviik (Agrifood Research Finland)	<b>Inter- and intra-year variation in foraging areas of breeding kittiwakes (Rissa tridactyla): consequences for MPA identification</b> Gail Robertson (University of Glasgow)
<b>Detecting ice- or snow-derived freshening of the North Atlantic</b> Crystal Smiley (University of Glasgow)	<b>Modelling fishing site choice</b> Stephen Hynes (Galway University)	<b>Mapping Cumulative Noise from shipping within a Marine Spatial Plan to help inform policy</b> Thea Pisani (University of Glasgow)

# DAY 1

13.45 – 15.45 SPECIAL SESSIONS

Auditorium	Carnegie A Room	Carnegie B Room
<p><b>Spectral dependence of phytoplankton light harvesting and its implications for primary productivity modelling in Scottish West Coast waters</b> Alex Cunningham (University of Strathclyde)</p>	<p><b>Economic and ecological analysis of restoring salt marshes</b> Kate Wade (University of St Andrews)</p>	<p><b>Recognising Essential Fish Habitat in MPAs: the impact of marine management measures on rural communities</b> Flora Kent (Heriot Watt)</p>
<p><b>Cold-water corals: a previously unknown sulphur pool?</b> Heidi Burdett (University of St Andrews)</p>	<p><b>Public values for coastal wetlands as flood defences</b> Katherine Simpson (University of Stirling)</p>	<p><b>Monitoring habitats: how useful are points on a map, predicted habitats, and historic data?</b> Richard Shelmerdine (UHI)</p>
<p><b>Effects of seawater pCO<sub>2</sub> on calcification and metabolism in the massive tropical coral, <i>Porites</i> sp.</b> Catherine Cole (University of St Andrews)</p>	<p><b>OPEN DISCUSSION</b></p>	<p><b>Taking forward management of Nature Conservation MPAs: process and research needs</b> Katie Gillham (SNH)</p>
<p><b>Coralline algae change their skeletal composition to counteract marine carbon dioxide enrichment</b> Nick Kamenos (University of Glasgow)</p>		<p><b>OPEN DISCUSSION</b></p>
<p><b>Ocean acidification alters the material properties of <i>Mytilus edulis</i> shells</b> Susan Fitzer (University of Glasgow)</p>		
<p><b>The importance of phytoplankton diversity on marine nitrogen and phosphorus cycles</b> Juan Bonachela (University of Strathclyde)</p>		
<p><b>OPEN DISCUSSION</b></p>		
<p><b>OPEN DISCUSSION</b></p>		

# DAY 1

15.45 – 16.30

## Coffee break, networking and E-poster Session 2

- **Jacopo Agagliate** (screen 1)  
Flow cytometry: characterizing marine particles towards the submicron scale
- **Hassien M.H. Alnashiri** (screen 2)  
The genotoxicity of Different Forms of Copper Oxide (NPs & MPs) in *M. modiolus* Mussels
- **Majed Al-Shaeri** (screen 3)  
Green algae interacting with single-walled carbon nanotubes affect the feeding behaviour of mussels, mitigating nanotube toxicity
- **Tim Brand** (screen 4)  
New developments in seawater trace metal analysis at SAMS:  
Automated preconcentration by SeaFAST Pico
- **Eileen Bresnan** (screen 5)  
Algal toxins in Scottish waters: the first association of domoic acid with the diatom *Pseudo-nitzschia pseudodelicatissima* complex in the North East of Scotland
- **Clare Scanlan** (screen 6)  
The National Marine Biological Analytical Quality Control Scheme
- **Caroline Miller** (screen 7)  
Constraining the effects of Mg:Ca ratio and temperature on non-biogenic  $\text{CaCO}_3$  polymorph precipitation

16.30 – 17.45

## MASTS Science Session 2

(Chair: Jennifer Loxton). Talks are 12 minutes each.

- **Karen Diele** (Napier)  
Impact of Typhoon Disturbance on Key Mangrove Macrobenthos in Can Gio Biosphere Reserve, Vietnam
- **Alessandro Sabatino** (Strathclyde)  
Simulating tides and waves in the East Coast of Scotland
- **Hassien Alnashiri** (Heriot Watt)  
Comparative toxicity of Nano- and Microscale Copper Oxide Particles in Two Marine Mussels
- **Laura Johnson** (Glasgow)  
Optimising holding conditions for lobsters to exploit a seasonal market

# DAY 1

- **Aidan Hunter** (Strathclyde)  
Changing growth and maturation schedules of demersal fish in the Firth of Clyde
- **Rachel Schucksmith** (NAFC Marine Centre)  
Assessing cumulative pressures on priority marine features

17.45 – 18.00

**Question time for Science Session 2**

18.00 – 18.10

**Day One Closing Remarks** (Prof David Paterson)

19.30 – late

**ASM Conference Dinner and Ceilidh at Edinburgh Zoo** (limited spaces available)

# DAY 2

## Thursday 4<sup>th</sup> September 2014

08.50 – 09.20 Coffee and Registration

09.00 – 11.00 SPECIAL SESSIONS

Auditorium	Carnegie A Room	Carnegie B Room
<b>Marine Biodiversity, Function &amp; Services – where are we now</b>	<b>Marine Microplastics in the marine environment</b>	<b>Fishing Discards</b>
Session Champion: <b>Prof Teresa Fernandes</b> (MBFS Theme Leader)	Session Champion: <b>Dr Marie Russell</b> (Marine Scotland)	Session Champion: <b>Dr Paul Fernandes</b> (MASTS Fisheries Science Forum Convenor)
Session information: This special session has been designed to highlight recent progress in the area of “Marine Biodiversity, Function and Services”, and to showcase work carried out by scientists and regulators in Scotland, who are at the forefront of this field worldwide. Prof Mike Elliot has been invited to talk as a keynote speaker.	Session information: 5 min introduction, followed by 6 presentations (15 mins duration) and an open discussion to conclude.	Session information: 5 min introduction, followed by 6 presentations (15 mins duration) and an open discussion to conclude (this may run over slightly into coffee break).
<b>The Marine socio-ecological system – how to protect biodiversity and deliver ecosystem services and societal benefits</b> Mike Elliott (IECS, University of Hull)	<b>Marine Litter and Micro-plastics: Why Are They of Concern and What Can We Do?</b> Colin Moffat (MSS)	<b>Fish discard patterns</b> Paul Fernandes (University of Aberdeen)
<b>Scotland's 'Blue Carbon' resource – what, where, and how much</b> John Baxter (SNH & Heriot-Watt University)	<b>Microplastics in the Scottish Aquatic Environment: An overview of sample collection, processing, identification &amp; biological effects</b> Brian Quinn (UWS)	<b>Hind-casting the quantity and composition of discards by mixed demersal fisheries in the North Sea</b> Robin Cook (University of Strathclyde)

# DAY 2

09.00 – 11.00 SPECIAL SESSIONS

Auditorium	Carnegie A Room	Carnegie B Room
<p><b>Linking biodiversity to ecosystem services in the coastal margin</b> David Paterson (Exec. Director of MASTS &amp; University of St Andrews)</p>	<p><b>Microplastics in the marine environment: Assessing the composition of micro-plastics in the Firth of Clyde</b> Laura Raposo Martinez (University of Aberdeen)</p>	<p><b>Selective fishing gears to reduce the capture of unwanted fish</b> Barry O'Neill (Marine Scotland Science)</p>
<p><b>Linking biodiversity to ecosystem services in the deep sea</b> Ursula Witte (University of Aberdeen)</p>	<p><b>Investigating the presence of microplastics in waste water treatment plants and fish located around Scotland</b> Fionn Murphy (UWS)</p>	<p><b>How will the change in discarding policy affect the Scottish Nephrops fisheries?</b> Clive Fox (SAMS)</p>
<p><b>Biodiversity, function and services: the importance of the abiotic environment</b> Jim Hansom (University of Glasgow)</p>	<p><b>Determination of the Partition Coefficient of PAHs and PCBs between LDPE and Sea Water, in order to evaluate the efficiency of biological uptake of PAHs and PCBs by <i>Mytilus edulis</i></b> Kelly McIntosh (University of Aberdeen)</p>	<p><b>Real-time spatial management approaches to reduce bycatch and discards: experiences from Europe and the United States</b> Alyson Little (University of Aberdeen)</p>
<p><b>Linking biodiversity, function and services: the importance of elasmobranchs</b> Lea-Anne Henry (Heriot-Watt University)</p>	<p><b>Towards a baseline database of microplastics contamination in Scottish Marine Environments</b> Mark Hartl (Heriot Watt University)</p>	<p><b>Likely economic impacts under the CFP landings obligation and the challenges that lie ahead</b> John Anderson (Seafish)</p>
<p><b>OPEN DISCUSSION</b></p>	<p><b>OPEN DISCUSSION</b></p>	<p><b>An industry perspective</b> Mike Park (CEO of SWFPA)</p>
		<p><b>OPEN DISCUSSION</b></p>

11.00 – 11.45

## Coffee break, networking and E-poster Session 3

- **Ana Catarino** (screen 1)  
MARMICROTOX project: Effects of microplastics in marine organisms and use of mussels to assess their presence in the Scottish coast
- **Helene Hoffmann** (screen 2)  
The diversity and value of key European marine habitats: reviewing the use of the 'ecosystem services' concept in marine environmental policy and coastal management

# DAY 2

- **Clara Mackenzie** (screen 3)  
Vulnerability of *Modiolus modiolus* biogenic reefs to climate change:  
A population-based approach for effective marine management
- **Chris McCabe** (screen 4)  
Kinetics of DNA Damage and Repair in Fish, using the Zebrafish (*Danio rerio*) as a model
- **Jackie McLean** (screen 5)  
Estimating discards using fisheries-independent data
- **Kaitlin Palmer** (screen 6)  
East coast marine mammal acoustic study: using multiple modalities to assess habitat usage by harbour porpoises and bottlenose dolphins
- **Christine McKenna** (screen 7)  
The decomposition of the Faroe-Shetland Channel water masses: an application of POMP analysis using  $\delta^{18}\text{O}$  and nutrient data

11.45 – 13.00

## MASTS Science Session 3

(Chair: Flora Kent). Talks are 12 minutes each.

- **Stewart Angus** (SNH)  
Climate change and roll-back in Scottish coastal habitats: the need for a holistic approach
- **Matthew Wale** (Napier)  
Crabs Unquiet in Noisy Seas
- **Georgios Kazanidis** (Aberdeen)  
Sponges as biogenic structures in two Cold Water Reefs of the North East Atlantic
- **Catherine Mitchell** (Strathclyde)  
The temporal and spatial variability of phytoplankton and mineral particles from ocean colour remote sensing: a case study in the Irish Sea
- **Leslie Mabon** (RGU) & **Midori Kawabe** (Tokyo University)  
Governing marine stakeholder and coastal community engagement under conditions of high uncertainty: lessons from north-east Japan?
- **Marlene Lorgan** (Aberdeen)  
Mechanisms of Differential Regulation of Dio2 Paralogues in Atlantic salmon

13.00 – 13.15

## Question time for Science Session 3

13.15 – 14.00

## Lunch and networking opportunities

# DAY 2

## 14.00 – 14.30 **Invited speaker: Dr Niall McDonough**

European Marine Board “The work of the Marine Board and a strategic perspective of the way marine science is viewed at EU level”

14.30 – 15.55

## MASTS Science Session 4

(Chair: Silje-Kristin Jensen). Talks are 12 minutes each.

- **Sophie Spatharis** (Glasgow)  
Competition between two globally important *Pseudo-nitzschia* species under N and P limitation
- **Andisheh Bakhshi** (Strathclyde)  
Using survey data in a length-based approach to fisheries stock assessment
- **Flora Kent** (Heriot Watt)  
Climate change and mussel reefs: hanging by a thread
- **Ina Lefering** (Strathclyde)  
Optical closure: Are we there yet?
- **Berit Rabe** (MSS)  
Winds, tides, freshwater, and their effects on the circulation in a Scottish sea loch
- **Alan MacDonald** (Strathclyde)  
Environmental cues for spawning and hatching in a mid-trophic pelagic fish
- **Robert Schick** (St Andrews)  
Estimating Body Condition in Harbour Seals with Aerial Photogrammetry: A Proof of Concept Study

15.55 – 16.10

## Question time for Science Session 4

16.10 – 16.45

## Coffee break, networking and E-poster Session 4

- **Lars Boehme** (screen 1)  
Integration of a miniaturized conductivity sensor into an animal-borne instrument
- **Heather Ritchie** (screen 2)  
Phylogenetic and phylogeographic analysis of hsp90 and hsp70 heat-shock proteins: Insights into the adaptation in deep-sea amphipod species
- **Amy Scott-Murray** (screen 3)  
Making virtual fish with photogrammetry

# DAY 2

- **Will Townshend** (screen 4)  
Validation of a vibroacoustic finite element model using bottlenose dolphin simulations: The dolphin biosonar beam is focused in stages
- **Joanna Wilson** (screen 5)  
Development of Mytilus species-specific markers using RAD sequencing
- **Joly Ghanawi** (screen 6)  
Fish Farms as Artificial Habitats for Wild Fish
- **Jennifer Loxton** (screen 7)  
The forgotten variables: The impact of common cleaning and preservation techniques on skeletal biogeochemistry

16.45 – 18.00

## MASTS Science Session 5

(Chair: Ewan Edwards).

- **Colin Macleod** (Aberdeen)  
Predicting population level risk effects of predation from the responses of individuals: A Case Study On Harbour Porpoises In Scottish Waters
- **Monica Betancor** (Glasgow)  
High-EPA oil from transgenic Camelina sativa as a replacement for marine fish oil in Atlantic salmon (*Salmo salar*) feeds
- **Robert Wilson** (Strathclyde)  
Zooplankton development: questioning the conventional view of the relationship between development and temperature
- **Niki Lacey** (Aberdeen)  
The lipids and fatty acids of two hadal amphipods (>6000 m depth). Adaptations to life in the deep
- **Jacqueline Tweddle** (Aberdeen)  
The future of managing our oceans: Starting at the bottom of the food-chain?
- **Natalia Serpetti** (SAMS)  
Polynoidae (Polychaeta) in the Southwest Indian Ocean Ridge: from the Evolutionary relationships to the Ecological adaptations

18.00 – 18.15

## Question time for Science Session 5

18.15 – 18.30

## Conference Closing Remarks & Prize Giving (Prof David Paterson)

18.30 – 19.30

## Networking (Bar will be open) and opportunity to view E-posters

# DAY 3

Friday 5<sup>th</sup> September 2014

This third day of the MASTS ASM is for associated meetings, seminars, training sessions and workshops.

Room	Morning	Afternoon
<b>Carnegie A</b>	<b>09.00 – 13.00</b> Spatial ecology of elasmobranchs: trends, advances in methods and opportunities	<b>13.30 – 16.30</b> Marine Spatial Plan Community Project
<b>Wardlaw</b>	<b>09.30 – 12.30</b> Micro-plastics in the marine environment: sources, sinks, effects, impacts	<b>13.30 – 16.30</b> xxx
<b>Carnegie B</b>	<b>09.10 – 13.30</b> Sustainable Aquaculture	
<b>Bruce A</b>	<b>09.30 – 12.30</b> Marine Invasive Species: Prevention, Detection and Management Challenges	
<b>Gibson</b>	<b>09.30 – 12.30</b> Decommissioning & Wreck Removal: Why? What? How?	

**Morning tea/coffee** (10.30 – 11.00)

**Lunch** (12.30 – 13.30)

**Afternoon tea/coffee** (15.00 – 15.30)

# Locations

## Heriot Watt University Conference Centre

The Marine Alliance for Science and Technology for Scotland will hold its fourth Annual Science Meeting (ASM) at the Heriot-Watt University Conference Centre, Edinburgh.

### Edinburgh Conference Centre

Heriot-Watt University  
Riccarton  
Edinburgh  
EH14 4AS

t: +44 (0) 131 451 3115

f: +44 (0) 131 451 3199

e: [info@edinburgh-conference.com](mailto:info@edinburgh-conference.com)

w: [www.edinburgh-conference.com](http://www.edinburgh-conference.com)

## Edinburgh Zoo

We invite you to join us at the conference dinner and ceilidh (with the Hoochie Coochie Band) to be held on the evening of Wednesday 3<sup>rd</sup> September at Edinburgh Zoo.

### Edinburgh Zoo

The Royal Zoological Society of Scotland  
134 Corstorphine Road  
Edinburgh  
EH12 6TS

t: +44 (0) 131 334 9171

f: +44 (0) 131 314 0384

e: [info@rzss.org.uk](mailto:info@rzss.org.uk)

w: [www.edinburghzoo.org.uk](http://www.edinburghzoo.org.uk)



**MASTS**

c/o Scottish Oceans Institute  
East Sands  
University of St Andrews  
St Andrews  
KY16 8LB

t: +44 (0) 1334 463470

f: +44 (0) 1334 463443

w: [www.masts.ac.uk/annual-science-meeting](http://www.masts.ac.uk/annual-science-meeting)