



MASTS-SFC Saltire Emerging Researcher Scheme (MASTS-SERS)

Final Report

MASTS in association with the Scottish Funding Council supported the Saltire Emerging Researcher Scheme, which represented an important and exciting opportunity for Post Graduate Researchers (PGR) and Early Career Researchers (ECR) to engage in substantive collaboration with colleagues from Europe (EA, EEA and EFTA countries).

The scheme aimed to promote mobility between Scotland and European research partners with the aim of strengthening existing, and seeding future, research relationships. Participants are expected to demonstrate the impact of their exchange through the publication of novel research work, the formation of new collaborations and project/ funding submissions, and the dissemination of their results.

As your exchange has now come to a close, we ask that you reflect on the exchanges and provide a report by filling in the form below. The reports will need to demonstrate the potential benefits of the grant for both the recipient and their collaborators. Please return this within four weeks of completing your exchanges to masts@st-andrews.ac.uk. When you do so, you are agreeing that your answers may be used to promote the activities of MASTS, including being used on the website and social media channels.

Please note that MASTS may also contact you, the participants, and/or your supervisors to gather additional post-exchange impact information. This information must be provided on request.

Contact information

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Exchange overview

Title	Sharing insights, ideas and understanding of vessel activity in coastal waterways: past, present and future
Start date	01/07/2022
End date	26/09/2022
Project location(s)	Aarhus University, Denmark University College Cork, Ireland

Abstract (max 300 words)

Provide a brief summary of the exchange using language accessible to a non-specialist. Describe what the exchange objectives were, the activities that were carried out, and the subsequent outcomes. This may be published on the MASTS website.

This funding facilitated a trip by PhD researcher, Emily Hague, to visit two European Higher Education Institutions whose research groups focus on human activities and their impacts on the marine environment (Aarhus University, Denmark, and MaREI, based within University College Cork, Ireland). These institutes were selected as they are the host institution and/or research partners on the European Commission's Horizon 2020 funded 'Saturn' project. 'Saturn' seeks to develop solutions to the problem of underwater radiated noise from motorised vessels, which closely aligns with Emily's home research group interests (Marine Spatial Analysis Group, Heriot-Watt University (HWU)) regarding impacts on the marine environment.

During the visits, Emily met with Saturn project coordinator, primary investigators, and researchers as well as their dedicated science communicator to build a deeper understanding of the research questions being explored, approaches used, data gathered, and the outreach being undertaken. At both institutions, Emily held day long open-department knowledge sharing and horizon scanning workshop, designed to encourage networking and the building of collaborative connections between attendees. Each workshop started with an introduction from Emily on her work, then each attendee was given time to share their own research relevant to human impacts, as either short presentations or as an informal brief overview to the group. Introductions were then followed by time dedicated to discussing knowledge gaps that span across the disciplines and species that attendees work on. The workshops provided attendees new opportunities to connect with researchers with complementary research interests, to identify potential future collaborators, and to discuss current research challenges and gaps that could be addressed within future research projects.

Finally, this funding also supported early career researcher Dr Charlotte Findlay to travel to HWU, where she presented her Saturn-project research to the wider MASTS community and utilised the opportunity to discuss future collaborations with HWU researchers.

Impact (max 600 words)

Please demonstrate the impact of your exchange from your perspective, and that of your exchange partner. Describe what the wider benefits of the exchange were to you as participant, your own and host institutions, and the wider community.

Networking and Knowledge Sharing Workshops

The MASTS-SERS funding provided the support for me to host workshops at the two visiting host institutions. Both workshops were tailored to the expected audience, and were designed to encourage networking within and across institutions, to share relevant research, to build new connections, to refresh old connections, and to discuss knowledge gaps limiting current research, which ultimately would allow for the identification of potential opportunities to collaborate.

- Workshop 1 – held at University College Cork (Ireland) on 18th August 2022, 11am-4pm. 22 attendees representing 11 different institutes. Workshop Report available at <https://docs.google.com/document/d/1IILviDH98IRca0nMjMBzZUkhxNxaH4PXYtt3ohUhMIQ/edit?usp=sharing>
- Workshop 2 – held at Aarhus University (Denmark) on 15th September 2022 08:30am-3pm, 15 attendees. Workshop Report available at https://docs.google.com/document/d/1DN7TL1PvoBXnouPi-BX2WnE3Z9EWnEGl5Jm_V0Z_GNI/edit?usp=sharing
- Following the workshops, there were multiple new collaborations and data sharing agreements developed between attendees, for example:
 - Following Workshop 1, attendee Dr Rebecca Dudley (Irish Whale and Dolphin Group (IWDG)) invited attendee (UCC Green Campus MRes Education student) Lydia Elliott to take a week long educational voyage on the IWDG vessel Celtic Mist, helping educate young people on-board about ocean life and how to protect it. This will directly contribute to Lydia's MRes research which focuses on engaging young people in the environment.
 - Data sharing set up between (Rory Scarrott (RS) and Nithiya Streethran)
 - New collaboration set up between RS and Dr Cian Luck (Global Fishing Watch) and I, working with satellite data to understand AIS vs nonAIS vessel activity. RS will support part of the data analysis in one of my PhD chapters, whilst the collaboration with RS and CL will form the basis of a fellowship application.
 - New collaboration between Dr Nicholas Baker-Horne (NBH) (Queens University Belfast) and I, with NBH joining as a co-author on a systematic map of marine mammal research (forming Chapter 2 of my PhD).
 - Copernicus documentation issue discussion between Jed Kempf and RS.

Training Received

The MASTS-SERS funding provided me the opportunity receive training from experts based at both host institutions;

- RS (MaREI) provided training in how to use satellite data in GIS based applications
- Amy Dozier (MaREI) provided training in digital illustrations and infographics for scientific communication
- Professor Peter Madsen (Aarhus) held a 3-hr acoustics seminar session, also inviting all members of his lab.
- CF provided me with training in underwater noise models, including the JOMOPANS-ECHO shipping noise model, and the underwater energy flux model, both which form part of Chapter 5 of my PhD.
- Dr Laia Rohano Doñate provided brief training of PAMGuard to detect harbour porpoise clicks and buzzes, which is part of the ongoing data analysis process within the Saturn project.

Dissemination of MASTS-SERS trip

- CF gave a 1hr talk on her current Saturn post-doctoral research '*Go Stealthy or Go Slow: Do moderate reductions in commercial shipping noise reduce impacts to marine mammals?*' as part of the Heriot-Watt ILES Seminar Series (held 22/07/22). This was hosted online and made available to all MASTS delegates.
- Bottlenose Dolphin SAC Workshop – 1st November, Cromarty Lighthouse Field Station (University of Aberdeen). Invited workshop attendee to discuss coastal vessel research on marine mammals. Workshop targeted at policy makers to improve SAC management.
- 12th MASTS Annual Science Meeting – 8-10th November, Glasgow. Abstract accepted for talk during the "Marine policy and management-linking current and future research to policy and impact" special session. ASM targeted at delegates of MASTS institutions (mainly academia and industry).
- WDC SMASS Marine Forum, 26th November, Glasgow. Invited speaker to share preliminary results of the Scottish Vessel Project, including results of the MASTS-SERS trips. Forum targeted at general public, aiming to educate, inform and increase public involvement in marine mammal research in Scotland.

Outputs (max 300 words)

Has this exchange resulted in clear outputs, such as the generation of a proposal, research results, or publication? Please provide brief details here. Do any of these outputs have relevance to larger programmes such as the UN SDGs, Blue Economy Action Plan etc?¹

Proposals

The MASTS-SERS has led to multiple funding applications, all now *in prep*, including:

- Charlotte Findlay (CF) EPSRC Fellowship Application - Heriot-Watt University (HWU) as lead institution.
- Lauren McWhinnie (LM) (and/or possibly Aarhus University if funding is European based) spearheading larger collaborative funding applications (e.g. ERC Consolidator Grant, NERC Discovery Grant, EPSRC New Investigator Award, Danish Innovation Fund, Future Leaders Fellowships). Collaboration between, but not limited to, HWU, Aarhus University, Ocean Acoustics Ltd., Styles Group, Sea Mammal Research Unit, Transport Canada.
- Emily Hague (EH) is building multiple fellowship proposal ideas and collaborations, based on discussions had as part of the MASTS-SERS trips. Most opportunities require the applicant to have either submitted or be <2 months from thesis submission. EH is due to hand in her PhD in winter 2023, so following the ideas and collaborations developed as part of these visits, will be excellently placed and prepared to submit when eligible.

Publication(s)

The meetings held during the MASTS-SERS visits allowed for direct development of the following publication(s) ideas and subsequent drafts, with all work now *in prep* with expected submission of work to appropriate peer review journals in early 2023:

- CF, EH, LM and Matt Pine (MP): short discussive research piece, for submission to a peer review journal: '*Can current management and mitigation solutions for shipping be applied to protect environments in an unpredictable future?*'. The piece will summarise the literature and provide a grounding to support future collaborative funding applications. This paper will support preparations to achieve the long-term ambition for Scotland's blue economy by 2045.
- LM, EH and MP: '*Are high speed regattas adopting the necessary measures to prevent impacts on marine mammals?*'

¹ All successful applicants will be expected to represent, promote and formally acknowledge the sponsors (MASTS, SFC & Scottish Government) during the course of their project and in any subsequent related outputs. All research outputs and any material used publicly must carry the funders' logos. The following acknowledgement should be used in all publications resulting from this funding. ["This work received funding from the Scottish Funding Council Saltire Emerging Researcher Scheme and the MASTS pooling initiative (The Marine Alliance for Science and Technology for Scotland) and their support is gratefully acknowledged. MASTS is funded by the Scottish Funding Council (grant reference HR09011) and contributing institutions"]

- MP, CF, EH, LM and Jakob Tougaard, with Ports of Auckland: '*Measuring underwater radiated noise of an electric tug*'. Relevance to SDG Goal 14.

The Future (max 300 words)

How do you plan to ensure a sustainable collaboration in the longer-term and maximise opportunities and impact in the future? How will you carry forward the benefits now the exchange has been completed? Please outline five concrete plans for future collaboration as a result of your exchange.

1. Academic publications (as outlined above), which either are discussive pieces outlining the gaps and challenges of shipping-related research, or, provide additional knowledge to the literature with regards vessel-based research. These all provide an excellent demonstration between host institutions of the positive start of a body of collaborative vessel-related research, and will be invaluable when cited in future collaborative funding proposals between host institutions.
2. Workshop reports written up and shared as editable drafts with workshop attendees. The reports provide attendees with a record of the other attendees fields of research and their contact details (to facilitate collaboration in future). The reports also provide thorough details of knowledge gap and research challenges discussed at each workshop, to support attendees in future funding applications/development of ideas for future work to address these identified knowledge gaps.
3. Outputs of the Scottish Vessel Project and the MASTS-SERS visits are due to be disseminated at national conferences and fora, each with different target audiences (i.e. expected to reach a wide ranging audience).
4. Online meetings between collaborators scheduled for autumn 2022, and a GoogleDrive set up which is host to multiple draft Fellowship and funding applications being developed. Proposals expected to begin being submitted early 2023.
5. New collaborations contributing to various chapters of my own PhD research (which will be written up by Winter 2023). Specifically;
 - Nicholas Baker-Horne, co-author on systematic map of impacts to marine mammals (Chapter 2)
 - Nathan Merchant and Adrian Farcas (both CEFAS) providing underwater shipping noise model data (Chapter 3)
 - Rory Scarrott (MaREI) AIS-nonAIS satellite data (Chapter 4)

Any further comments (max 500 words)

Please use this space to provide any additional comments. These may include, but are not limited to; what you would do differently if you could take the exchange again; what contingency measures you had to use (if any); details of any unexpected benefits or problems; any significant variations in costs;

Personal Development

I have facilitated workshops before, both online and in-person, but this was my first time as Lead Facilitator. I thoroughly enjoyed the opportunity, and received excellent positive feedback, and based upon this I have since been invited to host similar style workshops at other Higher Education Institutes. Both workshops were a great success, with attendees from a variety of institutes, backgrounds, and career stages (from Master's to very established academic level). Designing and hosting successful workshops has been invaluable to my development as an ECR.

Significant Variations in Cost

All flights were significantly cheaper than predicted in the initial funding application. This extra unexpected resource was instead utilised to cover;

- Registration and attendance at the Seabird Group Conference. This took place in Cork during my visit, and hosted many globally renowned seabird researchers. It was a fascinating and unique opportunity to see current research on another taxa of species outside my usual study area of marine mammals. It highlighted to me many areas of commonality, but I also learned about different approaches being used by the seabird community, it was fascinating to discuss the similarities and differences between the two marine megafauna. This has helped me think outside the box, and has vastly expanded my network. I am keen to explore fellowship opportunities that span marine taxa, something which I may not have considered otherwise.
- Payment for LM, MP and I to stay at Heriot-Watt during CFs research visit. This allowed for long and rich days of discussion during CF's visit, aiding development of fellowship ideas and the beginning of multiple publications. The funding covered the visit of Dr Carol Sparling (Director of the Sea Mammal Research Unit) to HWU, to discuss collaborative future funding opportunities and ideas. The fund therefore helped facilitate both national inter-MASTS institute collaborations, along with development of new international collaborative opportunities.
- Travel and accommodation during dissemination of research trips, to support travel and accommodation costs during my attendance at various conferences and fora. Considering the cost of living crisis, which is exacerbated for those on low incomes like PhD stipends, I am thoroughly grateful to have these costs covered to allow me to share news of my MASTS-SERS trips without financial barriers.

I would like to extend a thank you for supporting me. The outcomes and impact of these trips have far exceeded my expectations. For me, they will benefit my PhD in countless ways, whilst also providing me with both fellowship ideas and collaborators, further publications and data sharing opportunities. I am delighted with this, but am particularly thrilled that many workshop attendees or visiting institutions have found new collaborators, opportunities or data sharing agreements to support their own respective work as a consequence of these visits. This wasn't something I was expecting, and I think is a credit to the scope of the funding call – to facilitate networking and re-connecting European and Scottish based researchers post-COVID/Brexit. A big thank you to the funders for doing that!

Final expense report

Item Number	Description	Cost per Unit	Number of Units	Total Amount (£)
1	Travel: EH: HWU – Aarhus University, Denmark (return) Flight: Edinburgh – Billund AND Train or Bus: Billund – Aarhus (return) AND/OR Car travel to/from airport	<i>Flight</i> = 115.14	1	200.31
		<i>Bus</i> = 19.52 + 19.45 + 8.40	3	
		<i>Car Fuel 0.45 per mile</i> = 22.05 + 15.75	2	
2	Travel: CF: HWU – Aarhus University, Denmark (return) Flight: Edinburgh – Billund AND Train or Bus: Billund – Aarhus (return)	<i>Flight</i> = 158.38 <i>Bus</i> = 19.05+4.50+4.50+19.05	1 4	205.48

3	Travel: HWU – MaREI University College Cork, Ireland (for EH) AND/OR Car travel to/from airport	<i>Flight = 90.28</i>	1	134.38
		<i>Car Fuel 0.45 per mile = 22.05 + 22.05</i>	2	
4	Accommodation – Aarhus, Denmark (for EH)	<i>Billund Airport Hotel = 135.71</i>	1	1864.92
		<i>Aarhus Hotel = 1729.21</i>	1	
5	Accommodation – Cork, Ireland (for EH)	<i>Cork Hotel = 2088.21</i>	1	2088.21
6	Accommodation – Edinburgh, Scotland (for CF)	<i>Haymarket Hotel = 730.49 + WiFi Fee = £6</i>	1	825.49
		<i>Heriot Watt Hotel = 89</i>	1	
			1	
7	Subsistence (food, drink) (for EH and CF)	<i>Cork (Subsistence 90.45 + Hospitality 475.09), Aarhus (Subsistence 109.59 + Hospitality 362.63), CF Edinburgh (Subsistence 107.67)</i>	1	1145.43
			1	
			1	
			1	
8	Daily travel around HEI cities	<i>Cork (31.13 Taxi), Aarhus (2.65 + 6.3 + 6.3 + 6.13 + 6.24 all trams), CF Edinburgh (1.8, 4.5 buses/tram)</i>	1	65.05
			5	
			2	
9	PhD Stipend (for EH) + HWU fee for 1 month extension of studies	<i>£1472 (1 month stipend for AY 22/23)</i>	1	1602
		<i>£130 1 month fee</i>	1	
10	Catering/Refreshments during two knowledge exchange sessions	<i>Cork (Dinner £99.17 and drink £14.23 for workshop attendees)</i>	1	196.39
		<i>Aarhus (Sandwiches £80.05 and cake £2.94)</i>	1	
			1	
11	Voice recorder for semi-structured interviews	<i>£33.98</i>	1	33.98
12	3 x hotel rooms on HW campus for Lauren McWhinnie, Emily Hague and Matt Pine	<i>2 x Rate £89 per night</i>	2	317
		<i>1 x Rate £139 per night</i>	1	
13	Seabird Group Conference	<i>£185 attendance (including conference dinner)</i>	1	185.00
14	Networking dinner at Heriot-Watt	<i>£138.90</i>	1	138.90
15	Travel to-from Saltire Showcase Conference and Award Ceremony (return train Leuchars to Edinburgh)	<i>£30 open return train</i>	1	30.00

16	Accomodation for Saltire Showcase Conference and Award Ceremony (1 night in Edinburgh, Wed 23 Nov, Yotel)	£150	1	150.00
17	Travel to-from Heriot Watt (during Charlotte Findlay visit)	0.45 per mile	106 (miles)	47.70
18	Overnight incidentals (10 nights Cork, 13 nights Aarhus)	£10	23	230.00
19	Training and Visits: (Mizen Head Tour, and R coding Data Analysis Book)	11.64 12.69	1 1	24.33
20	Travel to-from Glasgow WDC SMASS Marine Forum + Moxy Hotel Glasgow Merchant City, invited speaker to present Scottish Vessel Project + SERS trip results	£40 open return train £135 hotel	1 1 night	175.00
21	Travel to-from Cromarty Lighthouse for Bottlenose Dolphin SAC Workshop (on Tues 1st Nov), + stay on 31st October and 1st Nov, invited attendee to discuss Scottish Vessel Project work (inc. SERS trip) at workshop	0.45 per mile Accomodation £63.81 per night	346 (miles) 2 night	283.32
22	GoogleDrive Storage for sharing data with new SERS collaborators	24.33	1	25.61
23	USB Lapel Microphone for videos	30	1	30
Total	£9998.50			£9998.50
In-kind contributions	£210			
In-cash contributions	NA			

Grand Total (Total requested from scheme + In-kind + Cash)	£10208.50			