



MASTS-PECRE Final Report: Dr. Franziska Broell

Host Institution

Scottish Ocean Institute, St Andrews University, St Andrews, KY16 8LB

Hosting Faculty

Dr. Mark James,
MASTS Operations Director
Scottish Ocean Institute
St Andrews University

Duration

1st July – 31st Sept

Background

In collaboration with MASTS, St Andrews University and the Scottish government (SNH, Marine Scotland), this fellowship was aimed at 1) the development and deployment of a low-cost high-resolution movement tag to assess habitat utilization of an endangered apex predator (flapper skates) in a marine protected area (Loch Sunart to the Sound of Jura MPA) and 2) the collection of substrate specific activity in the European Spiny Lobster (*Palinurus elephas*) in tank-based experiments. The MASTS exchange provided the opportunity for Dr. Broell to bring her expertise in acceleration tagging technology to the Scottish Ocean Institute at St Andrews University. In turn, Dr. Broell received the opportunity and training in the development of archival release packages, the expertise in tag development at St Andrews University and training in field deployment of the technology in an endangered species.

Interaction with the MASTS community

For three months, Dr. Broell was an active member of the MASTS community at the Scottish Ocean Institute at St Andrews University. She interacted at all levels, providing advice and support to PhD students and interacting with faculty and other fellow members. Dr. Broell gave a seminar at the Scottish Ocean Institute in August, 2016 and delivered a webinar in August, 2016. She also gave a presentation at the Annual MASTS highlighting some of the work that was conducted during her fellowship.

Outputs

1. Development of a low-cost high-resolution accelerometer archival package. On a personal and professional level the PECRE fellowship was a success for Dr. Broell as she was able to develop a new low-cost archival tag package with the insights of tagging technology experts at St Andrews University (M. Johnson and R. Swift). A release package for a high-resolution accelerometer tag was developed to obtain time, space, state, and rate (e.g. swimming, resting, feeding) data as well as inferred behaviour, post-release, for an

ecologically important and critically endangered fish species, the Common Skate (*Dipturus batis*)

2. The tag packages were tested in a tagging study of an endangered apex predator (flapper skate) in an MPA with collaboration through Marine Scotland and Scottish Natural Heritage. Data and results were discussed during meetings with all collaborators Dr. Broell (MASTS-PECRE fellow), Dr. M James (MASTS Operational Director), Dr. J Thorburn (Marine Scotland), Dr. J Dodd (Scottish Natural Heritage) and Dr. D Alyenik (SAMS). This project was summarized in a manuscript entitled 'Archival Tagging Technology as a tool to assess an MPA for an endangered apex predator' (PLOSone, under review). This work is especially relevant to the MPA and the data analysis and associated publications surrounding an endangered species has already been successful in establishing the basis for further research collaboration in this area through Marine Scotland and SNH.
3. Common Skate Workshop, Orkney, 18 – 19th November, 2016.
Dr. Broell participated in a workshop on common skate with the aim for discussion of existing knowledge base for flapper skate and the development of research and other actions for common skate in Orkney.
4. Conferences
MASTS Annual Science Meeting, 19th October – 20th October
5. Proposals/Awards
Sally Connelly Visiting Researcher Bursary
Leverhulme Research Grant to be submitted in 2018 in conjunction with Dr. J Thorburn (St Andrews), Dr. M James (MASTS, St Andrews) and Dr. Y Papastamatiou (Florida International University)

Award Size and Expenditure:

Total Awarded: 7,500

Salary: 3,300

Travel and Consumables: 827

Field Support: 3,423