



## **PROJECT PROPOSAL FORM**

Making the Most of Masters aims to improve collaboration between employers and universities by providing opportunities for postgraduate students to undertake work based projects as an alternative to a traditional university dissertation. Projects should address a real need within the host organisation and be beneficial to both host and student.

The Marine Alliance for Science and Technology for Scotland (MASTS), pools the majority of Scotland's marine research capacity. MASTS members provide Masters courses in a range of marine related disciplines and many of their students are keen to undertake applied projects outside of academia.

### **Notes on Topic Selection**

A relevant academic will work with your organisation to refine your proposed topic and ensure it meets both your needs and the academic requirements of the student. Projects should typically be achievable within a 12–16 week timeframe (including writing the final report).

Your proposed project could be:

- A specific project title or topic for the student to deliver;
- A general idea of a business need which requires further development;
- A core research theme to be developed by the student into a bespoke project;
- An intended outcome for the organisation.

The level of detail you provide will determine the extent to which further discussion may be required with the relevant programme director to ensure suitability.

desk-based/data studies that will easily facilitate remote working and remote supervision are welcome, as well as in person and/or experimental based projects where appropriate.

### **What's Next?**

Please send your completed form to the MASTS Programme Coordinator & Deputy Dean of Grad School, Dr Emma Defew ([masts@st-andrews.ac.uk](mailto:masts@st-andrews.ac.uk)) before the deadline.

Following submission of the form, it will be channeled to the leaders of the various Masters programmes that operate within the MASTS community and a representative from the most relevant programme or department will get in touch to discuss the project scope, delivery and the selection of an appropriate student. If more than one student expresses an interest in your project, you will need to ensure discussions take place to enable the most suitable student to be matched with your project. The projects themselves usually won't start until May or June.



## MASTS - Making the Most of Masters – Project Proposal Form

**Name and address of Organisation:**

NatureScot  
Great Glen House, Leachkin Road, Inverness, IV3 8NW.

**Name of the key contact in Organisation:**

Sarah Lawrence

**Contact e-mail and phone number:**

[Sarah.Lawrence@nature.scot](mailto:Sarah.Lawrence@nature.scot), 01738 458820

**Title of proposed project:**

Rum Manx shearwaters - exploring drivers of population dynamics to inform conservation management

**Project outline and intended outcomes:**

The Manx shearwater colony on the island of Rum is globally important, holding some 30% of world population. The drivers of population size and trends for this population are complex and include both intrinsic and extrinsic factors operating within the colony and in the birds' marine range, which includes wintering and prebreeding areas in the western Atlantic. At the colony, factors influencing breeding success include flooding of nest burrows during heavy rainfall and depredation of eggs or chicks by brown rats. Levels of rat activity at the colony may also be affected by climatic factors (e.g. winter temperatures). The development of large offshore wind farms (OWF) within the birds' foraging ranges may also impact birds from this population. A Bayesian state-space model of the colony population dynamics has recently been developed by Jason Matthiopoulos (under a ScotMer <https://www.gov.scot/policies/marine-renewable-energy/science-and-research/contract>).

**The aim of this MSc project would be:**

- a) to use the model framework to further explore how proximate factors, in particular rainfall patterns at the colony during the breeding season, may influence colony dynamics. Technically, this task can be thought of as an apportioning of the empirically inferred dispersion (the random effects), into the contributions of covariates.
- b) to use the model framework to explore potential population outcomes under various scenarios of future change, including pulse and press perturbations (potentially operating in tandem) to key demographic parameters.

**Any additional comments e.g. details of specific disciplines required, methods to be used, travel involved, where the work would take place (i.e. at the host site or at the University), whether you foresee any Intellectual Property or confidentiality issues (and if so, what form might these take?):**

The project would be desk-based; the student should have a good understanding of statistical analysis and should be proficient in the use of statistical programs including R. The fully-fitted, user-friendly and computationally efficient R-functions developed for this model will be available to the project. The project would suit a student with an interest in marine ornithology, statistics and population modelling.

We invite the student to visit a NatureScot office to meet with relevant colleagues as well as other MSc students carrying out projects within NatureScot. Travel and subsistence may be covered for this journey.