



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) 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: Katie Cubbon (Fair Isle Demonstration and Research MPA research officer)

Contact e-mail and phone number: katie.cubbon@nature.scot +44 1463 667613

Title of proposed project: Fair Isle Demonstration and Research MPA baseline plankton survey analysis

Project outline and intended outcomes:

Ocean plankton plays a fundamental role in maintaining the health and structure of the marine environment. Phytoplankton in particular plays a key role in ocean cycles and supports a substantial portion of marine life including; zooplankton and vulnerable larval cycles.

Phytoplankton is globally important in that it contributes significantly to the global carbon cycle. The biological carbon pump is responsible for transporting particles of carbon from the ocean surface to ocean sediment. Physiology and structure of phytoplankton communities determine the efficacy of this atmospheric carbon transfer. Increased knowledge on the structure, processes and impacts on phytoplankton is vital in understanding their role as a source of blue carbon.

Significant changes of plankton structures have been noted to cause reduced survival rate of marine species. Of particular concern, is the impact of climate change on the synchrony between phytoplankton blooms and higher trophic levels. Variation in bloom initiation encompasses all levels of marine food webs, including the reduction of prey availability during critical breeding periods of top predators.

Plankton monitoring is a priority research area within the [Fair Isle Demonstration and Research MPA programme](#). This project aims to utilise existing data streams from the [Continuous Plankton Recorder Survey](#) to build a picture of current plankton function and activity around Fair Isle. This analysis will help to generate baseline knowledge of phytoplankton and zooplankton; species presence, distribution and abundance, and assess blue carbon potential around Fair Isle. This work is fundamental in improving our understanding of marine food webs around Fair Isle and the pressures they may face.

The student will work with the Fair Isle Marine Research Organisation and the Fair Isle DR MPA research officer to develop specific research objectives and appropriate statistical analyses for this project.

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?):

This project will involve statistical analysis so the student should have experience and an interest in statistical methodologies. CPR data is available for the period 1958-2022 from plankton trawls taken from the MV Hildasay which travels between Shetland and Aberdeen on a regular basis. There is also a wealth of climate data available for Fair Isle including sea surface temperature (SST) data which could be incorporated into analyses to investigate climatic patterns in plankton abundance.

As this project is still under development, this gives the student the opportunity to lead on ideas for statistical analyses as well as the development of specific research objectives for the project. The student will be supported by the Fair Isle DR MPA research officer and the Fair Isle Marine Research Organisation.

This MSc project is fully desk-based; however, we invite the student to visit our main office in Inverness 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.