

Biodiversity Challenge Funds Projects

Darwin Initiative, Illegal Wildlife Trade Challenge Fund, and Darwin Plus Half Year Report

Note: If there is any confidential information within the report that you do not wish to be shared on our website, please ensure you clearly highlight this.

Submission Deadline: 31st October 2022

Project reference	DPLUS148
Project title	Climate change resilience in Falkland Island fisheries and marine ecosystems
Country(ies)/territory(ies)	Falkland Islands
Lead partner	South Atlantic Environmental Research Institute (SAERI)
Partner(s)	Falkland Islands Government, Directorate of Natural Resources, Fisheries Department (FIFD) Falkland Islands Government, Directorate of Policy and Economic Department (DEPD) Oregon State University (OSU) British Antarctic Survey (BAS) Shallow marine Surveys Group (SMSG) Falkland Islands Fisheries Companies Association (FIFCA)
Project leader	Dr Jesse van der Grient (Project Manager) Dr Paul Brickle (Project Leader)
Report date and number (e.g. HYR1)	HYR2
Project website/blog/social media	<i>Project: www.south-atlantic-research.org/dplus148-climate-change-resilience-in-the-falkland-islands-fisheries-and-marine-ecosystem/ Organisation: www.south-atlantic-research.org/ SAERI twitter: @SAERI_FI SAERI facebook: www.facebook.com/SAERI/ SAERI blogs: www.south-atlantic.research.org/news/</i>

1. Outline progress over the last 6 months (April – Sept) against the agreed project implementation timetable (if your project has started less than 6 months ago, please report on the period since start up to end September).

The project is on track, with progress made on several work packages, which are outlined below against log frame indicators (identified in brackets):

Work package 1: A project manager (PM) was recruited (1.2), and the project meeting group (PMG) was established (1.3), and two PMG meetings have occurred (June and September). PMG meetings are scheduled for each quarter for the remainder of the project. A website on the SAERI webpage has been created (1.4; <https://www.south-atlantic-research.org/dplus148-climate-change-resilience-in-the-falkland-islands-fisheries-and-marine-ecosystem/>). Engagement online and in the Falkland community has been generated via various social media posts (covering updates on the project, a Falkland Islands TV appearance, and the visit of our British Antarctic Survey (BAS) partner, newsletters, talks (PM gave two talks, one for the Falkland Islands Women Association, and the Falkland Islands Science and Humanities Society; BAS project partner gave various talks to the local schools), a visit from various Falkland Islands Fisheries Companies association (FIFCA) members to see the physiological experiments that were running, and general SAERI outreach events (Falkland Islands Farmers Week, Business Breakfast for students). A M&E plan has been created and shared with the PMG (1.5). The PM has been able to sign almost all MoUs (1.1), apart from the MoU with OSU, which is being chased up.



SAERI @SAERI_FI · Aug 8

Thank you to the team & students at Falkland Islands Community School for hosting Simon & Stephanie in July! They enjoyed presenting to the Year 7 & 10 students about whales, difficulties of living in the cold & climate change! @FIGEducation @Darwin_Defra @BAS_News @FIFCA52degrees



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Environment

How Climate Change Could Affect the Falklands' Marine Ecosystems

September 4, 2022 12:27 by Charles Kershaw



A new scientific project aimed at understanding the effects of climate change on local aquatic life is currently underway in the Falklands. The experiment is the first of its kind in the islands and hopes to uncover new data on the resilience of species in warming waters. It is hoped that the new information will help to inform decisions on the management of the Falklands' fisheries.

Work package 2: A literature review of the Falkland Islands marine ecosystem has been conducted and written (2.1) and sent around the PMG (2.2).

We are advancing this further, as the review is now prepared for submission to a scientific journal. During the literature review, various datasets on dietary information for various marine functional groups were collected (N = 49, covering a range of fauna, ranging from zooplankton, cephalopods, fishes to penguins and



SAERI @SAERI_FI · Jul 3
All ready for Farmers Week Expo 2022!

#falklandislands #farmersweek #outreach #learnmoreaboutus



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SAERI - South Atlantic Environmental Research Institute

It is always a joy to be out at sea, but what a different experience it is to sample our wonderful ocean under supervision of dolphins, penguins, and sea lions! We trialed several survey methods in preparation for inshore zooplankton surveys that we will use to better understand the connections between the inshore habitats around the Falkland Islands and the offshore habitats as part of the Darwin Plus project Climate resilience in the Falkland Islands marine ecosystem and... See more



ROV footage of Peale's Dolphins and Sea lions

SAERI - South Atlantic Environmental Research Institute

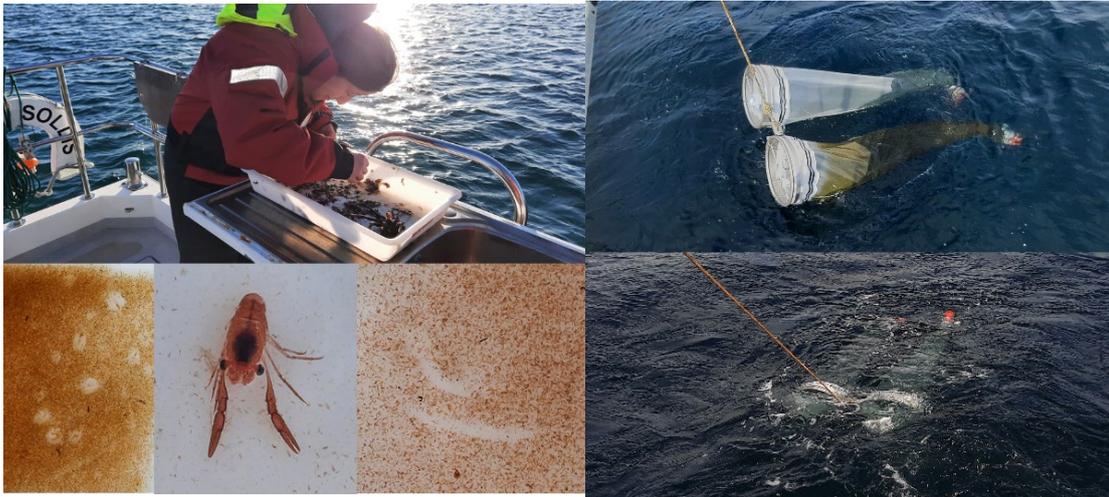
SAERI's Dr Isobella Hamon, Honorary Research Fellow - Marine Ecologist @ Dr Isobella Hamon, Project Manager and senior specialist marine ecologist, were invited to attend the Business Breakfast for the Falkland Islands, organised by Development Corporation and the Falkland Islands Chamber of Commerce.

The business breakfast offered an opportunity for school leavers to ask SAERI employees about career paths in marine science and... See more



albatross), which has been collated and the data are hosted on the SAERI IMS-GIS/FIG data portal, indicating the geographical location or areas of the samples on the public webGIS (2.1 & 2.2; [REDACTED])

The sampling of zooplankton and ichthyofauna has started (2.3). Initial trials were conducted in the winter months (June-August), but the actual survey has started in September with the arrival of our new Bongo nets, which have different net mesh sizes and filter larger volumes of water compared to the old net. Thus, for consistency, the survey started slightly later than initially planned. In addition, a PhD student with the University of Aberdeen was recruited to work further on these data to support this project. While *Loligo* eggs have been collected via scuba diving, these were used for the physiology experiments detailed below, and were not part of the *Loligo* survey.

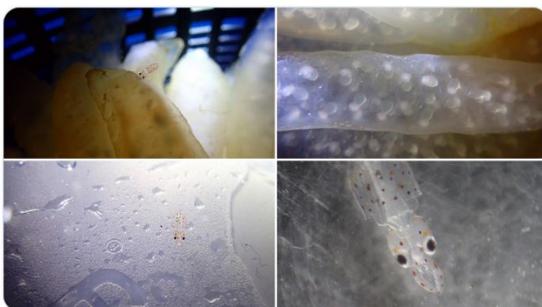


Work package 3: Physiological experiments investigating temperature responses of various marine animals have been set up (3.1) at the local aquacultural facilities of Falklands Fish Farming Ltd, owned by Fortuna Ltd who are a member of FIFCA. As part of this work, our BAS partner (Dr Simon Morley) visited the Falkland Islands for 6 weeks and he will be returning in January and February to further help develop the project. A tank system has been built with help from Fortuna to ensure proper water treatment and heating. The animals we have investigated include *Doryteuthis* (formerly known as *Loligo*) *gahi* eggs, two amphipod species that are currently not identified, but which have been sampled for specialist identification, and serolid isopods. Respiration rates have been measured in

SAERI - South Atlantic Environmental Research Institute
5 August
The DPlus148: Climate change resilience in the Falkland Islands Fisheries and Marine Ecosystem project has the pleasure of hosting Simon Morley from British Antarctic Survey. Simon will be working with us on kelp forests, which are important nurseries for several commercial species including squid, however little is known about how vulnerable they are to climate change. Simon and Jesse, along with Fortuna Ltd Group are working to setup an aquarium system where the animals an... See more



SAERI @SAERLFI · Sep 21
In time for #Squidtember!
@JGrient is looking at squid eggs in our @Darwin_Defra climate resilience project in the #FalklandIslands with @BAS_News & Fortuna & the first #hatchlings are here!
They are so adorable and #tiny!



response to warming, and several elevated temperature response points have been measured successfully for the animals. These responses will allow us to understand temperature tolerance capacity of the study animals. The squid eggs have started to hatch, and ways to measure the respiration rates of the hatchlings are currently being explored. In addition, we have extended experiments to several snail and urchin species. We are also working with our partner, the Falkland Islands Government,

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Directorate of Natural Resources, Fisheries Department (FIFD) to capture and bring back rock cod to include in the physiology experiment. In addition, we aim to collect other species (lobster krill, for example) that are currently in too low abundance to be collected but should appear in large numbers in the zooplankton community in the next few months. To extend and add value to this work, we have successfully applied for a diving PAM (that is, a fluorometer that can be used to study underwater photosynthesis) from the National Environmental Research Council (NERC), which should arrive early next year for a period of time. This will allow us to investigate kelp photophysiology in response to warming scenarios, and it will complement the fauna datasets that we are generating. The physiological experiments were recently shown on the Falkland Islands TV. Further, FIFCA members came around for a visit to the aquaculture facilities to see the experiments and discuss the reasons of why this work is done and how the scientific results could be beneficial for them. All of our project media and outreach clearly highlighted that the project was a Darwin project.



Work package 4: An ecosystem framework has been designed based on the literature review of work package 2. The aim for the modelling is to use the well-known Ecopath with Ecosim, but instead of the framework's standard platform the R version will be used to allow for the incorporation of temperature-dependent metabolic responses (that is, the respiration rates), that are currently being estimated in work package 3. FIFD is developing an Ecopath model of the Falkland marine ecosystem as part of a different project. Through our collaboration, we will use this model as a baseline for the work in this package, as well as offer modelling support to FIFD. For the project aims, the Ecopath will be redesigned to match the ecosystem framework we have, and develop the Ecopath to an Ecopath with Ecosim model in R. The FIFD model, which builds onwards from a Falkland Islands Ecopath model published in 2005, and our upcoming model will allow for a legacy of ecosystem modelling in the Falkland Islands. As this work moves along, our project partner OSU will also be further engaged to aid in model development. Note that this work is ahead of schedule, as the work for this work package is scheduled to start in year 3, quarter 1 (April 2023).

Work package 5: No work has been conducted towards this package yet; it is scheduled to start in year 3, quarter 3 (Oct 2023). The Environmental Department of the Falkland Islands Government is interested in the experimental and modelling results (the current Environmental Officer and Policy Advisor is, for example, helping out with animal collection for the experiments as well as providing assistance during experimentation), and will be engaged further when the project moves closer to this work package. Likewise, FIFD is currently involved in other parts of the project (modelling, providing advice on surveys), and will be engaged for this work package when the project moves closer to this working package.

Additional project outreach and publications include a short piece for Supplement in Oceanography, aimed at a broad audience including funders, policymakers, and the general public (currently in draft form, but will be submitted with the annual report). Further, a project talk was given to the Falkland Islands Women Association, highlighting the work currently being done, and what we are further aiming for in the future. Again, all project outreach and publications highlighted the project was a Darwin project.

2. Give details of any notable problems or unexpected developments/lessons learnt that the project has encountered over the last 6 months. Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities.

Some of our equipment was delayed in coming to the Falkland Islands (e.g., bongo nets needed for zooplankton and ichthyofauna surveys), but this will not negatively impact the project as the nets came on time for the start of spring. This did mean a change in the sampling program, as originally the winter sample would have been taken this year, but it can be taken next year without impact on the deliverables. A PhD student has been recruited who will work the survey data further up, extending the scope of this part of the project further than originally planned. The student has started her PhD this month and is expected to come to the Falkland Islands early next year. In the meantime, samples are taken at a regular basis to capture phenological change in the marine coastal waters, and samples are being sent to the University of Aberdeen (where the PhD student is based) so she can start analyses.

There was a slight delay in setting up the physiological experiment as the tank system had to be built from scratch, which was further challenged by certain items not easily available in the Falkland Islands. There were also challenges with the equipment not working as expected (e.g., tank heaters). Nevertheless, great progress was made, with data of sufficient quantity and quality already available to be used in the modelling elements of this project. We are confident that most of the issues with the equipment have now been resolved, and we will repeat experiments with the autumn (Aug/Sep) spawning cohort next year.

None of the issues listed above are not expected to influence the timeline or budget.

3. Have any of these issues been discussed with NIRAS-LTS International and if so, have changes been made to the original agreement?

Discussed with NIRAS-LTS: No

Formal Change Request submitted: No

Received confirmation of change acceptance N/A

Change request reference if known:

4a. Do you currently expect to have any significant (e.g. more than £5,000) underspend in your budget for this year?

Yes No Estimated underspend: £

4b. If yes, then you need to consider your project budget needs carefully. Please remember that any funds agreed for this financial year are only available to the project in this financial year.

If you anticipate a significant underspend because of justifiable changes within the project, please submit a re-budget Change Request as soon as possible. There is no guarantee that Defra will agree a re-budget so please ensure you have enough time to make appropriate changes if necessary. Please DO NOT send these in the same email as your report.

5. Are there any other issues you wish to raise relating to the project or to BCF management, monitoring, or financial procedures?

No

If you are a new project and you received feedback comments that requested a response (including the submission of your risk register), or if your Annual Report Review asked you to provide a response with your next half year report, please attach your response to this document.

Please note: Any planned modifications to your project schedule/workplan can be discussed in this report but **should also be raised with NIRAS-LTS International through a Change Request. **Please DO NOT send these in the same email.****

Please send your **completed report by email** to BCF-Reports@niras.com. The report should be between 2-3 pages maximum. **Please state your project reference number, followed by the specific fund in the header of your email message e.g. Subject: 29-001 Darwin Initiative Half Year Report**