



## Darwin Initiative/D+ Project Half Year Report (due 31<sup>st</sup> October 2019)

<b>Project reference</b>	DPLUS089
<b>Project title</b>	Integrating genetic approaches into sub-Antarctic deep sea research and management
<b>Country(ies)/territory(ies)</b>	South Georgia and the South Sandwich Islands
<b>Lead organisation</b>	University of Essex
<b>Partner(s)</b>	Cefas
<b>Project leader</b>	Dr Michelle Taylor
<b>Report date and number (e.g. HYR3)</b>	30 <sup>th</sup> Oct 2019
<b>Project website/blog/social media etc.</b>	N/A

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

All project partners and stakeholders have been informed of grant success and online meetings undertaken.

The data acquired through two expeditions in the Southern Ocean allowed the aims set out under this Darwin Project to be addressed.

Cefas conducted a survey on the RRS *Discovery* to examine the biodiversity and distribution of benthic invertebrate species around the South Sandwich Islands. The aim of the benthic sampling was to record the diversity and distribution of epibenthic macro- and megafauna, and to collect samples for genetic analysis linked with this grant.

All the benthic material was preliminary identified on board; coral specimens and genetic tissue was preserved and transported to the University of Essex for further analysis under the Darwin Plus project (DPLUS089). Project staff are collaborating with taxonomic experts to help with species identification and biodiversity data analysis is currently on going.

Additional samples were acquired from longlines deployed around SGSSI and collected by on-board fisheries observers, allowing us to extend coverage of sampling locations.

Dr Taylor and Dr Vieira spent 2 days at British Antarctic Survey identifying and collecting extra samples from by-catch from South Georgia Patagonian toothfish fisheries observers. In doing so many older samples were also discovered; which are now part of the research project.

We also hired a technician (Dr Kerry Estebeth) to commence laboratory genetic work (expected commencement date 1st Nov 2019 – this is one month later than planned due to internal administrative hiring delays).

We also conceptualised, drafted and submitted a PhD project proposal (AIRES DTP) with supervisors from University of Essex, Cefas, IMR (Norway) and BAS. This proposal has been shortlisted for funding by the ARIES NERC Doctoral Training Partnership. Shortlisted applicants will be interviewed on February 2020. If secured this contributes towards co-finance for this Darwin project.

The table below shows the current state of progress the activities that were started or completed by the first half of the financial year 2019-2020.

Activities commenced	Current state
1.1 Collection and cataloguing of deep-sea coral samples and transported to the UK.	Completed
1.2.1 Specimens identified to highest possible level by Dr Taylor.	On going
1.2.2 Research technician hired half way through year 1 to undertake genetic laboratory work.	Completed
1.2.3 Specimens of target species have DNA extracted, quality controlled, UCE libraries prepared, DNA sequenced	On-going
2.3 New species descriptions written for peer-review publication (e.g. Zootaxa, Polar Biology) and submitted to WoRMS.	On-going
3.1 Deep sea biodiversity analysis conducted and integrated into reports to GSGSSI and CCAMLR.	On-going
4.3 Donation of samples to NHM and disseminate results to the wider audience.	Partially completed

**2a. 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.**

Internal hiring procedures at the UoE have been slower than expected so the technician is starting 1 month later than expected. Expected underspend in Staffing budget in at £2,800. This is within the 10% financial leeway allowed so financially this is a minimal impact. Logistically we shall still aim to hire a bioinformatician for the same timing as originally planned as we should have data available then. We shall however start the hiring procedure earlier.

Some samples from the by-catch survey are of a poorer quality in terms of the DNA concentrations possible to extract. For this reason a methodological change from RAD-seq, where DNA is randomly sliced, to a more targeted approach, where specific sections of the genome are extracted (via a protocol that focuses on UCEs, ultra-conserved elements) is preferred. The latter protocol will mean many more samples are possible to use; widening the planned population connectivity study. This option means more time is required for genetic library preparations, different equipment is required, however the costs should be equivalent.

We have requested, and have received approval from LTS on 08/07/2019 to reallocated £ of international travel from year 1 to year 3. We need to approach LTS once the technician has actually started to change the staffing budget underspend.

**2b. Have any of these issues been discussed with LTS International and if so, have changes been made to the original agreement?**

Discussed with LTS: Yes/

Formal change request submitted: Yes/

Received confirmation of change acceptance Yes/

**3a. 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: £

**3b. 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 rebudget Change Request as soon as possible. There is no guarantee that Defra will agree a rebudget so please ensure you have enough time to make appropriate changes if necessary.

**4. Are there any other issues you wish to raise relating to the project or to Darwin's management, monitoring, or financial procedures?**

N/A

If you were asked to provide a response to this year's annual report review with your next half year report, please attach your response to this document. Additionally, if you were funded under R25 and asked to provide further information by your first half year report, please attach your response as a separate document.

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

Please send your **completed report by email** to [Darwin-Projects@ltsi.co.uk](mailto:Darwin-Projects@ltsi.co.uk). The report should be between 2-3 pages maximum. **Please state your project reference number in the header of your email message e.g. Subject: 25-035 Darwin Half Year Report**