



Biodiversity Challenge Funds Projects Darwin Initiative, Illegal Wildlife Trade Challenge Fund, and Darwin Plus

Half Year Report

It is expected that this report will be a **maximum of 2-3 pages** in length.

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 2025

Please note all projects that were active before 1st October 2025 are required to complete a Half Year Report.

Submit to: BCF-Reports@niras.com including your project ref in the subject line.

Project reference	DPLUS187
Project title	Using satellite technology to monitor seabird populations at South Georgia
Country(ies)/territory(ies)	South Georgia and South Sandwich Island
Lead Organisation	British Antarctic Survey
Partner(s)	RSPB
Project Leader	<i>Peter Fretwell</i>
Report date and number (e.g. HYR1)	April 2025-September 2025
Project website/blog/social media	Website: South Georgia seabirds from space - British Antarctic Survey (bas.ac.uk) Twitter: @BAS_NEWS, @WildlifeSpace

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

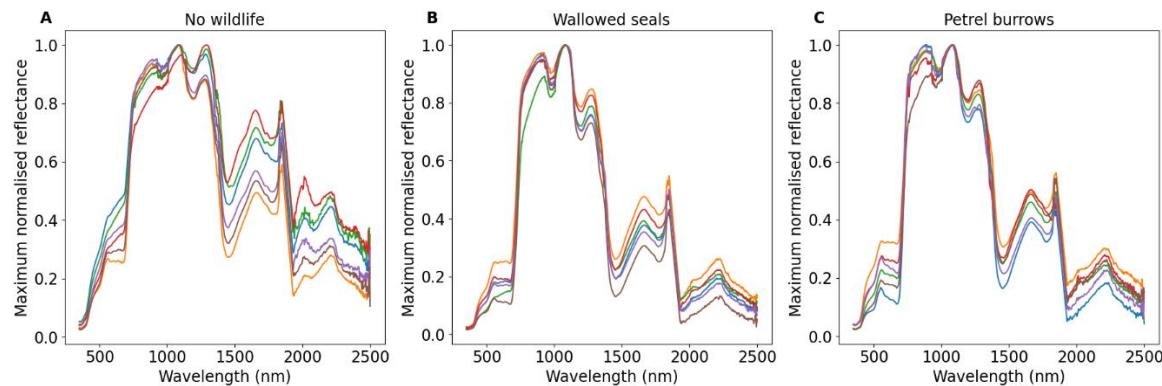
This six month period has seen a consolidation of the results and data collection from the previous period. Progress has slowed somewhat as our primary worker (Marie Attard) moved to Australia and has since started a new job. Most of the time has been taken in data management and transfer of files. It has also taken some time to recruit a replacement post-doctoral researcher with appropriate skills. That said there have still been a number of advancements and milestones within this period, as follows.

Spectral Processing and Analysis

Further work on spectral profile processing and analysis to isolate fertilized from unfertilized tussock. These data were collected during fieldwork at King Edward Point (Oct 2024 – March 2025).

Spectral data were processed using a Python script adapted from the NERC Field Spectroscopy Facility tutorial, which imported, organised, and visualised raw spectral files by vegetation and substrate type. Data were standardised by interpolating reflectance to 1 nm intervals, merging replicate scans via overlap matching and jump correction, converting relative

to absolute reflectance using reference panel calibration, removing and interpolating water absorption-affected regions, and smoothing with a Savitzky-Golay filter. These procedures were applied to both averaged groups and individual scans (Figure 2), with outputs exported as CSV files for the full spectral range and then subset corresponding to WorldView-2 sensor bands.



Normalised spectral reflectance (Min-Max scaling) for three tussock types: (A) unfertilised, (B) fertilised by seals, and (C) fertilised by burrowing petrels. Each of scan is scaled between 0 and 1 by dividing by its maximum reflectance, allowing comparison of peak reflectance.

We will model the relationship between these hand-held spectrometer spectral profiles and 50 cm resolution satellite imagery (captured 1 January 2025) to predict burrowing petrel presence-absence (distribution) and relative abundance at the fieldwork location. Preliminary classification using mixture tuned matched filtering in ENVI aims to distinguish fertilised from unfertilised tussock based on spectral profiles. Habitat preferences such as slope, elevation, and distance to coastline—derived from a 2 m resolution REMA digital surface model of known burrow sites—will be incorporated to improve classification accuracy.

This habitat suitability model will be extended across South Georgia using newly acquired 30-50 cm resolution 8-band satellite imagery covering 98% of vegetated coastal areas and smaller islands. The predicted burrowing petrel distributions will be compared to historical presence-absence data from a 1985-1987 archipelago-wide survey of white-chinned petrels, using the same 5 x 5 km grid as in Trathan, P.N., Daunt, F.J.H., & Murphy, E. J. (1996) South Georgia: an ecological atlas. The original datasets for all species in that publication, including hand-drawn field maps and other material in the BAS Archives were digitized as part of our project and published as a data paper in the journal *Scientific Data*.

The process of compiling the 40+ VHR satellite images into a continuous mosaic of South Georgia was started. Most of the work during this period has been in planning and researching the best method to do the pre-processing and what software to use. There are multiple steps, including orthorectification, pansharpening, and atmospheric correction and different options for alternative outputs. However any mosaic will be voluminous (with the unprocessed dataset currently totalling ~150GB), and will take time to process, so deciding what is required and the best way to achieve it is important. Marie Attard and Ellie Bowler trialled the initial phase of orthorectification and pansharpening using python code developed as part of another Darwin project (DPLUS 214) which gave successful results. This approach can be scaled using the BAS high performance computer and will be explored further with the new postdoc.

Meetings

1. A stakeholder meeting was held in on 18th July 2025, where the results so far were disseminated to the wider group.

2. Peter Fretwell, Ellie Bowler and Richard Phillips attended and contributed to the South Georgia Wildlife Population Count Workshop, hosted by South Georgia Heritage Trust and BAS on 17 September 2025. This workshop was very relevant to the project and the contribution of DPLUS187 was extremely well received. We have also been contributing to the subsequent process to identify priorities for future population monitoring at South Georgia.

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.

Due to personal circumstances our main postdoc, Marie Attard, left the project on the 31st of August. Much of the latter part of the period was spent on getting files and methods to a state where they could be transferred to a new postdoc. Interviews were conducted for the new person in September, and they will start at the beginning of December 2025. There has therefore been a 3 month hiatus in the project.

A change request has been made to extend the project by 3 months, transferring unspent monies to the next FY. This will not extend the project end date beyond end of FY year 2026/27.

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

Discussed with NIRAS:	No
Formal Change Request submitted:	Yes
Received confirmation of change acceptance:	No

Change Request reference if known: *If you submitted a financial Change Request, you can find the reference in the email from NIRAS confirming the outcome*

Guidance for Section 4: The information you provide in this section will be used by Defra to review the financial status of projects. This review will identify projects at random for spot checks on financial management and will include requests for evidence of the actual spend information provided below. Please ensure the figures you provide are as accurate as possible and that you have the evidence to support it. You do not need to provide it now.

4a. Please confirm your actual spend in this financial year to date (i.e. from 1 April 2025 – 30 September 2025)

Actual spend: [REDACTED]

4b. Do you currently expect to have any significant (e.g. more than £5,000) underspend in your budget for this financial year (ending 31 March 2026)?

Yes Estimated underspend: £ [REDACTED]

Note that these figures reflect the financial situation without the change request. If it is not authorized, we will have an underspend of due mainly to the three months without a research assistant. If the change request is authorized that the budget will be balanced and there will not be an underspend.

4c. If you expect an underspend, then you should 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, and not later than 31st December. There is no guarantee that Defra will agree a re-budget so please ensure you have enough time to make appropriate changes to your project if necessary.

Please DO NOT send these in the same email as your report.

NB: if you expect an underspend, do not claim anything more than you expect to spend this financial year.

Change request sent on 15th December 2025

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

Suspicions or allegations related to fraud and error concerns should be reported to fraudanderror@Defra.gov.uk

No

6. Project risk management

6a. If your project has an Overseas Security and Justice assessment, please provide an update on any related risks, and any special conditions in your award paperwork if relevant for your project.

Na

6b. Have any concerns or allegations relating to sexual exploitation, abuse or harassment been reported in the past 6 months?

No

If yes, please provide further information, ensuring no sensitive data is included within responses.

Suspicions or allegations related to safeguarding concerns should be reported to ODA.Safeguarding@defra.gov.uk

7. Please use this section to respond to any feedback provided when your project was confirmed, or from your most recent Annual Report. As a reminder, all projects that were scored as 'Not Yet Sensitive' in the Gender Equality and Social Inclusion (GESI) assessment of their latest Annual Report should demonstrate how they are meeting the minimum GESI-Sensitive standard.

Comments to address from the last Annual report specifically for the half year report:

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Checklist for submission

Have you responded to feedback from your latest Annual Report Review ? You should respond in section 6, and annex other requested materials as appropriate.	✓
Have you reported against the most up to date information for your project ?	✓
Have you clearly highlighted any confidential information within the report that you do not wish to be shared on our website?	na
Include your project reference in the subject line of submission email.	✓
Submit to BCF-Reports@niras.com	✓
Please ensure claim forms and other communications for your project are not included with this report.	✓