

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	DPLUS167
Project title	Pathogens as a threat to seabirds in the Falkland Islands
Country(ies)/territory(ies)	Falkland Islands
Lead partner	School of Biodiversity, One Health and Veterinary Medicine (SBOHVM), University of Glasgow
Partner(s)	South Atlantic Environmental Research Institute (SAERI), Falklands Falklands Conservation, Falklands Centre for Functional and Evolutionary Ecology (CEFE), National Centre for Scientific Research (CNRS), France Marine and Environmental Sciences Centre (MARE), ISPA Instituto Universitário, Portugal
Project leader	Amandine Gamble
Report date and number (e.g. HYR1)	HYR1
Project website/blog/social media	URL reserved but content to be published https://www.facebook.com/profile.php?id=100087032546192 https://twitter.com/FIWildHealth

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).

This report covers the project activities from 01 July 2022 (beginning of the project) to 30 September 2022. The project timetable is available in [Appendix 1](#), the project outputs are presented in [Appendix 2](#), and contributors to the project are acknowledged in [Appendix 3](#).

1. Database on potential pathogen detection and quantification in the seabirds of the Falkland Islands (Output 1)

1.1. Census of banked samples (Activity 1.1)

Banked samples from 807 individuals from 6 seabird species from New Island (Falkland Islands) are already available ([Table 1](#)). For each individual, plasma samples and mucosal swabs were collected. The plasma samples will be screened for pathogen-specific antibodies (indicative of past infection), and mucosal swabs for pathogen genetic material (indicative of current infectious status). All the samples are stored at CEFE, CNRS (France) and available for laboratory analyses.

Table 1. Banked samples. Those samples were collected on New Island prior to the project. Pilot analyses suggest the circulation of a potentially pathogenic paramyxovirus. Additional analyses will allow us to potentially characterize this virus, and to screen for other potential pathogens.

Species	2017/2018	2018/2019
Black-browed albatross	150	130
Southern rockhopper penguin	90	100
Imperial shag	74	70
Brown skua	30	34
Gentoo penguin	50	40
Magellanic penguin	4	25
Slender-billed prion	0	0
Striated caracara	0	0
Black rat	0	0
Brown rat	0	0
House mouse	0	0
Necropsy (various species)	7	3
Total	405	402

1.2. Preparation for upcoming field campaigns (Activity 1.2)

We will collect additional field data and samples to map pathogen occurrence in seabirds across the Falkland Islands. Sampling will occur during two seabird breeding seasons (2022/2023 and 2023/2024). The past few months has been dedicated to fieldwork preparation.

Coordination with existing research and monitoring activities – We have developed new collaborations with research and conservation partners within the Falkland Islands to collect additional data to better understand pathogen transmission within the Falkland Islands ecosystem:

- To study the potential role of introduced rodents as reservoir of seabird pathogens, we will collaborate with the [New Island Restoration Project](#) (led by Ross James and funded by the Darwin Plus Initiative) and the [Remove Disease Project](#) (led by Thierry Boulinier and funded by the BiodivERsA initiative).
- To study the potential for pathogen spread between seabirds and terrestrial birds, we will collaborate with the [Johnny Rook Project](#) (led by Katie Harrington).

Our final sampling plan for 2022/2023 includes 11 species and 5 sites across the Falkland Islands ([Figure 1](#)).

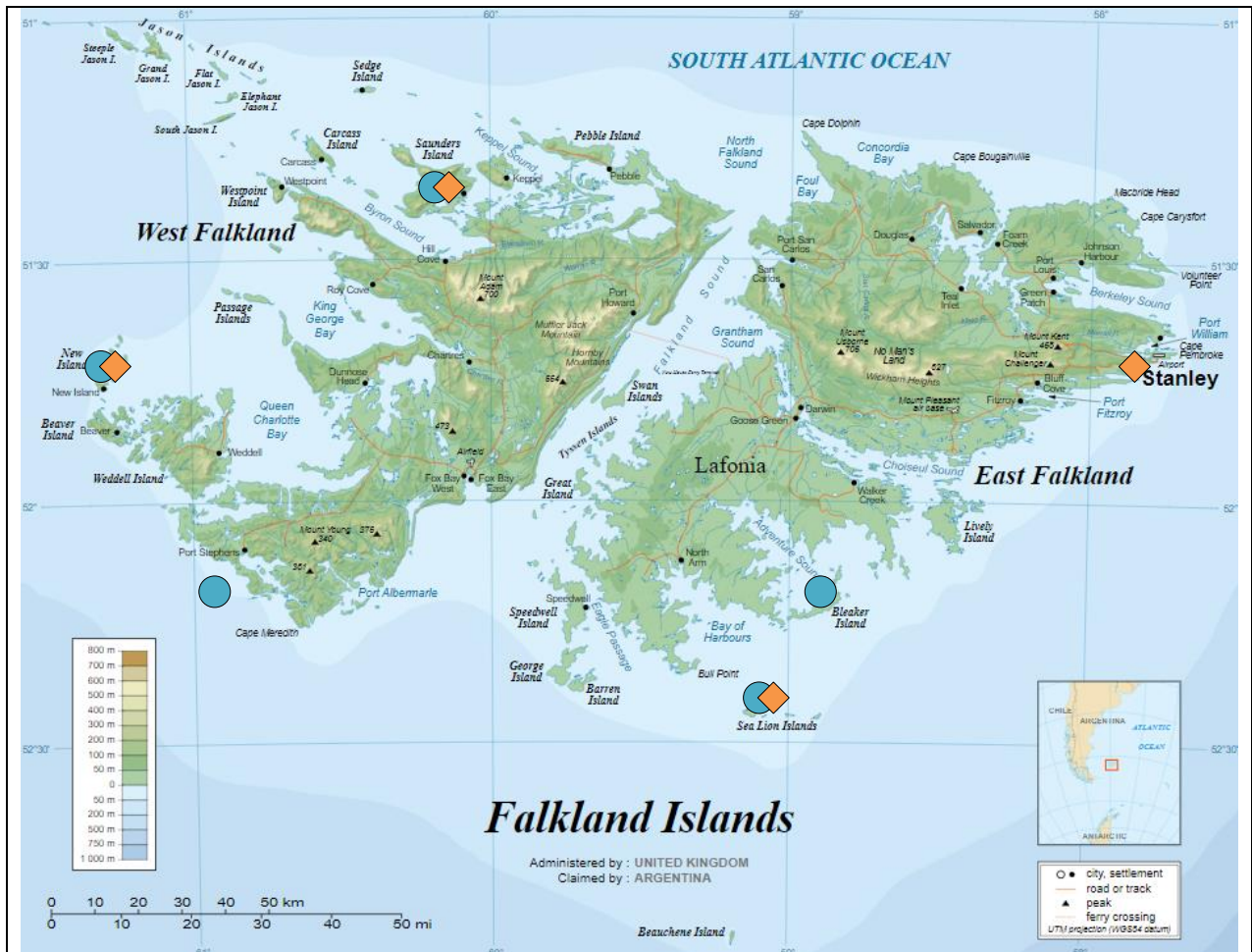


Figure 1. Epidemiological, ecological and anthropological data collection. This map shows sites where specific data collection campaigns have been organised for the 2022/2023 seabird breeding season. Blue dots represent ecological and epidemiological data collection sites; orange diamonds represent anthropological data collection site. Those sites were chosen to capture the diversity of ecosystems within the Falkland Islands (sites with and without farming activities, introduced rodents, or tourism). It completes long-term ecological data collection across the Falkland Islands led by Falklands Conservation.

Field campaign administration and logistics – Research permits (#R24.2022) and Ethical approval were granted by the Falkland Islands Government and University of Glasgow respectively. The 2022/2023 field team has been recruited (in collaboration with the CEFE and MARE partners). The needed visas and visitor permits have been granted. Accommodation and travel to field sites have been booked. **Scientific equipment** required for the 2022/2023 field campaign is now on-site in the Falkland Islands.

Infectious disease outbreak preparedness – In light of the avian influenza epidemic unfolding in the Northern Hemisphere, the scientific community is on **high alert regarding a potential influenza in the Southern Hemisphere** (Dewar et al. 2022; **Appendix 2**), notably in the Falkland Islands and other Important Bird Areas within the United Kingdom Overseas Territories. To best prepare for a potential outbreak, our team has developed **modified research protocols*** to ensure safe fieldwork (for both the staff and wildlife), while allowing us to collect critical data to understand how the pathogen spreads and its impact on wild populations. Finally, **additional funding** was requested from the British Bird Charitable Trust (pending) for a field sequencer to enable on-site genetic characterisation of the pathogen, if an outbreak occurred.

The field campaign started on October 12, 2022.

2. Improved disease surveillance and response system via increased local engagement and capacity and revised protocols (Output 4)

2.1. Avian influenza preparedness

Besides getting our team ready for a potential avian influenza outbreak in the Falkland Islands, we have worked on a series of workshops, publications and other outreach material to (1) increase awareness of the risks posed by avian influenza and how to prevent its introduction to seabird colonies of the Southern Hemisphere, and (2) share knowledge, initiate collaborations and coordinate efforts across groups of experts:

- A **workshop** on *Surveillance and monitoring responses to Highly Pathogenic Avian Influenza* (**Appendix 4**) aiming at **connecting groups within the seabirder community, and connecting the seabirder community with infectious disease experts**. The workshop, organised as part of the International Seabird Group Conference, gathered about 50 in-person attendees, representing many international academic, governmental and conservation institutions. To include people who could attend the workshop in-person, we created a mailing list to share the workshop material (available at <https://doi.org/10.17605/osf.io/u472g>), in addition to future updates on the avian influenza situation; more than 125 people signed from Ascension Island Government, BirdLife International, Royal Society for the Protection of Birds, Joint Nature Conservation Council, etc. The workshop material was also shared on Twitter (posts seen > 20,000 times and shared up to 200 times) and YouTube (videos seen up to 300 times), generating lots of engagement. This workshop also represents a foundation for the one organized by the Joint Nature Conservation Council in November 2022 on *Highly Pathogenic Avian Influenza in the United Kingdom*.
- The workshop led to a **publication targeting the international seabirder community** and proposing a path forward for the seabirder community to better prepare to future potential infectious disease outbreaks (**Appendix 2**).
- Together with other members of the Wildlife Health Monitoring Working Group of the Scientific Committee for Antarctic Research, we published a **practical guide for operators interacting with wildlife in the Southern Ocean** (Dewar et al. 2022; **Appendix 2**).
- With local partners within the Falkland Islands, we are developing enhanced biosecurity guidelines. This notably includes **practical recommendations* regarding equipment** for scientists working in proximity of seabird colonies and other visitors of the Falkland Islands.

2.2. Connecting the Falkland Islands community with infectious disease surveillance and response

Project visibility – We have designed the **general framework for communication** around the project activities and community engagement. This includes a draft of the website content, and a planning for talks and workshops. To ensure maximal visibility, we set up two **social media** account (URL reserved, content to be published) for the *Falklands Wildlife Health Initiative*:

- Facebook, which is widely used by the Falkland Islands community:
<https://www.facebook.com/profile.php?id=100087032546192>
- Twitter, which is widely used by the international seabird community:
<https://twitter.com/FIWildHealth>

Improvement of community involvement through anthropological survey – We have established a new collaboration with the Social Anthropology Laboratory (CNRS, France). This new component of the project is led by PhD student Keltoum Boumedjane and funded by CNRS (France). It includes a field survey (**Figure 1**) aimed at understanding practical aspects of people's engagement into biosecurity, such as personal and professional motivations, most used communication channels, etc.

* These documents are still being reviewed by collaborators and will be published on the project website when finalized.

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.

We do not have any problem to report. The **avian influenza epidemic** that has been affecting seabird populations in the Northern Hemisphere was not expected at the time of the proposal redaction. As mentioned above, our team has responded through (1) preparation for a potential outbreak in the Falkland Islands, and (2) communication around avian influenza. At the stage, there has been no sign of outbreak, and **we do not expect any impact on the budget or timetable.**

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: Yes/No

Formal Change Request submitted: Yes/No

Received confirmation of change acceptance Yes/No

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?

A response to the award letter is available in [Appendix 5](#).

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

Appendix 1. Project timetable.

	Activity	Year 1 (22/23)			Year 2 (23/24)				Year 3 (24/25)
		Q2	Q3*	Q4*	Q1	Q2	Q3*	Q4*	Q1
Output 1	Database on potential pathogen detection and quantification in the seabirds of the FI								
1.1	Census of banked samples (expected n = 1462)	Done							
1.2	Sample collection in the field (expected n = 750 in year 1 and n = 250 in year 2)								
1.3	Immunological analyses of all the samples for all the infectious agents								
1.4	PCR analyses of the samples collected in sites with antibody-positive individuals (based on results of activity 1.2).								
1.5	Database update with samples from year 2								
Output 2	Increased knowledge of epidemiological dynamics in the FI based on the mapping of potential pathogen occurrence across species, space and time								
2.1	Cleaning and mapping of the immunological and PCR data								
2.2	Estimation of infectious agent incidence across species, space and time by integrating immunological and PCR data								
2.3	Redaction of the report and publication presenting the patterns of infectious agent incidence across species, space and time								
2.4	Analyses update with results from samples from year 2								
Output 3	Increased knowledge of the likely drivers and consequences of pathogen dynamics in the system								
3.1	Ecological data compilation and cleaning.								
3.2	Statistical analyses linking infectious agent incidence to demographic dynamics.								
3.3	Statistical analyses linking host community composition to infectious agent incidence.								

	Activity	Year 1 (22/23)			Year 2 (23/24)				Year 3 (24/25)
		Q2	Q3*	Q4*	Q1	Q2	Q3*	Q4*	Q1
3.4	Statistical analyses linking host ecological traits to infectious agent incidence.								
3.5	Modelling of the relationship between host connectivity to infectious agent incidence.								
3.6	Redaction of the report and publication presenting the associations between ecological conditions and infectious agent incidence								
Output 4	Improved disease surveillance and response system via increased local engagement and capacity and revised protocols								
4.1	Result synthesis and surveillance protocol redaction								
4.2	Revision of the procedure for unusual observation reporting								
4.3	Coordination of the protocol with the Wildlife Health Monitoring Group of the Scientific Committee for Antarctic Research								
4.4	Outreach material production	Done							
4.5	Public talk organization and delivery								
4.6	Workshop organization and delivery								
4.7	Synthesis of the project products								

* Period when most of the project team will be present in the FI (Q3-Q4)