British Indian Ocean Territory Administration

Darwin Plus Main & Strategic: Annual Report

To be completed with reference to the "Project Reporting Information Note" (https://darwinplus.org.uk/resources/information-notes)

It is expected that this report will be a **maximum of 20 pages** in length, excluding annexes)

Submission Deadline: 30th April 2025

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

4. Darwin Plus Project Information

Scheme (Main or Strategic)	Main
Project reference	DPLUS209
Project title	Tracking terns for conservation in BIOT
Territory(ies)	BIOT
Lead Organisation	Heriot-Watt University
Project partner(s)	BIOT Administration
Darwin Plus grant value	£307,729.03
Start/end dates of project	05/07/2024 -
Reporting period (e.g. Apr 2024-Mar 2025) and number (e.g. Annual Report 1, 2)	June 2024 – July 2025
Project Leader name	Stephen Votier
Project website/blog/social media	iNaturalist site for collating seabird diet information: https://www.inaturalist.org/projects/terns-on-diego-garcia
Report author(s) and date	Stephen Votier/Hannah Wood

1. Project summary

Our project is designed to address a significant knowledge gap the breeding and feeding ecology of poorly studied seabirds (terns) in the Chagos Archipelago – these birds being of importance because of their long-term global declines and because of their valuable role fertilising coral reefs to improve their function and resilience to climate change. Moreover, by engaging with military and civilian personnel based on Diego Garcia to undertake monitoring, we will endeavour to create a sustainable long-term citizen-science project.

2. Project stakeholders/partners

Fieldwork in Diego Garcia would not be possible with support of our project partners, the BIOT Administration. They have provided guidance in terms of the following key aspects of our work:

- Logistics and planning in the field, including completing the necessary paperwork to conduct research in this sensitive location.
- Liaison and communications with stakeholders on island i.e. UK military, US military and Pilipino civilian community.
- Support from the Environmental Officers (EOs) on island in conducting monitoring and developing methodologies.

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There have been some challenges, however. We initially discussed with BIOT Administration about seabird monitoring on Diego Garcia becoming part of the regular biodiversity work on island conducted by the EOs. However, this proved to be problematic because of issues with workload and also during the sovereignty negotiations. We are in discussions with the BIOT Administration to develop a long-term monitoring plan, including all stakeholders.

3. Project progress

3.1 Progress in carrying out project Activities

Output 1. Data collection of tern breeding biology on Diego Garcia
Action 1.1. Plan and execute fieldwork expeditions and stakeholder meetings in Diego Garcia
Action 1.2. Collect and map data on tern breeding distribution in Downtown DG
Action 1.3. Collect and map data on tern roost sites in Downtown DG
Action 1.4. Quantify tern on breeding population size by month and by year
Action 1.5. Collect data on tern breeding tern breeding success using standard methods

Two fieldwork campaigns in Diego Garcia (October/November 2024 and April/May 2025, see Expedition Applications and reports in Annex 4) were led by Hannah Wood who was able to commence all activities 1.1 to 1.5, inclusive.
Stakeholder events comprised meetings with the Environment Officers, UK Military, US Military and the civilian support staff on the island. During these visits tern breeding sites and roosts were mapped and protocol established for routine data collection led by the EOs but with the assistance of guided walks to engage more widely.
Routine monitoring presented some challenges for the EOs because of workload. To try and address this we deployed 15 trail cameras on around 25 nests in Downtown Diego Garcia. Initial trials proved effective (and revealed the presence of nest predation by cats, see Annex 4).

Output 2. Data on tern diet composition
Action 2.1. Take digital images of prey items brought to the nest by breeding terns and upload to Zooniverse
Action 2.2. Collate digital images from stakeholders of prey items brought to the nest by breeding terns which have been uploaded to Zooniverse
Action 2.3. Identify fish images to lowest possible taxon
Action 2.4. Measure fish in relation to bill length

Via a combination of the two fieldwork campaigns and via citizen science engagement we have collated ~50 images of terns carrying prey items. Some of these can be found on [redacted]We have begun identifying these to the lowest possible taxon and have identified a number of flying fish and squid. We have not formalised identification and measurements until we have a better idea of the number of images likely to be collected.

Output 3. Spatial information on tern foraging distribution and habitat choice
Action 3.1. Catch and deploy tags on breeding terns
Action 3.2. Remotely download movement data
Action 3.3. Plot species-specific at-sea distribution and model habitat choice
Action 3.4. Use outputs from 3.3. to plot tern at-sea distribution based on remotely-sensed environmental conditions

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We have not begun tern tracking yet but instead have explored feasibility and begun planning. In the first instance we have established that catching birds at night is highly effective with minimal disturbance. We have also sourced appropriate tags for tern deployment (the picofix from Pathtrack [redacted] This work will likely take place towards the end of 2025.

Output 4. Increased engagement from the BIOT community in seabird conservation research
Action 4.1. Establish regular monitoring walks in conjunction with EOs and monitoring numbers attending
Action 4.2. Conduct regular outreach via presentations and bird catching demonstrations and monitor numbers
Action 4.3. Add tern monitoring into long-term EO roles in BIOT.
During Hannah Wood's two field trips to the island a number of public outreach events have been conducted including; two presentations about native seabirds in the archipelago and the work of this research project (one per trip, see copies in Annex 4), two interviews on the local radio station (one per trip), six guided walks with both members of the military and civilians, and bird catching trials with civilian support staff. We continue to work with the EOs and the military to develop and encourage further involvement of the BIOT community in seabird monitoring and research through photo submissions and nest monitoring. During the latest research trip, the project was supported and promoted by local leaders of the US military to encourage participation by personnel in local conservation efforts.

Output 5. Improved management strategy for seabird conservation in BIOT
Action 5.1. Provide guidance to the BIOT Administration on tern conservation in Downtown Diego Garcia
Action 5.2. Quantify guano production and potential benefits for reefs locally and beyond.
Action 5.3. Encourage tern monitoring in Downtown DG to become a part of standard monitoring, while looking for citizen champions to have their involvement.
We have provided clear guidance to the BIOT Administration on standardised seabird monitoring techniques (see Annex 4), including in-field demonstrations. However, there has been little or no monitoring since the PDRA left the island, presumably because of the demands to the job faced by the EOs. This is therefore an area we need to resolve and are in ongoing discussions about this with BIOTA.

3.2 Progress towards project Outputs

Output 1. Data collection of tern breeding biology on Diego Garcia
We are already developing a better understanding of tern breeding biology on Diego Garcia and we are confident that this will only increase throughout the project duration. The process is incremental but non-linear - we expect knowledge acquisition to accelerate throughout the life of the project. In addition to in-person monitoring we have adapted the monitoring methodology to include the use of camera traps. These devices have been deployed at strategic locations and the images will supplement the monitoring data collected by the PDRA and volunteers.

Output 2. Data on tern diet composition
It is clear from the digital images already collected that we can use this photographic method to improve our knowledge of tern diet composition. This is less effective for common noddies as they tend to carry food in their proventriculus and not their bill. However, we plan to take some guano samples for DNA metabarcoding to infer diet this way (an approach which has been effective across a wide range of seabird species).

Output 3. Spatial information on tern foraging distribution and habitat choice

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We have not progressed in this regard - this hinges on the deployment and data download of bio-logging devices, which is anticipated later this year. Suitable tracking devices have been identified and attachment options are being assessed.

Output 4. Increased engagement from the BIOT community in seabird conservation research
We have already seen some uptake including attendance at workshops, guided walks and via the online image submission site https://www.inaturalist.org/projects/terns-on-diego-garcia.

Output 5. Improved management strategy for seabird conservation in BIOT
It is early to make any assessment on this output but it is clear however that our project has led to increased discussion surrounding the inclusion of seabird monitoring and conservation.

3.3 Progress towards the project Outcome

Outcome: Development of an effective seabird monitoring programme on Diego Garcia and engagement with island workers to improve conservation engagement and tropical seabird biodiversity

We have made steady progress towards the project Outcome. Each of the outputs is progressing, to various degrees and we do not foresee major hurdles to achieving the Outcome by the end of funding.

3.4 Monitoring of assumptions

Assumption 1: Seabird guano enhancement of coral reef ecosystems based on models in Graham et al. (2018) is representative of the situation on DG.

Comments: We have no reason to suspect that anything has changed in this regard. However, we note that pathways of nutrient transfer are poorly known in Diego Garcia.

4. Project support to environmental and/or climate outcomes in the UKOTs

It is early in the project, but we hope that seabirds will become more clearly embedded within the Chagos Conservation Management Plan. For example, we are hoping to include seabird monitoring in DownTown Diego Garcia as a core activity conducted by the on-site Environment Officers. Additionally, we continue to offer guidance on the management of seabird breeding areas where there is overlap, interaction and/or conflict with residents.

Ultimately healthy seabird communities will have wide reaching benefits for coral reef ecosystems via nutrient deposition.

5. Gender Equality and Social Inclusion (GESI)

GESI Scale	Description	Put X where you think your project is on the scale
Not yet sensitive	The GESI context may have been considered but the project isn't quite meeting the requirements of a 'sensitive' approach	

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Sensitive	The GESI context has been considered and project activities take this into account in their design and implementation. The project addresses basic needs and vulnerabilities of women and marginalised groups and the project will not contribute to or create further inequalities.	X
Empowering	The project has all the characteristics of a 'sensitive' approach whilst also increasing equal access to assets, resources and capabilities for women and marginalised groups	
Transformative	The project has all the characteristics of an 'empowering' approach whilst also addressing unequal power relationships and seeking institutional and societal change	

Discussion among the PI, PDRA and project partners ZSL and BIOTA have considered GESI during design and implementation. We have considered the challenge of women working in a male-dominated environment on Diego Garcia and the need to avoid loan working, wherever possible.

6. Monitoring and evaluation

Our monitoring systems are relatively straightforwardly split in two. First, it will be evidenced by the effective delivery of data on tern breeding biology, diet and movement ecology by drafting reports or publishing papers. Second, evaluation of the efficacy of increased engagement in seabird conservation research and developing a more effective seabird conservation strategy will be achieved via ongoing discussions with the BIOTA team (including the EOs) and also discussions about the Chagos Management Plan.

7. Lessons learnt

Fieldwork campaigns were successful, but this was not a great surprise given the team's experience of working in the Chagos. Nevertheless, we could benefit from a larger field research team to generate a greater presence on-island and having longer stays on-island would improve this. I don't think there is much we can do to change this - it would require a change in the workplan and budget, but suffice to say the project would be more effective if better resourced financially and in terms of experienced fieldworkers.

We found problems regarding uptake of seabird monitoring by the EOs, despite the process being simplified and the PDRA guiding them through the practicalities, there was little or no monitoring in our absence. It is difficult to unpick exactly the reason why, but it may well relate to the EOs workload, sovereignty discussions or a combination of both of these non-independent processes. We will discuss this with BIOTA - there are new EOs due in post soon which might present an opportunity to integrate seabird monitoring as a standard component of the role from the outset.

8. Actions taken in response to previous reviews (if applicable)

N/A

9. Risk Management

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We did not experience any new fiduciary, safeguarding or delivery chain issues. However, we continue to be aware of the escalation of tensions between Israel and the USA with Yemen and Iran which has led to some increased risk in fieldwork on Diego Garcia as well as transit via military facilities in Bahrain. Travel advice continues to be monitored in line with past-precedence and the project design has not needed to change.

10. Scalability and durability

Stakeholder awareness of project activity has been facilitated through stakeholders meetings, guided walks, data collection demonstrations, publicity campaigns and public outreach events such as presentations and talks. Environment Officers employed by the Foreign, Commonwealth and Development Office have been involved since the early stages of project development and we will continue to develop this relationship with the newly appointed EOs when they begin their roles. The long-term monitoring of terns on Diego Gracia can provide valuable information to support the BIOT Administration's Interim Conservation Management Framework. The time-cost of conducting monitoring has been discussed with EOs and a suitable frequency and duration of monitoring sessions was agreed upon. The steps of the methodology and data submission have been discussed and a protocol has been produced for the EOs and volunteers.

Meetings with the US Military Commanding Officer on Diego Garcia have resulted in the adoption of our project within an existing volunteering scheme for military personnel ("Defending Paradise"). With support from local community leaders we are developing protocols to ensure that interested individuals are able to contribute to the project via a number of ways.

Financial costs have been discussed but we do not expect there to be any costs to volunteers or other stakeholders other than a small time commitment. Through the Defending Paradise volunteer scheme and out i-naturalist photo submission page, individuals are able to collect rewards or prizes for contributing to the project (eg. t-shirts) whilst also gaining experience in conservation research.

We have received feedback from participants in guided walks, and public talk-attendees that learning about local seabirds has improved their opinion and interest in them. Negative attitudes about seabird presence persist, but we hope that our continued presence and outreach efforts will continue to improve the perceived value of local wildlife.

Ongoing discussion with BIOTA is at the core of establishing a sustained legacy in terms of biodiversity monitoring.

11. Darwin Plus identity

We have used the Darwin Plus logo during public meetings on Diego Garcia, during which time it was made very clear that this was a discrete project to wider seabird research in the archipelago.

Given their increasingly political focus and questionable content we have moved away from social media channels.

12. Safeguarding

[redacted]

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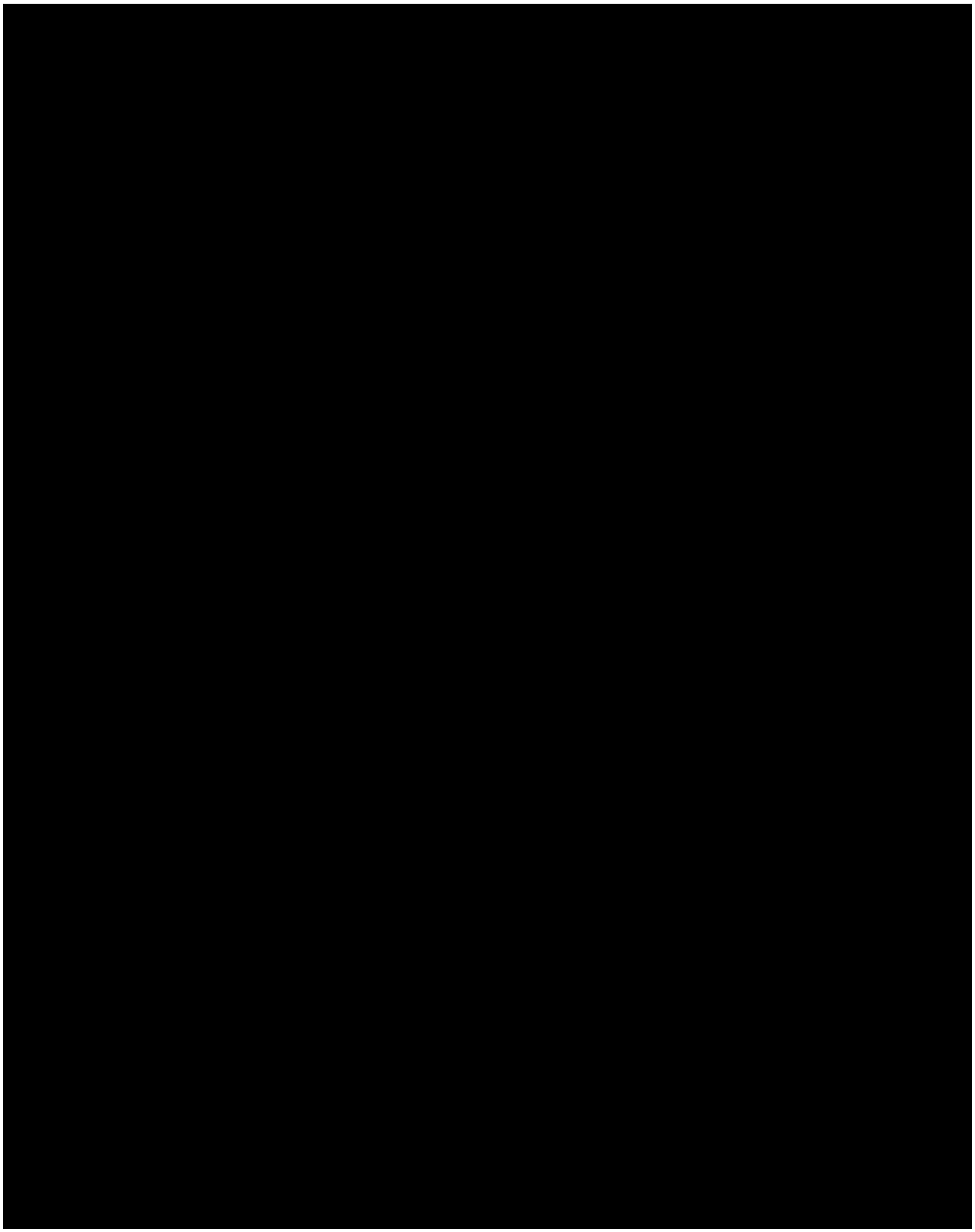

13. Project expenditure

Table 1: Project expenditure <u>during the reporting period</u> (1 April 2024 – 31 March 2025)

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Project spend (indicative) i this financial year	2024/25 D Grant (£)	202/25 Tota actual D Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs	[redacted]	[redacted]	[redacted]	[redacted]
Consultancy costs		-		
Overhead Costs		-		
Travel and subsistence		-		
Operating Costs		-		
Capital items		-		
Others (Please specify) costs are a combination of trave & subsistence for two field campaigns, plus kit including optics and trail cameras.	[redacted]	[redacted]	[redacted]	
TOTAL		**112,340.45**		

Table 2: Project mobilised or matched funding during the reporting period (1 April 2024 – 31 March 2025)

	Secured to date	Expected by end of project	Sources
Matched funding leveraged by the partners to deliver the project (£)	[redacted]	[redacted]	
Total additional finance mobilised for new activities occurring outside of the project, building on evidence, best practices and the project (£)	Nil	-	-

6. Checklist for submission

	Check
Different reporting templates have different questions, and it is important you use the correct one. Have you checked you have used the **correct template** (checking fund, scheme, type of report (i.e. Annual or Final), and year) and **deleted the blue guidance text** before submission?	X
Is the report less than 10MB? If so, please email to BCF-Reports@niras.com putting the project number in the Subject line.	X
Is your report more than 10MB? If so, please consider the best way to submit. One zipped file, or a download option, is recommended. We can work with most online options and will be in touch if we have a problem accessing material. If unsure, please discuss with BCF-Reports@niras.com about the best way to deliver the report, putting the project number in the Subject line.	
Have you included means of verification? You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	
Have you provided an updated risk register? If you have an existing risk register you should provide an updated version alongside your report. If your project was funded prior to this being a requirement, you are encourage to develop a risk register.	
If you are submitting photos for publicity purposes, do these meet the outlined requirements (see section 15)?	
Have you involved your partners in preparation of the report and named the main contributors	x
Have you completed the Project Expenditure table fully?	
Do not include claim forms or other communications with this report.	