

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 2023

Project reference	DPLUS184
Project title	Mitigating the impacts of climate change on sea turtle populations
Country(ies)/territory(ies)	Cayman Islands
Lead partner	Cayman Islands Department of Environment
Partner(s)	University of Exeter
Project leader	Jane Hardwick and Joe Roche
Report date and number (e.g. HYR1)	October 2023 HYR1
Project website/blog/social media	@doecayman (Instagram), Cayman Islands Department of Environment (Facebook), doe.gov.ky (website)

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).

Although we are not looking for specific reporting against your indicators, please use this opportunity to consider the appropriateness of your M&E systems (are your indicators still relevant, can you report against any Standard Indicators, do your assumptions still hold true?). The guidance can be found on the resources page of the relevant fund website.

Since the start of the project in April 2023 we are pleased to report the recruitment of field staff and a post-doctoral researcher (**output 1.1**) and rapid progress with our data collection in line with achieving our other research outputs.

Our project has two key research aims, 1, to identify current and future sex ratios of sea turtle hatchlings and 2, to assess how sea level rise and storm surge will impact sea turtle nesting habitat in the future.

Procurement of necessary equipment was carried out in the first month of the project, allowing for fieldwork to begin promptly at the start of the turtle nesting season in May. In addition to 100 temperature loggers purchased from BCF funding as outlined in our application, the lead partner (Cayman Islands Department of Environment) funded the purchase of 100 additional loggers. This was over and above that planned but allowed us to do robust monitoring of control site temperatures whilst also targeting large samples of nests for *in situ* monitoring in both of the main sea turtle species.

For research surrounding sex ratio predictions (contributing to **outputs 1.0, 1.4, 2.0, 2.3 and 2.4**), throughout the nesting season (May – present), a total of 152 temperature loggers were placed in *in-situ* turtle nests throughout Grand Cayman (N = 66 for loggerhead *Caretta caretta* nests and N = 86 for green turtle *Chelonia mydas* nests), surpassing our target of 50 temperature logger nests for each species. To date, all temperature loggers from *C. caretta*

nests have been retrieved, though we lost data from one nest due to it being kicked out of the nest by a turtle a few weeks into the incubation. For *C. mydas*, more than 90% have been retrieved. One was lost, also assumed to have been kicked out by another turtle, and 7 more nests are yet to hatch.

Therefore, the first season of temperature logger deployment has been highly successful.

In addition to the temperature loggers within nests, 75 control temperature loggers were also placed in sand. This includes 39 long term controls which were located on the two most important nesting beaches for each species on each of the three islands, at the average egg chamber depths for each species. Data from these loggers was downloaded approximately every three months, to prevent total loss if the temperature logger was washed out by high swells or disturbed by a nesting turtle. As these were only placed on select beaches, 36 short term controls were also deployed for 10 days in May in Grand Cayman across 9 nesting beaches (and this will be repeated in November) to identify temperature differences across north, south, east, and west facing beaches.

The temperature data retrieved will be used, along with 2024 data, to estimate current and future hatchling sex ratios in the face of global climate change. Results from naturally shaded and unshaded nests will also indicate if shading is an appropriate mitigation technique (contributing to **outputs 2.0, 2.2 and 2.5**).

In addition, we have also begun collecting imagery for our assessment of sea level rise and increased storminess, using drones and 3D photogrammetry to create elevation models of nesting beaches. Aerial imagery of the two main nesting beaches for both species has also been collected and in the next stage, specific nest locations will be mapped and sea level rise scenarios will be modelled until 2100 to explore the predicted impacts of climate change. To identify areas most vulnerable to storm surge, additional drone imagery was taken after Hurricane Idalia impacted nesting habitat in August. Further imagery will be collected next storm season (**outputs 1.0, 1.2, 1.3, 1.4, and 2.0**).

Moving forward, historic imagery will be assessed to identify erosion of nesting beaches and its effect on nesting densities over time (**output 1.2**).

Another area of key importance is involving and informing the public and stakeholders. During the first six months of the project, we have met with Government stakeholders, presented to our extensive network of community volunteers, issued a press release about the project, spoken on the radio, and carried out public turtle nest excavations for the Ministry of Sustainability and Climate Resiliency and for seven school groups, reaching more than 100 students (**output 3.2 and 3.3**). There are some groups still to target, such as the Central Planning Authority, and we are currently scheduling these meetings (**output 3.2**). We are also working with the National Trust on the creation of a new school curriculum on climate change impacts in the Cayman Islands, using sea turtles as a flagship species for sustainable coastal zone management. We have filmed a nest excavation for school education specifically, based for 2 different year groups (year 4 and year 7) and will continue to work with the National Trust throughout the project (**output 4.2**).

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 have recently submitted a change request form to move some funds from Capital Equipment to Operating Costs to ask for GBP to be moved to reimburse % of the cost of additional temperature loggers that the Lead Partner purchased.

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

Discussed with NIRAS: Yes/No

Formal Change Request submitted: Yes/No

Received confirmation of change acceptance Yes/No

Change request reference if known:

4a. Please confirm your actual spend in this financial year to date (i.e. from 1 April 2023 – 30 September 2023)

Actual spend: £

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 2024)?

Yes No Estimated underspend: £

4c. 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.

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

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

N/A

If you are a new project and you received feedback comments that requested a response, 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.

All new projects (excluding Darwin Plus Fellowships and IWT Challenge Fund Evidence projects) should submit their Risk Register with this report if they have not already done so.

Please note: Any planned modifications to your project schedule/workplan can be discussed in this report but **should also be raised with NIRAS 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**