Darwin Plus Main: 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 2024

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

Darwin Plus Project Information

Project reference	DPLUS184
Project title	Mitigating the Impacts of Climate Change on Sea Turtle Populations
Territory(ies)	Cayman Islands
Lead Partner	Cayman Islands Department of Environment
Project partner(s)	Exeter University
Darwin Plus grant value	£396,989
Start/end dates of project	1st April 2023 – 31st March 2026
Reporting period (e.g. Apr 2023-Mar 2024) and number (e.g. Annual Report 1, 2)	1st April 2023 – 31st March 2024
Project Leader name	Jane [redacted] / Joseph [redacted]
Project website/blog/social media	@doecayman and @exetermarine (Instagram)
Report author(s) and date	Jane [redacted] Joseph [redacted], Alejandro [redacted], Liliana [redacted], Janice [redacted] Brendan [redacted] and Annette [redacted] 30th April 2024.

1. Project summary

The climate is changing at unprecedented rates, posing threats to both biodiversity and human welfare. Small islands are forecasted to face significant vulnerability to climate change due to their size, isolation, and relatively simple ecosystems. Nevertheless, these very characteristics render small islands perfect microcosms for comprehending and addressing climate change impacts.

The Cayman Islands are 3 inhabited islands located in the northwest of the Caribbean Sea (Grand Cayman, Little Cayman and Cayman Brac) (Figure 1). The islands are low lying and flat, making them extremely vulnerable to sea level rise and storm impacts. Climate change is considered one of the main threats to local biodiversity, including both terrestrial and marine ecosystems.

The Cayman Islands sea turtle populations are currently recovering after being reduced to near-extinction due to centuries of over-exploitation. However, while the threat of legal take has been removed and illegal take reduced, turtle populations are now facing new threats such as coastal development and potential effects posed by climate change.

Sea turtles are particularly vulnerable to climate change, with threats expected to affect all their life stages. Since they have temperature-dependent sex determination (TSD), in which the

offspring sex ratios are determined by the incubation temperatures, it is predicted that increases in incubation temperatures would eventually lead to a complete feminisation of populations.

Increased incubation temperatures are also expected to cause reductions to hatching success and hatchling output. Furthermore, it is expected that the frequency and intensity of extreme weather events will increase, which could cause nest inundation and the loss of important nesting habitats through coastal erosion. Additionally, sea level rise caused by climate change is expected to reduce the nesting area available for sea turtles.

This project aims to gain a better understanding of the aforementioned climate change impacts on sea turtle populations in the Cayman Islands and explore plausible mitigation methods to safeguard future populations. The outputs of this project will allow quantitative measures of potential impact and provide mitigation options, which can be incorporated into Cayman's conservation strategies and management plans. This locally-specific information is key to provide evidence to policy makers and galvanise action both within the islands and globally. The survival of turtles across the islands holds importance culturally, for tourism and for their ecological purpose in maintaining a thriving marine environment.

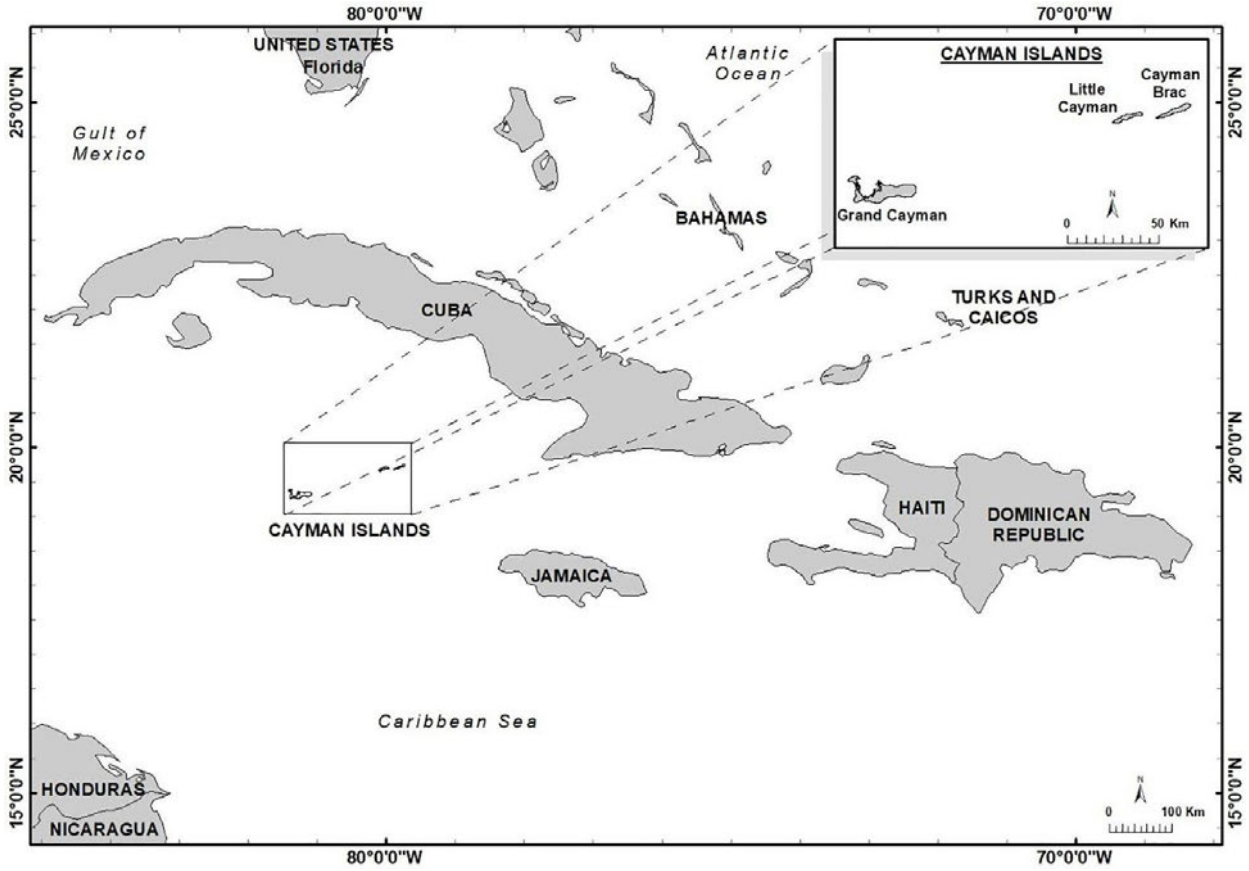

Figure 1: The location of the Cayman Islands in the Caribbean Sea.

2. Project stakeholders/partners

The project is led by the Cayman Islands Department of Environment (DoE) and was developed in partnership with researchers from the University of Exeter, in the UK, who have over 30 years' experience in the field and were involved in partnering with DoE to establish the turtle nest monitoring programme in the Cayman Islands in 1998. Therefore, the current project partnership builds on a long-term collaboration between DoE and the University of Exeter, and this relationship has continued to be productive over Y1 of the project.

In addition to leading research outputs, the University of Exeter is providing project management support (including drafting of reports) and the University of Exeter Project Managers and the appointed Postdoctoral Researcher have visited the Cayman Islands for team meetings, activities planning, methodological design and general project discussions. The Project Leaders and the Project Managers are in regular contact with both teams to discuss methodology and to monitor

progress and have developed effective partnerships that are likely to be sustained beyond the lifespan of this project.

At the start of the project, project partners and advisors Professor Brendan Godley and Annette Broderick from the University of Exeter, and Project Advisor Janice Blumenthal visited Cayman to initiate the project. During this time, meetings were held with the Director and Deputy Director of DoE to discuss and solidify research methods. Meetings took place between April 29th and May 6th 2023.

Throughout the first year of the project, we have also involved stakeholders and the public. This has included meeting with Government stakeholders, presenting to our extensive network of community volunteers, issuing a press release about the project, speaking on the radio, and carrying out public turtle nest excavations for school groups, the public and the Ministry of Sustainability and Climate Resiliency. We also assisted the National Trust for the Cayman Islands on the creation of a new school curriculum on climate change impacts in the Cayman Islands, using turtles as one of the case studies.

Fig.2 Preparing the first batch of temperature loggers with project partners (May 2023)

Fig 3. Volunteer meeting to discuss project plans (May 2023)

3. Project progress

3.1 Progress in carrying out project Activities

Progress is summarised below for all activities that were scheduled for Y1 according to the agreed implementation timetable, as well as activities planned for subsequent years for which there is early progress to be reported.

1.1. Recruitment and successful appointment of field leaders (Y1, Q1) and postdoctoral researcher (Y1, Q2) and field leaders with relevant experience

The recruitment process for field leaders, followed by the appointment of a postdoctoral researcher was successfully completed in Y1, Q2. This marks a significant advancement in our project's implementation and sets a strong foundation for the research endeavours ahead.

Rigorous selection criteria were applied to ensure that appointed field leaders possessed the necessary skills, qualifications, and fieldwork experience essential for executing the planned research activities effectively. The appointment of Postdoctoral Researcher (Y1, Q2) further strengthened our research team. The selection process prioritised candidates with exceptional

academic credentials, research proficiency, and a demonstrated commitment to interdisciplinary collaboration. The appointed postdoctoral researcher brings a wealth of expertise in sea turtle ecology and conservation, enhancing our capacity to address the outputs outlined in our project objectives.

1.2. Nesting patterns over time are examined using existing GIS mapping data and nesting habitat/nest inundation rates over time are examined to identify areas of high vulnerability

Using 25 years of empirical data (1999-2023), we described the temporal distribution of nesting for green turtles (*Chelonia mydas*) and loggerhead turtles (*Caretta caretta*) in the Cayman Islands. We found a significant advancement on the onset of nesting (the start of the nesting season) for loggerhead turtles, at a rate of 0.72 d yr−1 on average, but not for green turtles. The duration of the nesting season is getting longer for both species, which might be explained by the population growth observed over the last decade (Blumenthal *et al*. 2021).

Inundation data is currently being examined but analysis is not yet completed.

1.3. DTMs created to show historic and current beach profiles and SLR will be examined and modelled to predict future climate change will impact nesting beach habitat

Digital Terrain Models of four beaches that have the highest density of nesting for both green and loggerhead sea turtles were created. They were created at the beginning of the nesting season, following weather events that were likely to have had a significant impact on the beach, and at the end of the nesting season.

These models, along with models created at each time period and each year during the course of the project, will be used for all GIS-related outputs of the project.

An Unmanned Aerial Vehicle (UAV) and survey-grade gps equipment were utilised and each of the four beaches required one flight. Surveyed ground control points were collected to further enhance horizontal and vertical accuracies using a Trimble R8s GNSS receiver and Trimble TSC controller. For data processing we used Pix4D Mapper photogrammetry software to create an orthomosaic and Digital Surface Model (DSM) of each beach (Fig. 4).

For the GIS analysis and beach elevation model production we utilised ArcGIS Pro version 3.2.2. As the end goal of this stage of the project is to create a Digital Terrain Model (bare-ground model), ArcGIS Pro was first used to remove all areas that are unsuitable to be used for DTM production such as vegetation, buildings, water, beach chairs, etc. The data was resampled to a 1m resolution raster surface and each cell was subsequently converted to a point shapefile representing the cell centre. Points were removed when at a location unsuitable for DTM production and the resulting effective area points were assigned the elevation value of the DSM at that location. Points along the shoreline at 1m intervals were added to the effective area dataset. Large gaps of no data (>~250 m2) were ‘filled’ with a grid of points from LIDAR-derived elevation data acquired in 2021. Smaller no data gaps were filled by interpolation during the raster creation process. A triangulated irregular network (TIN) model was created to interpolate between all points and a resulting DTM at 1m resolution was created from the TIN. The DTM for each beach was then clipped to an effective area that included all possible nesting habitat within the beach system.

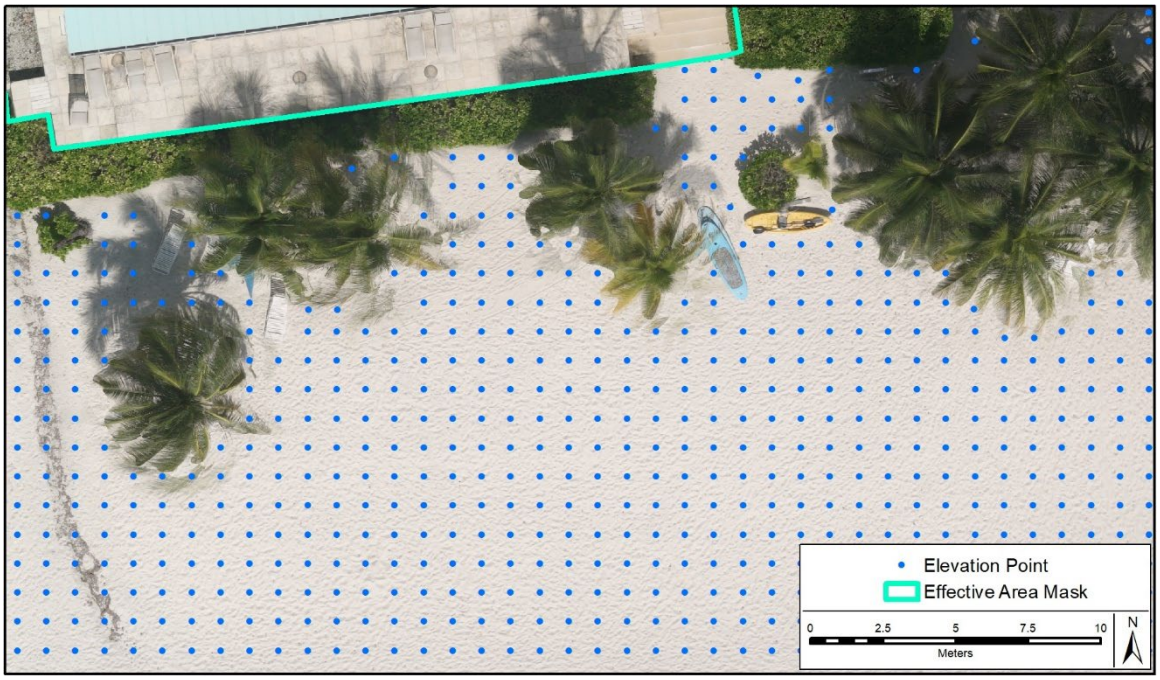

Fig.4 Map to show elevation points on beach as part of GIS analysis

2.3. Hatchling sex ratios are analysed using temperature logger data from at least 100 nests per season (50 C. mydas and 50 C. caretta nests) over 2 seasons

Throughout the first nesting season (May – October 2023), a total of 153 temperature loggers were placed in *in-situ* turtle nests in Grand Cayman (n = 65 for loggerhead turtle nests and n = 88 for green turtle nests), surpassing our target of 50 temperature logger nests for each species. In addition to the temperature loggers within nests, 75 control temperature loggers were also placed in sand on the most important nesting beaches for each species on each of the three islands, to record sand temperatures throughout the year. The data loggers within nests were retrieved upon hatching, and the data were processed and analysed for 55 loggerhead turtle nests and 66 green turtle nests. A small number of data loggers were unusable as some nests failed due to storm impacts, and some had malfunctioned or were displaced by other nesting turtles. Following an elaborate modelling approach (Monsinjon *et al*. 2019, 2022) (Fig. 5), we used the temperature within the nests, hatching size, incubation duration and hatching success to predict the sex ratio, considering the known relationship between constant temperature and sex ratios derived from laboratory studies.

Data from the multiple beaches have shown that Grand Cayman nests in 2023 were predicted to be producing highly female-skewed sex ratios for both species. The sex ratio (female proportion) predicted from nests with monitored temperature (n = 121) varied between 0.89 for green turtles (n = 66) and 0.83 for loggerhead turtles (n = 55).

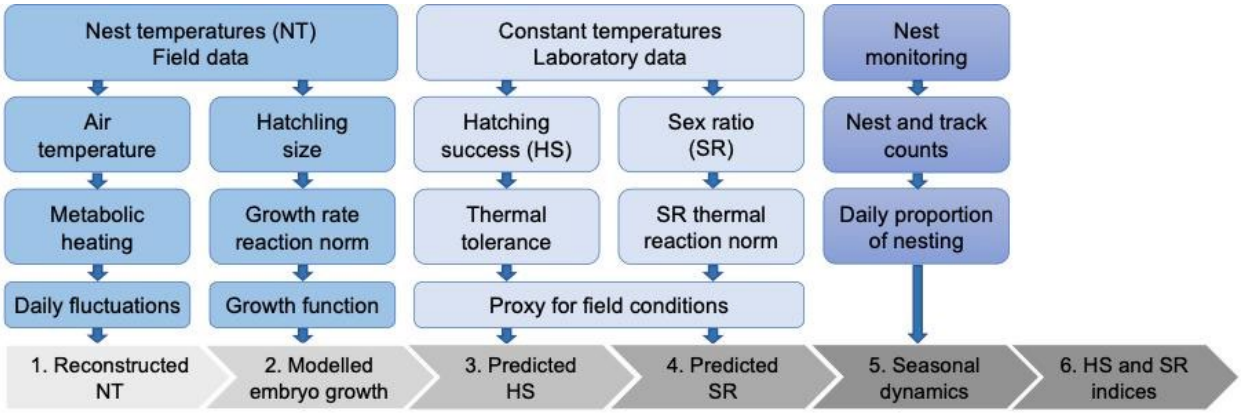

Fig. 5.Modeling framework (modified from Monsinjon et al. 2019).

2.4. Hatchling sex ratios are analysed alongside environment variables and climate projections to determine future scenarios

Data analysis is currently underway to predict the overall island-wise sex ratios, by extrapolating the results using a sample of monitored nests to make predictions for the entire nesting population. Data from the 2023 nesting season were used, alongside environmental variables and climate projections to predict sex ratios and hatchling success under different scenarios of climate change. Preliminary results have shown that for green turtles, sex ratios are currently highly female-biased, and potentially reaching concerning levels considering the predicted global warming scenarios. 2023 was a very hot year, with temperatures above the 30-year average throughout the nesting season, and thus the 2024 nesting season will contribute to more robust analysis.

2.5. Nest cooling techniques are evaluated, tested, and monitored

Current analysis using data from the 2023 nesting season is underway to assess whether natural shading had a significant impact on reducing nest temperatures, to determine if cooling experiments are necessary.

3.2. and 3.3. Meetings with and updating key stakeholders: National Conservation Council, Central Planning Authority, Development Control Board, Department of Planning, Cayman Islands Tourism Association, beachfront property owners' associations, Department of Tourism, and Presentation for Ministry of Sustainability and Climate Resiliency

Stakeholder involvement so far has included: a Department-wide Lunch and Learn presentation with the Ministry of Sustainability and Climate Resiliency (Y1, Q1), a public meeting and presentation at Cayman International School with 40 people in attendance (Y1 Q1) (Fig.3), a radio interview (Radio Cayman) about the project (Y1, Q1), engagement with the National Trust for the Cayman Islands in regards to creation of a new climate change school curriculum which utilises local examples of climate impacts (Fig. 6), including filming a turtle nest excavation and hatchling release (Y1, Q2), communication on the beaches with at least 1,857 members of the public whilst fieldwork was carried out (logged in our data collection app) (Y1, Q1 - Y1, Q3), frequent engagement with property owners (Y1, Q1 - Y1, Q3), production of a 3 part video on YouTube by The Phoenix Zone (Y1, Q2) (Table 2), a joint press release went out by Cayman Islands DoE and Exeter University in January 2023 to announce the project (Table 2) and there has been multiple social media posts for outreach about the project and the nesting season in general in 2023. For example, see project announcement post from January 2023 (Fig. 7).

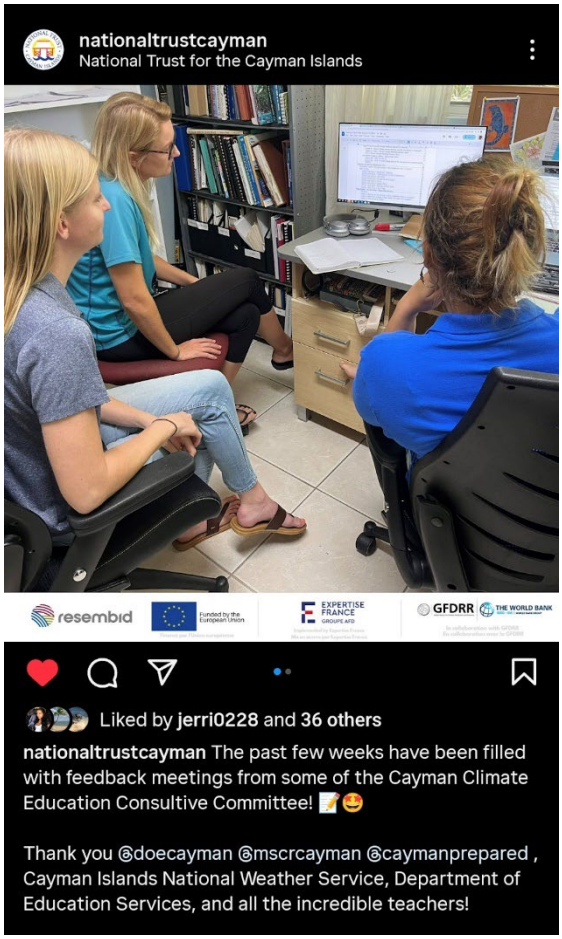

Fig. 6 National Trust meeting

Fig. 7 DoE project announcement

4.1. Production of resource packs for schools, preparation of presentation for schools and arranging school group field trips to observe how data are collected and why it is important

In Y1, we assisted with the National Trust school curriculum, which included climate change impacts on sea turtles. Six presentations were carried out at schools (Fig. 8) and eight excavations for school groups were conducted in Y1. Further activities for schools are planned for Y2 of the project.

Fig. 8 School presentation in 2023.

4.2. Creation of a dedicated page on the CIDoE website, CIDoE outreach to assist with regular social media posts, leaflet production and distribution, press releases, video production, and TV and radio interviews

Various video, radio and press releases have been published (see Table 2). The website page will be published during Y2.

4.3 Organising public meetings across each island each year to keep the public up to date on the research

Public meetings have taken place in Grand Cayman in Y1 Q1 and Y2 Q1 and are planned for the Sister Islands in Y2.

3.2 Progress towards project Outputs

Output 1. Cayman-specific predictions for climate-related turtle nesting beach loss and temperature effects on turtle nests produced and published, for use in mitigation (Output 2) and management (Output 3)

Work toward this output is progressing according to the timeframe and we expect that it will be delivered in full. A postdoctoral researcher (Y1, Q2) and field leaders (Y1, Q2) were successfully appointed. Analyses on the effects of temperature on sea turtle nests are underway, with the data collected in 2023 fully processed. The modelling of the relationship between nest temperatures and environmental variables is also currently underway and it will benefit from data collection in 2024 to produce more robust results and allow a better interpretation of their significance and conservation implications. Cayman-specific predictions for climate-related turtle nesting beach loss are also underway, based on collection of drone imagery before the nesting season, mid-season (post-storm), and after the nesting season, creation of Digital Terrain Models, and determination of elevations of GPS-recorded turtle nests for 2023 and for previous years. Modelling of sea level rise scenarios and storm impacts will take place in Y2.

Output 2. Evidence-based protocols developed, trialled, and implemented to reduce nest loss due to SLR and protect populations from reduced hatch success and skewed sex ratios.

This output is scheduled to commence in Y2, however preliminary data collection and analysis regarding the effect of nest shading on nest temperatures, sex ratios and hatching success have already been conducted and will serve as baseline for future work towards achieving this output.

Output 3. Policy framework developed for coastal management and sea turtle conservation which can be used for decision-making in the Cayman Islands and as a model for other OTs

Work is on track to produce results in Y3 for policy development.

Output 4. Results are widely shared through local and international outreach programme with sea turtles as a flagship species for sustainable coastal zone management

The majority of research results are in their preliminary stages and therefore too early to be shared; however, we have worked to raise local interest and ownership of the project through engagement of stakeholders, the public, and volunteers.

3.3 Progress towards the project Outcome

Outcome: Cayman Islands' turtles are safeguarded from habitat loss, skewed sex ratios, and reduced hatch success in the face of climate change, and serve as a flagship for enhanced coastal management

Progress toward the project outcome is on track as we successfully appointed project staff, overachieved in the first year of data collection through the purchase of 100 additional temperature loggers funded by DoE, conducted drone flights and carried out analysis which will facilitate the collection of additional data in Y2. This, in concert with the DoE's experience in public consultation, will facilitate safeguarding of the Cayman Islands sea turtle populations through evidence-based management efforts.

3.4 Monitoring of assumptions

Data loggers are deployed and sufficient high quality field data is collected to allow mapping and modelling

A total of 153 temperature loggers were deployed in turtle nests, exceeding our target of 100 loggers deployed during the first field season. In addition, 75 loggers were deployed as controls to monitor sand temperatures. A majority of loggers were retrieved and data successfully downloaded, resulting in very successful collection of field data for temperature modeling. Collection of drone data for habit mapping has also been highly successful.

Cayman Islands government decision-makers are willing to incorporate results into national policy

The applicant organisation (CIDoE) is directly responsible for the development of Sea Turtle Nest Monitoring Protocols and drafts conservation plans and reviews coastal development applications to assess environmental impacts under delegated authority from the Cayman Islands National Conservation Council.

No major disruption occurs during data collection, e.g., hurricanes that may impact biology and logistics

Tropical storm Idalia in August 2023 caused failure of 8 green turtle nests with temperature loggers in, which meant data was unusable, but all temperature loggers were recovered except for 1. Additionally 2 control temperature loggers were lost in sand. Nonetheless, a sufficient sample size was collected for analyses and crucial information was obtained to assess the impacts of storms of nest incubation temperatures and habitat loss – an important consideration in the face of potentially increasing extreme weather events.

A suitable candidate with experience needed for climate modelling applies and is available for the duration of the project

A highly-qualified candidate was recruited and began work on the project as scheduled.

Historic climate data and SLR data are obtained

We have obtained historic climate data from the Cayman Islands National weather service as well as sea surface temperatures and SLR data from NOAA and will be sourcing publically available international data.

Non-lethal indirect methods of estimating sex ratios and modeling future nest temperatures are sufficiently robust

Based on literature, these models are suitable for estimating hatchling sex ratios.

A large enough sample size is obtained to infer accurate sea turtle sex ratios for the Cayman Islands

Based on nest counts in recent years and the results of the first field season, the desired sample size should be obtained by the end of the project.

Effective interventions are identified which are viable under local conditions and within the current capacity of the CIDoE

We will prioritise strategies which require minimum intervention and maximal dividend per unit resource. The project has a strong educational component which will allow collaboration with beachfront property owners on low-cost strategies e.g. maintenance of native vegetation.

Policy makers are amenable to implementing change based on the outcome of the research

The Cayman Islands Department of Environment is the lead partner on this project and the Ministry of Sustainability and Climate Resiliency have made it a high priority to have a new climate change policy implemented.

Wider society, including schools are prepared to engage with the project

To date, schools and the Cayman Islands public have been highly engaged with the project.

International conferences persist, at least in online format

International Sea Turtle Symposia have been scheduled to take place in 2025 and 2026.

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

Sea turtles in the Cayman Islands continue to face threats from loss of habitat as a result of coastal development and the emerging threat of climate change.

The need for this work has been outlined in the recent CEFAS/UKCEH Climate Change Risk Assessment for the Cayman Islands which identified “disruption of turtle distribution and population dynamics" as one of the three highest rated climate change risks to the Cayman Islands, in terms of proximity and magnitude (medium agreement, medium evidence). Data collected in Y1 of this project will provide management-relevant information on profile changes, erosion, and flooding of nesting habitat and sex determination and survival of turtle hatchlings.

This will allow the Cayman Islands Species Action Plan for Marine Turtles and other relevant policy documents to be updated to include actionable steps to protect sea turtles from loss of habitat and other impacts of climate change, enabling effective reviews of coastal development applications by DoE and legally binding recommendations by the Cayman Islands National Conservation Council for the protection of critical sea turtle nesting habitat. Updates to the draft Sea Turtle Conservation Plan will be submitted to Cabinet for their review. This plan would tie into the Climate Change Policy, prioritised by the recently formed Ministry of Sustainability and Resiliency.

The project will assist the Cayman Islands Government in meeting some of its principles outlined in domestic legislation, draft Climate Change Policy (2011) and Environmental Charter (2001). Project results will also contribute to achieving the aims of the draft Cayman Islands Climate Change Policy 2023-2040, as one of its immediate priorities is to adopt and implement Conservation Plans for protected species impacted by climate change, in particular sea turtles. The activities outlined in this project will allow for the development of evidence-based protocols and policies to mitigate the impacts of climate change on sea turtle populations and prioritise coastal protection.

5. Gender Equality and Social Inclusion (GESI)

Please quantify the proportion of women on the Project Board[1].	55.5%
Please quantify the proportion of project partners that are led by women, or which	100%

[1] A Project Board has overall authority for the project, is accountable for its success or failure, and supports the senior project manager to successfully deliver the project.

have a senior leadership team consisting of at least 50% women[2].	

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	
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.	
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	X
Transformative	The project has all the characteristics of an 'empowering' approach whilst also addressing unequal power relationships and seeking institutional and societal change	

The DoE and UoE have demonstrated commitment to gender equality and social inclusion in our collaborative efforts. Notably, the Director of the Department of Environment, one of the project leaders, and the leader of the University of Exeter team are all female.

The project is led by the UK Overseas Territory partner, ensuring that it is designed to meet the specific needs identified by the Cayman Islands Government and that decisions are made based on local experience and priorities.

The lead partner organisation's adherence to the Gender Equality Law of 2011 ensures fair recruitment practices and equal remuneration for employees of all genders. The University of Exeter's awards, such as the Athena Swan Silver Award and Race Equality Charter Bronze award, further underscore our commitment to equality and being an equal opportunities employer.

Our efforts have included a focus on ensuring a diverse and inclusive interview process, with the recruitment of a postdoctoral researcher and three overseas field staff from middle-income Latin American countries, maintaining a gender balance of 3 females and 1 male. Additionally, efforts have been directed towards building capacity among Caymanians, including Department of Environment staff, interns, and volunteers.

Recognizing the importance of incorporating diverse perspectives in addressing climate change, we prioritise the inclusion of women and citizens of small island nations. By embracing these perspectives, we aim to ensure that our climate solutions are inclusive, equitable, and sustainable. Our commitment to inclusive engagement will persist in the advanced phases of the project, which will focus on consultation, outreach and policy development.

[2] Partners that have formal governance role in the project, and a formal relationship with the project that may involve staff costs and/or budget management responsibilities.

6. Monitoring and evaluation

Monitoring is through team meetings (of DoE staff and volunteers) held regularly during the fieldwork season, regular email contact between DoE and University of Exeter, steering group meetings held remotely, and in-person meetings at the beginning of the project (April 2023) and the beginning of Y2 (April 2024). Additionally, the Post-Doctoral Researcher visited the Cayman Islands in October 2023, facilitating her knowledge of the project environment and communication among the partners.

A number of key indicators show progress of the project: these include the appointment of key staff, completion of the first field season (with associated metrics such as number of temperature loggers deployed), initiation of analysis, and presentation of initial results. All of these have been outlined in the logical framework, which has allowed us to assess how the project is progressing.

The project has involved an initial year of intensive data collection, with more extensive stakeholder consultation and public education scheduled to take place in subsequent reporting periods.

Results from the project will be incorporated into DoE protocols and the Cayman Islands legal framework, ensuring that knowledge gained during the course of the project contributes to the project outcome.

7. Lessons learnt

To date, the project has progressed largely as planned and only small changes have been necessary to our field methods. For example, it was originally envisioned that project field technicians would place temperature loggers in all nests and excavate all nests that contained temperature loggers. This was unachievable due to an increase in the number of temperature loggers obtained for the project as well as high workload for field teams due to record nest numbers in 2023. This was overcome by training additional members of the DoE daytime turtle nesting beach monitoring field team in deployment and recovery of temperature loggers. This modification was successful, resulting in successful deployment and recovery of a large number of temperature loggers as well as capacity building for DoE staff and volunteers.

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

N/A. This is our first annual report.

9. Risk Management

N/A. no risks have arisen that were not considered.

10. Sustainability and legacy

This project is driven by the need to address what will become the most severe threat to the survival of sea turtles in the Cayman Islands. Our aim is to utilise research results to develop robust protocols and policies to assist in the long-term survival of these populations. Our exit strategy remains valid, with significant progress made in the collection of research data crucial for policy formulation. DoE staff have increased their capacity to collect sea turtle nest temperature data and mapping to evaluate vulnerability to climate change and the DoE is committed to identifying and adapting solutions which safeguard turtle populations. We have formed partnerships with stakeholder organisations such as the National Trust and there is already a high level of interest and engagement from the community which will assist in turning the results of this project into policy.

11. Darwin Plus identity

Press releases issued under the project have acknowledged the Darwin Plus. The logo has been included in press releases, social media, presentations, and it will be used for educational materials.

Darwin Plus is recognised as supporting a clear and cohesive project, evaluating and mitigating the impacts of climate change on sea turtle populations in the Cayman Islands, within the context of the successful DoE sea turtle monitoring program.

The Cayman Islands public is likely to be familiar with Darwin Plus due to other projects taking place here. We aim to continue to raise the profile through the duration of the project.

12. Safeguarding

Has your Safeguarding Policy been updated in the past 12 months?		No
Have any concerns been reported in the past 12 months		No
Does your project have a Safeguarding focal point?	Yes. Sonya [redacted] (HR and Finance Manager at DoE)	
Has the focal point attended any formal training in the last 12 months?	No	
What proportion (and number) of project staff have received formal training on Safeguarding?		Past: 7 of 9 = 77.78% [and number] Planned: 9 of 9 = 100% [and number]
Has there been any lessons learnt or challenges on Safeguarding in the past 12 months? Please ensure no sensitive data is included within responses. No safeguarding issues or concerns have arisen.		
Does the project have any developments or activities planned around Safeguarding in the coming 12 months? If so please specify. Continued training in safeguarding for project staff.		
Please describe any community sensitisation that has taken place over the past 12 months; include topics covered and number of participants. Recording number of people spoken to on beaches (~2000), volunteer meetings, podcast, outreach, signs, leaflets, volunteer group chats to keep them informed.		

Have there been any concerns around Health, Safety and Security of your project over the past year? If yes, please outline how this was resolved.

No.

13. Project expenditure

Table 1: Project expenditure during the reporting period (1 April 2023 – 31 March 2024)

Project spend (indicative) in this financial year	2023/24 D+ Grant (£)	2024/25 Total actual D+ Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs	[redacted]			Increased salary costs due to University of Exeter slightly uplifting salary grades.
Consultancy costs				
Overhead Costs				
Travel and subsistence				Underspent on T+S due to flight costs.
Operating Costs				
Capital items				
Others (Please specify)				
TOTAL	**108,563.00**	**108,563.0**		

Table 2: Project mobilised or matched funding during the reporting period (1 April 2023 – 31 March 2024)

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

14. Other comments on progress not covered elsewhere

15. OPTIONAL: Outstanding achievements or progress of your project so far (300-400 words maximum). This section may be used for publicity purposes.

I agree for the Biodiversity Challenge Funds to edit and use the following for various promotional purposes (please leave this line in to indicate your agreement to use any material you provide here).

During the first year of the project, we achieved significant milestones that underscore our commitment to monitoring and conserving marine turtle populations in the Cayman Islands. One notable achievement is the successful deployment of 153 temperature loggers in the first season of the project (88 in green turtle nests and 65 in loggerhead turtle nests; Fig. 9). This marks a substantial increase from our initial target of 100 temperature loggers placed in the first year.

From preliminary analysis conducted, we have found there to be significant predicted female-biased hatchling sex ratios across Cayman's beaches. Throughout the project we will continue to explore the variables most important to safeguarding future populations from the threat of rising temperatures.

Furthermore, we conducted comprehensive 3D photogrammetry of four key beaches. These surveys were conducted at the beginning and end of the nesting season, with an additional mapping session following a significant storm event. This detailed mapping initiative provides invaluable insights into the dynamic coastal landscape and its influence on nesting beaches. By capturing the beach morphology at various stages of the nesting season and in response to natural disturbances like storms, we enhance our understanding of the spatial dynamics crucial for effective conservation, planning and management.

The wealth of data gathered through temperature monitoring and beach mapping efforts enriches our understanding of nesting behaviours and habitat dynamics, contributing to informed conservation strategies. As we move forward, we remain committed to leveraging these accomplishments to drive meaningful change and enhance the resilience of marine turtle populations in our study areas.

Fig. 9. Placing a temperature logger into a green turtle nest during the egg-laying process.

File Type (Image / Video / Graphic)	File Name or File Location	Caption including description, country and credit	Social media accounts and websites to be tagged (leave blank if none)	Consent of subjects received (delete as necessary)
Image	Night Work_Green Turtle	Joe Roche placing a temperature logger into a green turtle egg clutch in Grand Cayman, Cayman Islands. Credit: Cayman Islands Government	@doecayman (Instagram)	Yes
Video	Green Turtle Laying Eggs	Temperature logger has been placed into the egg clutch as the Green turtle (Chelonia mydas) is laying eggs in Grand Cayman, Cayman Islands. Credit: Cayman Islands Government	@doecayman (Instagram	Yes

Annex 1: Report of progress and achievements against logframe for Financial Year 2023-2024

Project summary	Progress and Achievements April 2023 - March 2024	Actions required/planned for next period
Impact Mitigation of climate change impacts on sea turtle nesting populations in the Cayman Islands		
Outcome Cayman Islands' turtles are safeguarded from habitat loss, skewed sex ratios, and reduced hatch success in the face of climate change, and serve as a flagship for enhanced coastal management		
Outcome indicator 0.1 Baseline data collected and mapping and modeling completed to produce an evidence-based assessment of the effects of climate change on sea turtle nesting habitat availability, sex ratio, and hatch success in the Cayman Islands, including vulnerable areas and high priority beaches for protection (Y3 Q3).	The project is currently in the data collection phase and therefore it is relatively early to report against outcome level indicators. However, Y1 fieldwork and initial mapping and modelling has set a firm foundation for the project in Year 1.	Data collection and analysis will continue in Y2.
Outcome indicator 0.2 National Sea Turtle Nest Monitoring Protocols include tested Cayman-specific methods to mitigate climate threats (Y3 Q3), resulting in hatch success maintained above 65% and sex ratio stabilised at ±10% of the baseline identified through the project or at an optimal level determined through modeling (Y3 Q2).	We have begun to establish a baseline for sex ratio and hatch success, via data collection in Y1 of this project and analysis of data from the Cayman Islands DoE marine turtle monitoring programme (e.g. egg counts and hatch rates 1998 to present).	Data collection and analysis will continue in Y2.
Outcome indicator 0.3 Through a consultative process, the Cayman Islands Species Action Plan for Marine Turtles and other key turtle conservation and climate change policy documents are updated with actionable steps for the protection of Cayman Islands sea turtle populations from climate impacts (Y3 Q3).	Work toward policy outcomes is scheduled for Y3 Q3 of the project once all results are collated.	Via stakeholder engagement and collection of robust scientific data, we are setting a strong foundation for future policy making and management efforts.
Output 1. Cayman-specific predictions for climate-related turtle nesting beach loss and temperature effects on turtle nests produced and published, for use in mitigation (Output 2) and management (Output 3)		
Output indicator 1.1 3D DTMs produced, including estimated proportion of nests inundated/lost under various sea level rise	Digital Terrain Models (3D DTMs) have been created for key green and loggerhead turtle nesting beaches in Grand	In May 2024, we will commence collection of drone footage for the second year of the project.

(SLR) scenarios and increased storm activity/beach erosion, safe and vulnerable locations, and key habitats for protection (Y2 Q2).	Cayman, to be used in mapping and modelling efforts in the next phase of the project.	
Output indicator 1.2 Baseline hatchling sex ratios determined for the three islands across a selection of beaches (Y2 Q4).	Sex ratios have been estimated for both species for the 2023 nesting season however additional data must be collected to increase sample size and account for annual temperature variation.	Deployment of temperature loggers has commenced, which will allow estimates of sex ratios for the 2024 nesting season.
Output indicator 1.3 Models produced to predict how climate change scenarios may impact sex ratios and hatching success as well as to estimate optimal nest incubation temperatures to ensure population persistence (Y3 Q2).	Initial work has been done to develop climate change scenario models based on the results of Y1; these models will be refined and updated as further data are collected.	Data collection and analysis will continue in Y2.
Output indicator 1.4 An evaluation is produced of observed and predicted phenological and location shifts for turtle nesting, along with their consequences for mitigation and management (e.g. areas of beach/land for protection as refugia or male- producing beaches) (Y3 Q2).	Analysis of the temporal distribution of nesting has begun, utilising 25 years of DoE nesting data, and we have collected temperature data from nests and control sites across the three islands during Y1 of the project. Future analyses will investigate spatial distribution of nesting and identify potential management actions.	Data collection and analysis will continue in Y2.
Output 2. Evidence-based protocols developed, trialled, and implemented to reduce nest loss due to SLR and protect populations from reduced hatch success and skewed sex ratios		
Output indicator 2.1. As appropriate, at least two robust practical adaptation measures are developed to reduce nest loss and maintain appropriate nest temperature: these may include interventions such as relocation of nests from vulnerable beaches or manipulation of incubation temperatures via planting native vegetation, artificial shading or water sprinklers (Y3, Q3). Choice will be based on preliminary results from season 1 and further informed by season 2.	While this output is scheduled for Y3, Q3, data collection and analysis are well underway. These efforts will allow examination of the effects of nest shading and nest relocation on sex ratio and hatch success and will guide decision-making for this output.	Beginning this season, we will evaluate effects of shading on clutches relocated due to inundation threat.
Output indicator 2.2. Cayman Islands National Nesting Beach Monitoring Protocols are updated and Sea Turtle Climate Change Monitoring and Mitigation Protocols are created to include practical adaptation measures (e.g. criteria for nest relocation or shading of nests or indicators of when these interventions would be necessary in the future) (Y3 Q4).	Y1 data collection and analysis is complete and Y2 data collection has begun; therefore we are on track to complete these protocols by the end of the project.	Complete Y2 data collection and analysis.
Output indicator 2.3 Protocols are implemented, ensuring that hatch success remains above 65%, and sex ratios are maintained	As above, baseline data is being collected and analysis is underway.	Complete Y2 data collection and analysis.

at ±10% of the baseline identified through the project or at optimal levels based on population modelling (Y3 Q4).		
Output 3. Policy framework developed for coastal management and sea turtle conservation which can be used for decision-making in the Cayman Islands and as a model for other OTs.		
Output indicator 3.1 Consultation and engagement has taken place with key stakeholders and government decision-makers: National Conservation Council, Ministry of Sustainability and Climate Resiliency, Central Planning Authority, Development Control Board, Department of Planning, beachfront property owners' associations, Department of Tourism, including meetings in Y1, Q1, Y2, Q2 and Y3, Q4.	To date, meetings have taken place with the Ministry of Sustainability and Climate Resiliency, the National Trust for the Cayman Islands, school groups, members of the public, and volunteers. Other stakeholders have been engaged through social media, through nesting fieldwork and engaging with property owners. More extensive consultation is planned once initial data collection is complete, to guide management planning and implementation.	Schedule meetings with stakeholder groups that have not yet been consulted.
Output indicator 3.2 Cayman Islands Species Action Plan for Marine Turtles updated to include actionable steps to protect sea turtles from loss of nesting habitat and other impacts of climate change (Y3, Q3).	Scheduled for Y3 Q3.	Complete Y2 data collection and analysis.
Output indicator 3.3 Conservation Plan and Species Action Plan for Marine Turtles, and other relevant policy documents updated (Y3, Q4 or first statutory update of documents), enabling effective reviews of coastal development applications by the Cayman Islands Department of Environment (CIDoE) and legally binding recommendations by the Cayman Islands National Conservation Council for the protection of sea turtle critical habitat (NCC).	Scheduled for Y3 Q4 or first statutory update of document.	Complete Y2 data collection and analysis.
Output 4. Results are widely shared through local and international outreach programme with sea turtles as a flagship species for sustainable coastal zone management.		
Output indicator 4.1 School Outreach Campaign – teacher resource packs produced on sea turtles, climate change, and sustainable coastal development for primary and secondary schools (1 resource pack for primary schools (Y2 Q1), 1 resource pack for secondary school (Y2 Q1), at least 6 school presentations, at least 8 field events for schools (Y1 – 3).	We have partnered with the National Trust for the Cayman Islands to assist with creation of a new climate change curriculum for Cayman Islands schools, using sea turtles as a flagship species for sustainable coastal zone management. This includes filming project fieldwork, with information targeted at two different year groups. Six school presentations took place in Y1 and further educational efforts will be undertaken in the next phase of the project.	Schedule additional presentations and field events in Y2.

Output indicator 4.2 Media Outreach Campaign conducted to inform the public of climate-related threats to sea turtles and the necessity of sustainable coastal zone management and climate change response (Y1 – 3). At least 2 press releases per year (Y1,Q1; Y1;Q3; Y2,Q1; Y2;Q3; Y3, Q1; Y3;Q3).	A joint press release was released by DoE and Exeter University in January 2023 to announce the project and various social media posts have been published throughout the first year.	More press releases and social media scheduled for Y2.
Output indicator 4.3 A minimum of three public meetings (one on each island) held in Y1,Q2 to outline the aims of the project and gather public input and in Y3, Q3 to present results and gather feedback.	Volunteer meetings carried out in Y1.	Schedule public meetings for Y2.
4.4 Findings presented at 2 international conferences, including a regional OT conference (estimates Y2,Q2, Y3,Q2), and a minimum of 2 papers will be published from the study (Y2,Q3; Y3;Q2 3).	Data collection and analysis has commenced which will ultimately enable presentation and publication of results.	Complete Y2 data collection and analysis.

Annex 2: Project's full current logframe as presented in the application form (unless changes have been agreed)

Project summary	SMART Indicators	Means of verification	Important Assumptions
Impact: Mitigation of climate change impacts on sea turtle nesting populations in the Cayman Islands			
Outcome: Cayman Islands' turtles are safeguarded from habitat loss, skewed sex ratios, and reduced hatch success in the face of climate change, and serve as a flagship for enhanced coastal management	**0.1** Baseline data collected and mapping and modeling completed to produce an evidence-based assessment of the effects of climate change on sea turtle nesting habitat availability, sex ratio, and hatch success in the Cayman Islands, including vulnerable areas and high priority beaches for protection (Y3 Q3). **0.2** National Sea Turtle Nest Monitoring Protocols include tested Cayman-specific methods to mitigate climate threats (Y3 Q3), resulting in hatch success maintained above 65% and sex ratio stabilised at ±10% of the baseline identified through the project or	**0.1** Database of baseline data, digital terrain maps (DTMs) showing past and present nests, habitat loss model results and sex ratio model results. **0.2** Text of National Sea Turtle Nest Monitoring protocols. **0.3** Text of Cayman Islands Species Action Plan for Marine Turtles and other relevant policy documents, minutes of stakeholder and decision-maker meetings,	Data loggers are deployed and sufficient high quality field data is collected to allow mapping and modelling. CIDoE has an annual sea turtle monitoring programme which has been in continuous operation since 1998, minimising risks for data gathering. Cayman Islands government decision-makers are willing to incorporate results into national policy.

Project summary	SMART Indicators	Means of verification	Important Assumptions
	at an optimal level determined through modeling (Y3 Q2). **0.3** Through a consultative process, the Cayman Islands Species Action Plan for Marine Turtles and other key turtle conservation and climate change policy documents are updated with actionable steps for the protection of Cayman Islands sea turtle populations from climate impacts (Y3 Q3)	archive of media and outreach materials on the project website.	The applicant organisation (CIDoE) is directly responsible for the development of Sea Turtle Nest Monitoring Protocols and drafts conservation plans and reviews coastal development applications to assess environmental impacts under delegated authority from the Cayman Islands National Conservation Council. No major disruption occurs during data collection, e.g., hurricanes that may impact biology and logistics
Output 1 Cayman-specific predictions for climate-related turtle nesting beach loss and temperature effects on turtle nests produced and published, for use in mitigation (Output 2) and management (Output 3)	**1.1** 3D DTMs produced, including estimated proportion of nests inundated/lost under various sea level rise (SLR) scenarios and increased storm activity/beach erosion, safe and vulnerable locations, and key habitats for protection (Y2 Q2) **1.2** Baseline hatchling sex ratios determined for the three islands across a selection of beaches (Y2 Q4) **1.3** Models produced to predict how climate change scenarios may impact sex ratios and hatching success as well as to estimate optimal nest incubation temperatures to ensure population persistence (Y3 Q2) **1.4** An evaluation is produced of observed and predicted phenological and location shifts for turtle nesting, along with their consequences for mitigation and management (e.g. areas of beach/land for protection as refugia or male producing beaches) (Y3 Q2)	**1.1** UoE employment records for employment of post-doctoral researcher, DTM outputs and project reports/scientific papers **1.2** Temperature logger data from ~200 nests for loggerhead (C. caretta) and green (C. mydas) sea turtles, project report/scientific papers **1.3** Climate model output and project reports/ journal submission email **1.4** Model output and project reports/journal submission email	A suitable candidate with experience needed for climate modelling applies and is available for the duration of the project The project partners will advertise the position in appropriate channels for maximum visibility Historic climate data and SLR data are obtained Non-lethal indirect methods of estimating sex ratios and modeling future nest temperatures are sufficiently robust
Output 2 Evidence-based protocols developed, trialled, and	**2.1** As appropriate, at least two robust practical adaptation measures are developed to reduce nest loss and maintain appropriate nest temperature: these may include interventions such as relocation	**2.1** Results and photographs of at least 2 practical adaptation trials **2.2** Text of updated National Sea	A large enough sample size is obtained to infer accurate C. caretta and C. mydas sea turtle sex ratios for the Cayman Islands

Project summary	SMART Indicators	Means of verification	Important Assumptions
implemented to reduce nest loss due to SLR and protect populations from reduced hatch success and skewed sex ratios	of nests from vulnerable beaches or manipulation of incubation temperatures via planting native vegetation, artificial shading or water sprinklers (Y3, Q3). Choice will be based on preliminary results from season 1 and further informed by season 2. **2.2** Cayman Islands National Nesting Beach Monitoring Protocols are updated and Sea Turtle Climate Change Monitoring and Mitigation Protocols are created to include practical adaptation measures (e.g. criteria for nest relocation or shading of nests or indicators of when these interventions would be necessary in the future) (Y3 Q4) **2.3** Protocols are implemented,ensuring that hatch success remains above 65%, and sex ratios are maintained at ±10% of the baseline identified through the project or at optimal levels based on population modelling (Y3 Q4)	Turtle Monitoring protocols **2.3** Monitoring results from Y3	Based on recent years nest counts, the desired sample size should be obtained Effective interventions are identified which are viable under local conditions and within the current capacity of the CIDoE We will prioritize strategies which require minimum intervention and maximal dividend per unit resource. The project has a strong educational component which will allow collaboration with beachfront property owners on low-cost strategies e.g. maintenance of native vegetation
Output 3 Policy framework developed for coastal management and sea turtle conservation which can be used for decision-making in the Cayman Islands and as a model for other OTs	**3.1** Consultation and engagement has taken place with key stakeholders and government decision-makers: National Conservation Council, Ministry of Sustainability and Climate Resiliency, Central Planning Authority, Development Control Board, Department of Planning, beachfront property owners' associations, Department of Tourism, including meetings in Y1, Q1, Y2, Q2 and Y3, Q4 **3.2** Cayman Islands Species Action Plan for Marine Turtles updated to include actionable steps to protect sea turtles from loss of nesting habitat and other impacts of climate change (Y3, Q3) **3.3** Conservation Plan and Species Action Plan for Marine Turtles, and other relevant policy documents updated (Y3, Q4 or first statutory update of	**3.1** Text of Species Action Plan **3.2** Text of other relevant policy documents **3.3** Attendance register, meeting minutes and feedback forms **3.3** Attendance register, meeting minutes and feedback forms **3.4** Meeting minutes	Policy makers are amenable to implementing change based on the outcome of the research The Cayman Islands Department of Environment is the lead partner on this project and the Ministry of Sustainability and Climate Resiliency have made it high priority to have new climate change policy implemented

Project summary	SMART Indicators	Means of verification	Important Assumptions
	documents), enabling effective reviews of coastal development applications by the Cayman Islands Department of Environment (CIDoE) and legally binding recommendations by the Cayman Islands National Conservation Council for the protection of sea turtle critical habitat (NCC)		
Output 4 Results are widely shared through local and international outreach programme with sea turtles as a flagship species for sustainable coastal zone management	**4.1** School Outreach Campaign – teacher resource packs produced on sea turtles, climate change, and sustainable coastal development for primary and secondary schools (1 resource pack for primary schools (Y2 Q1), 1 resource pack for secondary school (Y2 Q1), at least 6 school presentations, at least 8 field events for schools (Y1 – 3) **4.2** Media Outreach Campaign conducted to inform the public of climate-related threats to sea turtles and the necessity of sustainable coastal zone management and climate change response(Y1 – 3). At least 2 press releases per year (Y1,Q1;Y1;Q3; Y2,Q1; Y2;Q3; Y3, Q1; Y3;Q3) **4.3** A minimum of three public meetings (one on each island) held in Y1,Q2 to outline the aims of the project and gather public input and in Y3, Q3 to present results and gather feedback **4.4** Findings presented at 2 international conferences, including a regional OT conference (estimates Y2,Q2, Y3,Q2), and a minimum of 2 papers will be published from the study (Y2,Q3; Y3;Q2 3)	**4.1** Copies of materials, photographs, schedule of school names, year groups, presentation dates, and number of students reached (Target 500 students engaged) **4.2** Up to date project website, copies of newspaper articles (Target 12 print/online news articles), videos, leaflets, radio and TV interviews (Target 6 broadcast items), and social media posts (Target 30 substantive items across the project duration) **4.3** Minutes of public meetings (Target 6; 300 attendees), photographs, social media posts **4.4** Conference proceedings, copies of scientific publications or submission emails	Wider society, including schools are prepared to engage with the project International conferences persist, at least in online format

Project summary	SMART Indicators	Means of verification	Important Assumptions
Activities (each activity is numbered according to the output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1) **1.1** Recruitment and successful appointment of field leaders (Y1, Q1) and postdoctoral researcher (Y1, Q2) and field leaders with relevant experience **1.2** Nesting patterns over time are examined using existing GIS mapping data and nesting habitat/nest inundation rates over time are examined to identify areas of high vulnerability **1.3** DTMs created to show historic and current beach profiles and SLR will be examined and modelled to predict future climate change will impact nesting beach habitat **1.4** Historic and current records of climate and storm impacts will be examined and modelled to predict how future climate warming and increase storminess could impact hatchling sex ratios, hatch success and nest inundation/loss of nesting habitat **2.1** Historic and current records of erosion will be examined and modelled alongside inundation and nest loss data to determine when nest relocation may be required **2.2** Sea Turtle Nest Monitoring Protocol updated to include current relocation practises based on findings of 2.1 **2.3** Hatchling sex ratios are analysed using temperature logger data from at least 100 nests per season (50 C. mydas and 50 C. caretta nests) over 2 seasons **2.4** Hatchling sex ratios are analysed alongside environment variables and climate projections to determine future scenarios **2.5** Nest cooling techniques are evaluated, tested, and monitored **2.6** Cayman Islands National Sea Turtle Nest Monitoring Protocol updated based on findings in 2.5 **3.1** Species Action Plan for Marine Turtles updated in order to outline most vulnerable areas of the islands in terms of erosion and SLR and to provide actionable steps to protect sea turtle populations from climate change **3.2** Meetings with and updating key stakeholders: National Conservation Council, Central Planning Authority, Development Control Board, Department of Planning, Cayman Islands Tourism Association, beachfront property owners' associations, Department of Tourism			

Project summary	SMART Indicators	Means of verification	Important Assumptions
3.3 Presentation for Ministry of Sustainability and Climate Resiliency **4.1** Production of resource packs for schools, preparation of presentation for schools and arranging school group field trips to observe how data are collected and why it is important **4.2** Creation of a dedicated page on the CIDoE website, CIDoE outreach to assist with regular social media posts, leaflet production and distribution, press releases, video production, and TV and radio interviews **4.3** Organising public meetings across each island each year to keep the public up to date on the research **4.4** Preparing research presentations at 2 international conferences **4.5** Preparing 2 papers for submission based on research findings			

Annex 3: Standard Indicators

Table 1 Project Standard Indicators

DPLUS Indicator number	Name of indicator	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DPLUS-A07	Number of government institutions/departments with enhanced awareness and understanding of biodiversity and associated local community issues	Government institutions	Government Organisation type	1	1	0	1	2
DPLUS-C07	Number of projects contributing evidence to biodiversity conservation or associated community benefits to policy/regulation/standards consultations.	Number	Community/sub-national/national /international.	0	0	1	0	1
DPLUS-C15	Number of Media related activities.	Number	Internet/Print/Radio/Television, and sub-national/national /international	7	11	12	7	30
DPLUS-C17	Number of unique papers submitted to peer reviewed journals	Number		0	1	1	0	2
DPLUS-C19	Number of other publications produced	Number	Annual downloads, publication typology	0	1	3	0	4

Table 2 Publications

Title	Type (e.g. journals, best practice manual, blog post, online videos, podcasts, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)
Project aims to shield Cayman Islands turtles from	Press Release	Cayman Islands DoE and Exeter University (2023)	Female	UK and Caymanian	Cayman Islands and Exeter (UK)	https://doe.ky/project-aims-to-shield-cayman-islands-turtles-from-climate-change-threats/ https://news-archive.exeter.ac.uk/homepage/title_957779_en.html

Title	Type (e.g. journals, best practice manual, blog post, online videos, podcasts, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)
climate change threats						
YouTube 1	Video	Phoenix Singh (2023)	Male	Caymanian	Cayman Islands	https://www.youtube.com/watch?v=8ScQ_C0HVPE
YouTube 2	Video	Phoenix Singh (2023)	Male	Caymanian	Cayman Islands	https://www.youtube.com/watch?v=nTvjtAlAYak&t=280s
YouTube 3	Video	Phoenix Singh (2023)	Male	Caymanian	Cayman Islands	https://www.youtube.com/watch?v=gyFFKlF7nTw&t=639s
Documentary Interview	Documentary on threats to turtles	-	-	-	-	Not yet available
Climate Change Video for Schools	Turtle nest excavation video	National Trust for the Cayman Islands	Female	Caymanian	National Trust for the Cayman Islands, Cayman Islands	Not yet available

Annex 4: Onwards – supplementary material (optional but encouraged as evidence of project achievement)

Annex_1: Presentation slides from 2023 meeting

Annex_2: Presentation slides from 2024 meeting

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, type of report (i.e. Annual or Final), and year) and **deleted the blue guidance text** before submission?	Y
Is the report less than 10MB? If so, please email to BCF-Reports@niras.com putting the project number in the Subject line.	Y
Is your report more than 10MB? If so, please discuss with BCF-Reports@niras.com about the best way to deliver the report, putting the project number in the Subject line.	N
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.	Y
If you are submitting photos for publicity purposes, do these meet the outlined requirements (see section 15)?	Y
Have you involved your partners in preparation of the report and named the main contributors	Y
Have you completed the Project Expenditure table fully?	Y
Do not include claim forms or other communications with this report.	