

Applicant: **Mukhida, Farah**
Organisation: **Anguilla National Trust**
Funding Sought: **£44,847.00**

DPLR5\1073

Establishing a climate-adapted approach to sea turtle nesting habitat management

The sex of sea turtle embryos is directly correlated to nest temperature: higher temperatures result in more females, lower temperatures result in more males. Climate change, combined with coastal development, and coastal erosion caused by sea level rise is disrupting beach dynamics, impacting long-term sea turtle population viability. Using existing climate change models, and correlating beach temperature with hatchling success, this project identifies and pilots conservation actions to enhance the resilience of Anguilla's threatened sea turtle populations.

PRIMARY APPLICANT DETAILS

Name	Farah
Surname	Mukhida
Tel (Work)	
Email (Work)	
Address	

DPLR5\1073

Establishing a climate-adapted approach to sea turtle nesting habitat management

Section 1 - Project Title & Contact Details

Q1. Project Title

Establishing a climate-adapted approach to sea turtle nesting habitat management

Q2. Please select whether you are applying as an organisation or as an individual (Guidance section 3 and Guidance Glossary)

☒ Organisation

PRIMARY APPLICANT DETAILS

Name	Farah
Surname	Mukhida
Tel (Work)	
Email (Work)	
Address	

GMS ORGANISATION

Type	Organisation
Name	Anguilla National Trust
Phone (Work)	
Email (Work)	
Website (Work)	
Address	

Section 2 - Overseas Territory(ies)

Q3. Please state whether the same (or a similar) project proposal has previously been submitted (or you are planning to submit it) to the UK Government for funding. This includes through Darwin Plus Local,

Defra’s other Darwin Plus grant schemes or other UK Government funding mechanisms. Failure to share this information may result in the application being ineligible (see Guidance section 2.1.1).

☒ No

Q4. Overseas Territory (Guidance section 1.3):

Which UK Overseas Territory(ies) will your project be working in?

☒ Anguilla

* if you have indicated a territory group with an asterisk, please give detail on which territories you are working on here:

No Response

In addition to the UKOT(s) you have indicated, will your project directly benefit any other UK OT(s) or country(ies)?

☒ No

Section 3 - Project Partners





Q5. Project partners (Guidance section 3.2)

In this section, please give details of all the partners involved (including the Lead Organisation) and provide a summary of their roles.

Project Leader name: (Guidance section 3.1)	Farah Mukhida
Lead Organisation name: (if applying as an organisation; Guidance section 3.1)	Anguilla National Trust
Lead Organisation Website (if applicable):	www.axanationaltrust.com
Is the Lead Organisation based in a UKOT where the project is working? (Guidance section 3.1)	<input checked="" type="radio"/> Yes
List other partners involved and where are they based:	Environment Systems Ltd., Wales Royal Society for the Protection of Birds (RSPB), United Kingdom

Summary of roles and responsibilities of each partner in the project:	As project lead, the Anguilla National Trust will be responsible for project management, including technical and financial management and reporting, and all aspects of project implementation.
	Environment Systems Ltd. will train ANT staff in how to integrate existing climate change models to project future impacts on key nesting beaches, especially potential losses due to sea level rise and storm surges.
	The Royal Society for the Protection Birds will train ANT staff in how to use ArcPro and will assist with scientific data interpretation and analysis and the development of a climate change-informed action plan for sea turtle nesting beaches.
I confirm that all listed partners are aware of this application and have indicated support:	Checked

Attach a Cover Letter for your application (Guidance section 4.2).

 [Cover Letter-Anguilla National-Trust-sea turtle nesting beaches](#)
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Section 4 - Project Summary & Description

Q6. Project Summary (Guidance section 3.8)

Please provide a brief summary of your project. This may be used in communication activities and/or published online, if your application is successful.

The sex of sea turtle embryos is directly correlated to nest temperature: higher temperatures result in more females, lower temperatures result in more males. Climate change, combined with coastal development, and coastal erosion caused by sea level rise is disrupting beach dynamics, impacting long-term sea turtle population viability. Using existing climate change models, and correlating beach temperature with hatchling success, this project identifies and pilots conservation actions to enhance the resilience of Anguilla's threatened sea turtle populations.

Q7a. Description (Guidance section 2.1 and 6)

Please provide a description of your project, including:

- the overall objective
- the current situation and the problem the project is trying to address
- what success will look like and how you will measure it

Please be as specific as possible when describing the project, using quantified data and evidence where available. You may wish to consider: what are the specific threats to the environment that the project will attempt to address, and what should we know about these threats? What does your successful project look like? And how will you demonstrate whether and how your project has been successful?

Since 2006, ANT has collaborated with local government agencies, as well as regional and international partners, to gather scientific evidence to inform and support hawksbill *Eretmochelys imbricata*, green *Chelonia mydas*, and leatherback *Dermochelys coriacea* sea turtle conservation efforts in Anguilla. In 2020, these efforts led to the permanent ban on sea turtle hunting and the development of a stakeholder-driven sub-regional conservation action plan [1,2].

Although hunting pressures have been significantly reduced, Anguilla's globally endangered sea turtle populations are far from secure. Coastal development, beach erosion [3], and climate change continue to pose serious threats. Anguilla's breeding turtle populations, once numbering in the thousands, remains below 100 breeding females a year [2,4]. While large-scale climate impacts on coastal and ocean habitats—such as ocean warming and increased frequency of storms—have no straightforward solutions, understanding predicted impacts can help us better manage localised factors. This can improve resilience at a local level, where we still have some influence.

This project aims to address a critical gap in our knowledge and a priority action of the regional sea turtle conservation action plan. This project will enable us to prioritise the most critical nesting beaches based on current usage, hatching success, and the effects of temperature on sex ratios, assess each beach's vulnerability to sea level rise and storm surge, and identify and implement effective mitigation measures to address localised impacts of climate change.

Through this project, we will:

1. Analyse hatching success patterns by using data collected by ANT on nesting success over the past ten years. We will examine variations in hatching success across years and nesting beaches to determine which beaches not only host the highest number of nesting crawls but also result in the greatest hatching success. Using this data, we will predict current and future sex ratios of hatchlings based on established correlations from regional and global studies.
2. Monitor beach temperatures by building on (1) and utilising methodologies developed in a previous Darwin-funded project (Ascension Island, DPLUS184) [7]. We will deploy temperature depth recorders (TinyTags Plus 2, Gemini Data Loggers) on at least 15 of the most frequented nesting beaches across Anguilla's mainland and offshore cays. These recorders will track sand temperatures throughout the breeding season, enabling us to assess links between current beach temperatures and hatching success rates. Field data will be continuously gathered during the breeding season to further correlate environmental conditions with nesting outcomes.
3. Assess climate impact on nesting beaches by integrating existing modelled flood risk and sea level rise maps from previous projects (DPLUS091, JNCC's flood risk vulnerability modelling) and existing beach profile data to project future impacts on key nesting beaches, specifically regarding potential losses due to sea level rise (SLR) and storm surges. This work will be undertaken by ANT staff who will be trained remotely via a series of GIS workshops led by Environment Systems Ltd.
4. Develop and implement priority nesting beach management plans by using the results from previous steps to prioritise key nesting beaches and inform targeted management strategies. We will identify high-value nesting sites that are particularly vulnerable to rising temperatures, inundation, and erosion. For these critical areas, and working with local communities and landowners, we will implement protective measures such as vegetation planting to provide shade, dune restoration, and broader habitat conservation efforts to safeguard essential nesting grounds, while also continuing to monitor impact of beach restoration measures on beach temperature. We will also raise awareness of the importance of these nesting sites and promote sustainable coastal practices by promoting environmentally responsible guidelines and turtle-friendly practices for coastal development initiatives.


Q7b. Long-term sustainability (Guidance section 2.1 and 6)


Please describe the long-term benefits of the project and the change it will bring about. How will the outcomes of the project be sustained after the funding is finished?


Long-term benefits and impacts include strengthening protection of key nesting sites and deepening our understanding of climate change effects on nesting success and sex ratios. One of the primary outcomes will be a prioritised list of beaches most in need of conservation efforts, each with tailored management strategies. By focusing on most vulnerable sites, this project will contribute to long-term resilience through demonstrable habitat protection and restoration activities. These efforts will safeguard Anguilla's nesting beaches and provide a model for replication and scaling. Project methodologies and findings can be adapted to different contexts, amplifying impact on global sea turtle conservation. Further extending the reach of our work, we will share results at the regional WIDECAST conference, engaging 50+ Caribbean conservationists.


Project outcomes will be sustained through integration into our biodiversity conservation programmes: we conduct weekly monitoring of mainland sea turtle nesting beaches and have a fully operational native plant nursery. Procured temperature loggers will continue to be used to monitor beach temperature and assess restoration effectiveness. This project will also provide evidence regarding the importance of maintaining and restoring coastal habitat and help us to better inform and target our on-going restoration activities to directly benefit at-risk sea turtle species.

(Optional) Please upload any additional and supporting materials or files (such as maps of project sites, etc) below. Maximum of 5 sides of A4, and is combined as a single PDF:

 [Supporting Documents-Anguilla National Trust-sea turtle nesting beaches](#)

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Section 5 - Project Outcome(s)

Q8. Project Outcome(s) (Guidance section 1.2)

Successful Darwin Plus Local projects must demonstrate measurable outcomes in at least one of the themes of Darwin Plus with a clear focus on biodiversity and the natural environment, either by the end of the project or soon after through a credible plan.

Please note: Any proposals including research or monitoring are required to demonstrate a clear link to tangible outcomes for conservation of biodiversity and the natural environment. Please explain how any new research will be applied to drive environmental outcomes on the ground.

Please confirm that your project has a clear focus on biodiversity and the natural environment.

Checked

Biodiversity: improving and conserving biodiversity, and slowing or reversing biodiversity loss and degradation;

Please tick which additional theme(s) of Darwin Plus your project contributes to (if relevant):

Checked

Climate change: responding to, mitigating and adapting to climate change and its effects on the natural environment and local communities;

Unchecked

Environmental quality: improving the condition and protection of the natural environment

Checked	Capability and capacity building: enhancing the capacity within OTs, including through community engagement and awareness, to support the environment in the short- and long-term.
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Please justify your selection. Please use quantitative information where possible here.

This project supports long-term sea turtle recovery. By collecting nesting beach temperature data, we will fill climate change-related information gaps, with new (temperature) and existing (storm surge, SLR) data feeding into climate change models, allowing us to better understand nesting beach vulnerability and sea turtle population dynamics and inform on-the-ground conservation action to mitigate climate change impacts.

This project will increase organisational capacity to analyse and apply climate-related data through virtual GIS learning labs, with staff using GIS software and climate models to project future/potential impact on nesting beaches and conservation action effectiveness on habitat and sea turtle population recovery.


Section 6 - Workplan


Q9. Workplan (Guidance section 2.2)


Please provide anticipated dates for the start and end of your planned project here. Please use the Darwin Plus Local Project Workplan (available at: <https://darwinplus.org.uk/how-to-apply/local-applications/>) to provide a list of the individual activities you have planned for this project, a brief description of what each activity entails, and the months in which the activities will be carried out. If the project involves only one activity (e.g. a purchase), please still provide project start and end dates (noting estimated times for procurement). Please note that your project must start after 1 April 2025 and be completed by 31 March 2026.


Start date:	End date:	Duration (e.g. 3 months):
01 April 2025	31 March 2026	12 months

Please upload the completed Darwin Plus Local Project Workplan with your proposed project activities here


[r5-dplus-local-implementation-timetable-Anguilla National Trust-sea turtle nesting beaches](#)


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Section 7 - Costs

Q10. Costs (Guidance section 2.2 and please read the Finance Guidance)

Please provide a breakdown of costs to be funded through Darwin Plus Local (in GBP).

Are you seeking any matched funding for this project? (Please note that this is optional and there is no requirement to seek matched funding for Darwin Plus Local projects).

☒ Yes

How much matched funding are you seeking and where from?

Match funding from the Anguilla National Trust has already been secured to cover project overhead costs (partial – 2.5%) and staff costs [REDACTED]. Environment Systems Ltd, has committed to providing a 10% discount on their services [REDACTED] while RSPB have committed 3% of staff time as in-kind [REDACTED]. Total funding secured is [REDACTED].

Budget line	Explanation	Cost in GBP
Staff costs:	N/A	[REDACTED]
Consultancy costs:	Includes fees for services from Environmental Systems Ltd., for training in using and applying climate models	
Overhead costs:	Includes overhead cost of 7.5% of total project budget (including project funding with additional 2.5% ANT match funding)	
Travel & subsistence costs:	Including travel and subsistence costs for fieldwork conducted on four offshore cays (Dog Island, Pricky Pear East, Pricky Pear West, Scrub Island) (20 trips to deploy and retrieve loggers); fieldwork subsistence costs; attendance at the 2026 WIDECAST Annual Meeting (2 participants)	
Operating costs:	Includes cost of ArcPro subscription, portable solid state drives for data storage and management, cloud storage platform subscription, cloud data management system maintenance fee, venue and catering fees for a public presentation about project findings and results	
Capital equipment:	Temperature loggers (TinyTags Plus 2 - Gemini Data Loggers) (100 loggers deployed across 15 indicator beaches)	
Other Costs	Includes wire transfer fees to facilitate payments to Environment Systems Ltd. and equipment supplier (bank charges)	
Total:		

This section provides more information on the budget to help evaluators understand how you will use the funds you are requesting. You do not need to list all costs, but please list and detail costs of more than £1,000 per item below, under the appropriate budget line.

Details of staff costs over £1,000 (if relevant)

N/A

Details of overhead costs over £1,000 (if relevant):

Project management overheads, calculated at 7.5% of the total project costs [REDACTED]

Details of travel and subsistence costs over £1,000 (if relevant):

Travel: 4 mainland Anguilla-Dog Island trips @ [REDACTED] 4 mainland Anguilla-Prickly Pear East trips @ [REDACTED] 4 mainland Anguilla-Prickly Pear West trips @ [REDACTED] 4 mainland Anguilla-Scrub Island trips @ £200/trip, 4 contingency trips [REDACTED]
Fieldwork subsistence: Subsistence costs for field team for 20 days of fieldwork [REDACTED]
2026 WIDECAST Meeting travel (location to be determined) (flight, ferry, departure taxes, on-island travel): 2 people [REDACTED]
2026 WIDECAST Meeting accommodation: 2 people for 6 nights [REDACTED]
2026 WIDECAST Meeting subsistence: 2 people for 7 days [REDACTED]

Details of operating costs over £1,000 (if relevant):

ArcPro software to support spatial and temporal data analysis ([REDACTED])
Portable Solid State Drives for storing and managing data, one portable 2T drive [REDACTED]
Cloud data storage subscription ([REDACTED])
Cloud data management platform maintenance fee ([REDACTED])
Public presentation (venue and catering) ([REDACTED])

Details of capital equipment costs over £1,000 (if relevant):

TinyTags Plus 2 x 100 tags @ [REDACTED] (including shipping and handling) ([REDACTED])

Details of consultancy costs over £1,000 (if relevant):

Environment Systems (training in spatial and temporal data analysis), this expertise is required as it is not available in Anguilla ([REDACTED])

Details of other costs over £1,000 (if relevant)

Wire transfer fees (for payment to Environment System and Gemini Data Loggers) – 3 wire transfers @ [REDACTED] wire transfer ([REDACTED])

If your project budget was prepared in another currency and converted to GBP, please provide the exchange rate, its source, and the date it was accessed:

Other currency:	Exchange rate:	Source of this exchange rate:	Date exchange rate accessed:
USD	1.2925	xe.com	09 November 2024

Darwin Plus Local has been created to build capacity and contribute to local economies in-territory (Guidance section 2.1.1 and section 1.8.4 of the Finance Guidance).

In-territory spend is defined in Darwin Plus Local as including funding spent on:

- Equipment purchased in-territory;
- Equipment that cannot be acquired in-territory and is therefore purchased abroad, but will remain and be used in-territory beyond the life of the proposed Darwin Plus Local project;
- Training or skills that cannot be acquired in-territory and are therefore purchased abroad, but will be used in-territory beyond the life of the proposed Darwin Plus Local project;
- Time for consultants or staff based in-territory.

In-territory spend does not include:

- Time for consultants or staff who are based abroad, even if they travel to the OT to undertake the work;

- Shipping and import costs for equipment purchased abroad;
- Travel and subsistence costs where they incur spend outside the OT.

What % of the total will be spent in-territory? 73

If less than 80% of the total project spend is to be spent in-territory, please explain why.

Twenty-seven percent of the project's budget is spent outside of Anguilla, with funds supporting consultancy costs to train ANT staff through bespoke surgeries in the local use and application of existing climate data and in the development of a coastal vulnerability index.

This consultancy focuses on building long-term local capacity to analyse and apply geospatial and temporal data where, for the first time, instead of Environment Systems (or any external consultant) collating, processing and analysing climate data, over the course of an extended on-line training period, ANT staff, supported by RSPB's Senior Conservation Scientist, will learn how to do this work ourselves, allowing for continued post-project application as well as in-house training of new staff and other natural resources management colleagues.

Section 8 - Local and National Priorities

Q11. Local and national priorities

Please explain how this project aligns with local and national priorities? You may wish to consider the project in the context of national environmental laws, objectives, strategies, territory specific agreements, action plans or policies.

This project supports the Government of Anguilla's National Environmental Management Strategy and Action Plan by developing climate-informed sea turtle nesting beach habitat management plans (supporting Strategy 25), assessing the threats of climate change on sea turtle population dynamics and taking steps to mitigate those threats (supporting Strategy 33, Strategy 34), and protecting and conserving and enabling recovery of biodiversity (supporting Strategy 39).

This project supports the implementation of the 2019 Anguilla Sea Turtle Recovery Action Plan by protecting and restoring nesting beach habitat and by monitoring and protecting sea turtle nesting populations, nests, and hatchlings. In addition to the national sea turtle strategy, this project also supports the 2018 Action Plan for the North-eastern Caribbean Sea Turtle Recovery Plan which calls for the protection of essential sea turtle habitat, identification of issues/threats to sea turtle habitat and the development, implementation, and coordination of best practices related to habitat threat response, and the undertaking of research to inform applied conservation.

Will the project...

Take place on Government owned land or water?

☐ No

Involve biocontrol, invasive alien species control or eradication?

☐ No

Require permit(s) from Government departments for completion of activities?

☐ No

If you have answered yes to any of the questions above, please attach evidence that you have Government support for this project i.e. a Letter of Support. Applications which indicate that they do not take place on Government land or water, but which propose work that appears to the reviewers would be difficult/impossible to carry out without working on government land or waters may be ineligible if no Letter of Support is provided.

No Response

Section 9 - Project Risks

Q12. Project Risks

Please demonstrate your consideration of any risks involved in this project and how you intend to manage them. Please note the importance of health and safety and environmental risk assessment in the design of your project. If there is any possibility that your project may have negative impacts on the environment or human health, it is important that you provide a comprehensive analysis of potential environmental and human health risks, and the prevention measures you will take to ensure the work does not cause harm.

Depending on your project, you may wish to consider:

- Biosecurity risks – particularly for projects involving external equipment.
- Safeguarding risks – particularly for projects involving vulnerable groups such as children, older people or people with disabilities.
For example, you should consider the ratio of vulnerable people or children to adults, ensuring there are appropriate background checks of all staff, and informing vulnerable groups and children of their right to safety and protection.

Risk	Mitigation
Storms and hurricanes hamper project implementation	Noting that peak sea turtle nesting season coincides with peak hurricane season, temperature loggers will be deployed at the start of the nesting season (April), before the start of the hurricane season. Loggers that may be compromised by beach erosion caused by hurricanes or above-average storm surges will be removed and then re-deployed to avoid equipment loss. Weather forecasts will be checked at least weekly during the hurricane season to monitor (and avoid) any upcoming weather disturbances.
Limited engagement of and interest by beach-front property owners	Some of Anguilla’s most active nesting beaches on the mainland are those with existing hotel and resort developments. The ANT has established relationships with all four major hotels and most smaller resorts with hotel and resort management regularly reporting sea turtle nesting activity. We will draw on these relationships to further support project activities, and will continue to engage, meet with, and present to hotel and resort beach-front staff and high-level management regarding this project and, more broadly, sea turtle conservation efforts.

No Response

No Response

Do you require more fields?

☒ No

Section 10 - Terms & Conditions

Q13. Terms and conditions (Guidance section 3.10)

By applying for Darwin Plus Local you are adhering in full to the grant Terms and Conditions in full (available at: <https://darwinplus.org.uk/how-to-apply/local-applications/> and as referenced in the Guidance at section 3.10). For information, the Terms and Conditions include requirements for all applicants to (amongst other requirements as per the full Terms and Conditions):

- Uphold a zero tolerance for inaction approach to tackling sexual exploitation, abuse, and harassment.
- Where appropriate, make all reasonable and adequate efforts to address gender inequality and other power imbalances.
- Notify all cases of fraud and theft (whether proven or suspected) relating to the project to the Grant Administrator as soon as they identified.

Please indicate you have read, and understood, and will adhere to the Terms and Conditions.

Checked

Supporting documents list (please have these ready to attach with application)

- Cover Letter of no more than two A4 pages. (Guidance section: 4.2 has information on what this cover letter should include).
- If the project takes place on public land or water, is addressing invasive alien species or includes activities requiring a permit, a Letter of support from OT Government.
- Project Workplan in the template provided for Darwin Plus Local (available at: <https://darwinplus.org.uk/how-to-apply/local-applications/>).
- Map and additional information (optional) maximum five additional pages.

If your application is successful

-
If your project application is successful, the Fund Administrator (NIRAS) will ask you to provide some financial evidence for due diligence checks before you receive your project grant. (Please see section 3.3 of the Darwin Plus Local Finance Guidance). Please be ready to provide this evidence promptly.

- **Financial evidence for organisations:** Year-end financial statements, the latest management accounts or audited accounts (if you have these).
- **Financial evidence for individuals:** Proof of identity such as a passport, ID card or driving licence and solvency (such as bank statements) and a police check.

Section 11 - Certification





Certification

I certify that, to the best of my knowledge and belief, the statements made in this application are true and the information provided is correct.

Checked

I have the authority to submit an application on behalf of my organisation.

Checked

Name:	Farah Mukhida
Position in the organisation: (if applicable)	Executive Director
Signature (please upload e-signature)	<div> FMukhida signature</div> <div> 24/11/2024</div> <div> 12:39:04</div> <div> jpg 59.28 KB</div>
Date:	24 November 2024

Section 12 - Submission Checklist

Checklist for submission

	Check
I have read the Guidance documents, including the “Darwin Plus Local Guidance” and the “Darwin Plus Local Finance Guidance”.	Checked
If my proposed project takes place on public lands or water or is addressing alien invasive species, I have uploaded a Letter of Support from Government.	Unchecked
I have uploaded a cover letter that details the information requested in the guidance (Guidance section 4.2 has information on what this cover letter should include).	Checked
I have read, and can meet, the current Terms and Conditions for this fund (found at: https://darwinplus.org.uk/apply/local-applications/) for this fund.	Checked
I have provided actual start and end dates for my project that fit this Round.	Checked
I have provided my summary budget based on UK government financial years i.e. 1 April – 31 March and in GBP in the application form.	Checked
I have uploaded my project workplan using the specific template provided (available at: https://darwinplus.org.uk/apply/local-applications/).	Checked
I have uploaded all supplementary documents if I have any.	Checked
(If copying and pasting into Flexi-Grant) I have checked that all my responses have been successfully copied into the online application form.	Checked
The application has been signed by a suitably authorised individual (clear electronic or scanned signatures are acceptable).	Checked
I have checked the Darwin Plus website immediately prior to submission to ensure there are no late updates.	Checked
I have read and understood the Privacy Notice on the Darwin Plus website.	Checked

We would like to keep in touch!

Please check this box if you would be happy for the lead applicant (Flexi-Grant Account Holder) and project leader (if different) to be added to our mailing list. Through our mailing list we share updates on upcoming and current application rounds under Darwin Plus. We also provide occasional updates on other UK Government activities related to biodiversity conservation and share project news. You are free to unsubscribe at any time.

Checked

Data protection and use of personal data

Information supplied in the application form, including personal data, will be used by Defra as set out in the **Privacy Notice**, available from the [Forms and Guidance Portal](#).

This Privacy Notice must be provided to all individuals whose personal data is supplied in the application form. Some information may be used when publicising Darwin Plus including project details (usually title, lead partner, project leader, location, and total grant value).