DPLR3\1016

Darwin Plus Local - Final Report (1)

Officer: Linzi Ogden

Section 1 - Darwin Plus Local Project Information (Essential)

Project Reference Number

DPL00064

Q1. Project Title

No Response

Overseas Territory(ies)

☑ British Indian Ocean Territory (BIOT)

Lead Organisation or Individual

Zoological Society of London

Partner Organisation(s)

Zoological Society of London

Value of Darwin Plus Local Grant Award

£49,974.00

Project Start Date

01 April 2024

Project End Date

31 March 2025

Project Leader Name

Dr Claire Collins

Project Website/Twitter/Blog etc.

No Response

Report Author(s)

Claire Collins

Report Date

31 March 2025

Project Summary

No Response

Project Outcomes

Checked	**Biodiversity: improving and conserving biodiversity, and slowing or reversing biodiversity loss and degradation;**
Unchecked	**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.**

Section 2 - Project Outcomes (Essential)

On a scale of 1 (high – outcome substantially exceeded) to 5 (low – outcome substantially did not meet expectation), how successful do you think your project has been?

⦿ 2 - Outcome moderately exceeded

Project outcomes and justification for rating above

This project aimed to understand species-specific distribution of sharks around Diego Garcia, raise awareness of sharks on-island and provide data to inform conservation management, including supporting recreational fisheries policy.

Collection of ecological data exceeded project success indicators, as 87.5 hours of underwater footage were collected from 75 BRUV (Baited Remote Underwater Video) deployments; a 200% increase on our planned 25 BRUV developments. Data analysis is ongoing, conducted by a Masters student at the University of Exeter (submission date of September 2025), and will provide the first publicly available dataset for sharks from BRUVs around Diego Garcia. In addition, explanatory variables such as bathymetry, habitat type, tidal condition, anthropogenic activity and biodiversity measures (e.g., wider fish biomass and diversity) will be modelled against species appearance to identify potential drivers of shark distribution. Outputs will include a masters thesis, short summary reports, media outputs (please see uploaded video) and a peer-reviewed paper. We predict this data will be used to reinforce conservation zonation, including maintenance of restricted areas. For example, we have already confirmed (through the first documented sighting), the presence of adult female lemon sharks in an existing restricted area, supporting their designation as potential nursery areas.

In terms of adding to broader scientific understanding, project data suggests that grey reef sharks (Carcharhinus amblyrhynchos) are currently broadly ubiquitous in shallow coral reef habitat around the island, filling a key identified knowledge gap and disproving current theory that they were broadly absent from Diego Garcia during November-February. Concerningly, we identified no silvertip sharks (Carcharhinus albimarginatus), in contrast to a recent study (2023). These data all contribute importantly to understanding of the impact of illegal fishing in the wider MPA and the role of Diego Garcia as a 'final refuge'.

The project team successfully engaged different audiences through varied engagement events. By getting the first video footage of sharks underwater on-island and presenting this at informal meetings and organised events (e.g. at a bingo event with attendance of 57 persons), awareness of sharks and species ID was raised with at least 150 individuals. This video is currently available as a resource for training and environmental awareness raising on-island, ensuring the project's longer-lasting legacy in terms of awareness raising. We were also able to input to a review of shark safety management policy on-island with the British military and all on-island environmental staff ('Environmental Officers') were trained in how to deploy BRUVs.

The aforementioned bingo event was co-developed with project DPL3/1003 (as recommended in project feedback) and during this, we conducted Local Ecological Knowledge interviews with 50 fishers and other ocean users (evidence attached). It was evident that due to conservation zonation and low levels of engagement with sharks, there was limited knowledge of species-specific appearance. This contributed to a project decision to re-develop efforts from developing an interactive platform and instead focus on creating interactive outputs to broaden awareness of species ID and sharks distribution.

Supporting Evidence - file(s) upload

LEK_maps_all
10/04/2025
09:59:30
docx 2.45 MB

Attendance_all
10/04/2025
09:40:10
docx 2.98 MB

Bingo_event_pic
10/04/2025
09:35:15
jpg 2.78 MB

Supporting Evidence - links to published document/online materials

Uploaded above is evidence of attendance at our bingo event (in the form of sign-up sheets; 'Attendance_all'). Further, the maps used to collect Local Ecological Knowledge are included ('LEK_maps_all'). We have also included a photo of our bingo event. Sent separately via email due to file size is the video we generated from collected data. This video has been used to raise awareness of the types of sharks around Diego Garcia and their spatial distribution, including dispelling myths about common shark species and their numbers and habitat preferences. This has been presented to a variety of audiences, including academics, military personnel and the wider public and is now available on-island for dissemination to all island-residents. For example, environmental and military personnel have reviewed this in order to inform discussions about conservation, management and health and safety policy on-island. The video has also been presented at the Chagos Conservation Trust talk in March (London, UK).

Project Challenges

In identifying the most suitable methods for data collection, we identified citizen science data, participatory mapping (Local Ecological Knowledge) data and ecological data as suitable datasets to illuminate distribution of

sharks around Diego Garcia. By identifying a diverse set of possible data collection methods, we hoped to accommodate for any issues/delays with progress of individual methods. For example, as a tropical military island with sporadic flights primarily designed for military personnel only, there are often issues with getting project teams and equipment on-island.

For this project, although we had planned to corroborate data collected through BRUVs with that collected through social science methods, we identified low levels of encounters with sharks as well as poor species identification. In addition, due to extensive zonation of conservation areas and a lack of access to vehicles, we found that fishing effort was highly spatially concentrated. Therefore, it was identified that collection of citizen science data would lead to a very limited dataset that would also be likely spatially biased leading to erroneous trends within the data. As a result, we re-focused most project team efforts on-island to collection of data from BRUVs in order to create a comprehensive dataset for species appearance as well as create outputs that could be used to raise species awareness and dispel local lore about shark distribution, species and abundance.

Lessons Learned

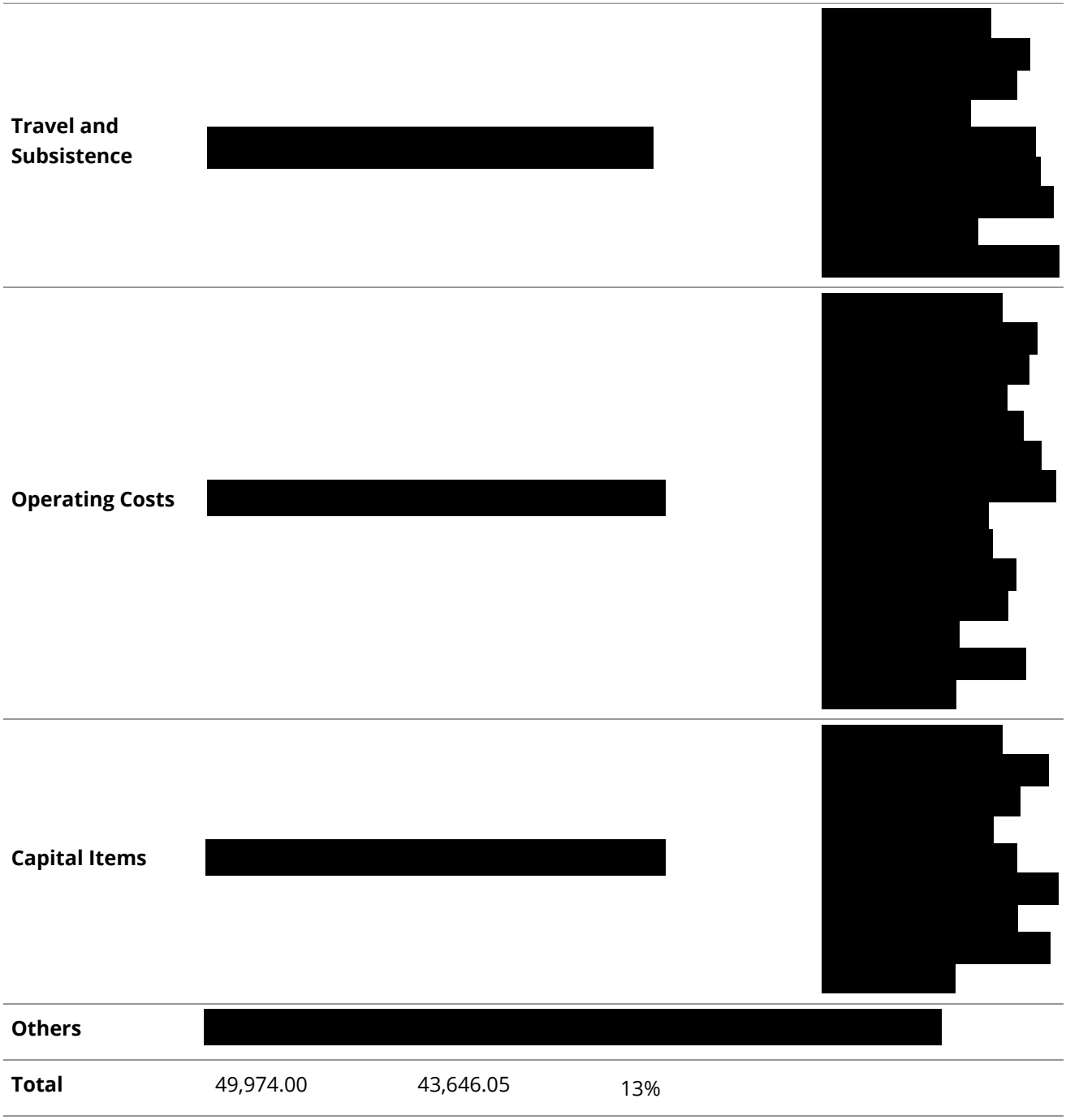
We found that creating visual outputs, e.g., edited BRUVs footage, worked extremely well to engage a broad variety of audiences on-island and communicate messages about species identification and behaviours. Providing visual resources such as the video to personnel on-island has also enhanced project legacy, as due to high costs of accommodation on-island and access restrictions, it is often difficult to run sufficient engagement events during allocated fieldwork time. Learning from previous project experience (E.G., DPLR1_1034) when co-developing engagement events with communities led to high levels of engagement. Furthermore, by building on established trust and relationships, the project was able to maximise data collection effort and benefit from high levels of engagement.

We identified issues with collection of data on distribution of juvenile sharks for this project. The tidal conditions of nursery areas around Diego Garcia led to poor visibility, and we also suggest that juveniles didn't respond to the chosen bait in a similar way to adults. This meant we could visibly see juveniles but they weren't recorded on camera. Future projects endeavouring to feed into designation of nursery areas or special conservation areas (such as Important Shark and Ray Areas) should consider a broader set of methods for recording juvenile sharks beyond BRUVs. For example, we would suggest that timelapse static cameras are more suited. These are an economical way of recording juvenile shark appearance (although come with limitations regarding species identification and other morphological characteristics).

Section 3 - Project Finance (Essential)

Project Expenditure

Project Spend (indicative) since last Annual Report	2023/24 Grant (£)	2023/24 Total actual Darwin Plus Costs (£)	Variance %	Comments (please explain significant variances)
Staff Costs	[redacted]			
Consultancy Costs	[redacted]			
Overhead Costs	[redacted]			



Travel and Subsistence			
Operating Costs			
Capital Items			
Others			
Total	49,974.00	43,646.05	13%

Please provide a short narrative summary on project finances.

This project came under budget (£6,327.95) primarily due to established partnerships with the University of Exeter which facilitated access to staff time (~6 weeks) of Dr Christopher Kerry, an expert in ecological data collection and specialising in elasmobranchs. In addition, through the same partnership, the project team were able to secure free access to BRUVs equipment. Although the secured units did not permit stereo BRUV data collection, the opportunity to use the equipment was taken as it allowed us to offset increased costs associated with change in military policy on-island. In particular, the cost of hiring high-speed boats on-island was considerably increased during the project timeline, this meant that the project diverted efforts to using smaller low-speed vessels that increased fieldwork day requirements and led to a higher bill (£500). Therefore, through existing partnerships and collaboration, we were able to collect a substantial body of data through fieldwork in a remote, island situation even with shifts in military policy and increased costs.

Section 4 - Contribution of Project to Darwin Plus Programme Objectives

Please select up to **one** indicator that applies within **each group/indicator list (A, B, C, D)** and report your results for that indicator in the text box underneath. If you do not have relevant results to report for any of the indicators in a particular group, you can leave them blank.

Please also submit some form of evidence (above) to demonstrate any results you list below, where possible.

Group A: Capability and Capacity - Core Darwin Plus Standard Indicators (select one)

Checked	**DPLUS-A01: Number of people from key national and local stakeholder groups completing structured and relevant training.**
Unchecked	**DPLUS-A02: Number of secondments or placements completed by individuals of key local and national stakeholders.**
Unchecked	**DPLUS-A03: Number of local/national organisations with improved capability and capacity as a result of project.**
Unchecked	**DPLUS-A04: Number of people reporting that they are applying new capabilities (skills and knowledge) 6 (or more) months after training.**
Unchecked	**DPLUS-A05: Number of trainers trained reporting to have delivered further training by the end of the project.**

Group A Indicator Results

All Environmental Officers on-island (2 persons) were trained in how to operate BRUV units

Group B: Policies, Practices and Management- Core Darwin Plus Standard Indicators (select one)

Unchecked	**DPLUS-B01: Number of new/improved habitat management plans available and endorsed.**
Unchecked	**DPLUS-B02: Number of new/improved species management plans available and endorsed.**
Unchecked	**DPLUS-B03: Number of new/improved community management plans available and endorsed.**
Unchecked	**DPLUS-B04: Number of new/improved sustainable enterprises/ community benefits management plans available and endorsed.**

Unchecked	**DPLUS-B05: Number of people with increased participation in local communities / local management organisations (i.e., participation in Governance/citizen engagement).**
Unchecked	**DPLUS-B06: Number of Local Stakeholders and Local Communities (people) with strengthened (recognised/clarified) tenure and/or rights.**

Group B Indicator Results

Although we anticipate our data will be used moving forwards to reinforce zonation of conservation areas, our data showed that existing zonation was suitable and therefore, no 'new' plans have been created

Group C: Evidence and Best Practices - Core Darwin Plus Standard Indicators (select one)

Checked	**DPLUS-C01: Number of best practice guides and knowledge products published and endorsed.**
Unchecked	**DPLUS-C02: Number of new conservation or species stock assessments published.**
Unchecked	**DPLUS-C03: New assessments of habitat conservation action needs published.**
Unchecked	**DPLUS-C04: New assessments of community use of biodiversity resources published.**
Unchecked	**DPLUS-C05: Number of projects contributing data, insights, and case studies to national Multilateral Environmental Agreements (MEAs) related reporting processes and calls for evidence.**

Group C Indicator Results

Videos of shark distribution and species on-island created and made available for use on-island for training and awareness raising purposes

Group D: Sustainable Benefits to People, Biodiversity and Climate - Core Darwin Plus Standard Indicators (select one)

Unchecked	**DPLUS-D01 Hectares of habitat under sustainable management practices.**
Unchecked	**DPLUS-D02: Number of people whose disaster/climate resilience has been improved.**
Unchecked	**DPLUS-D03: Number of policies with biodiversity provisions that have been enacted or amended.**

Group D Indicator Results

NA

Section 5 - Project Partnerships, Wider Impacts and Contributions

Project Partnerships

Due to the political and management structure of BIOT (Chagos), there are no government bodies on-island. Therefore, this project operated within the framework for scientific expeditions. That is, the two environmental officers on-island were involved in terms of obtaining permits and spending time with the project team receiving training in the use of BRUVs. In addition, the project team liaised and coordinated within the wider management framework which is primarily military. This included meeting with UK and US military representatives to explain project purpose and receive in-person permission for activities. In addition, a communication strategy for fieldwork was established with suitable ways of communicating project findings to military and wider contractor personnel established. Outputs such as videos were shown to military on-island during formal and informal meetings. Due to the lack of permanent residents on-island, and transitory nature of contractor communities, we engaged with key community figures and developed our engagement events within the existing community structure. These processes benefited from previous trust and relationships built during previous Darwin-funded projects (e.g., DPLR1_1034).

Wider Impacts and Decision Making

We believe our data collection was timely and highly useful in light of the potential shift in sovereignty of BIOT (Chagos). During the next 5 years or so, it is anticipated that there may revisions of existing conservation and management as the relevant stakeholders (e.g., UK and US military) decide how to utilise the island. By raising awareness of the role of the island for shark species, we hope we have highlighted the importance of maintaining existing conservation and recreational fisheries policy. In addition, we have highlighted the importance of maintaining protection of the speculated 'nursery areas'. In addition, whilst we were on-island, there was a revision of safety guidelines regarding sharks by the UK military. Therefore, we were able to input our understanding of shark distribution and safe practice.

Sustainability and Legacy

The continued use of visual outputs such as videos will ensure a longer legacy for the project on-island in terms of awareness-raising and we understand it has been distributed and disseminated on-island widely. Through the engagement of a masters student at the University of Exeter, we hope to create additional outputs, including peer-reviewed publication, in a cost-effective manner, maximising the impact of the project. We anticipate that this publication will have wider academic relevance and will contribute to current understanding of several key aspects. Firstly, we anticipate that our appraisal of methods to understand distribution of juvenile sharks will have wider academic relevance. In addition, we anticipate the data will play a substantial role in increasing our understanding of species-species spatiotemporal distribution of sharks across the wider MPA as well as feeding into the idea that Diego Garcia is acting as a vital refuge for sharks due to military presence on-island deterring illegal fishing that occurs across the wider MPA.

Section 6 - Communications & Publicity

Exceptional Outcomes and Achievements

Diego Garcia, an island located in the Chagos Archipelago, may be acting as a refuge for shark species within the Indian Ocean. This Darwin Plus Local project aimed to fill key knowledge gaps about the presence of shark species around Diego Garcia which is broadly protected from illegal targeting of sharks (which consistently occurs across the wider Chagos Archipelago Marine Protected Area) due to its role as a military base. To date, species-specific appearance and distribution around Diego Garcia were broadly unknown and it was unclear as to whether conservation policy, including zonation of suspected shark nursery areas, was suitably designed.

From a total of 75 drops of Baited Remote Underwater Video (BRUVs) systems, the team collected 87.5 hours of footage in November 2024. These data suggested that grey reef sharks (Carcharhinus amblyrhynchos) were broadly ubiquitous in shallow coral reef habitat around the island, filling a key identified knowledge gap and disproving current theory that they were broadly absent from Diego Garcia during November-February. Despite a previous study suggesting silvertip sharks (Carcharhinus albimarginatus), were also present around the island, there were none present across all drops. Other typical Indo-Pacific reef-associated species present on drops included blacktip (Carcharhinus melanopterus) and whitetip (Triaenodon obesus) sharks, as well as tawny nurse sharks (Nebrius ferrugineus). In addition, adult female lemon sharks (Negaprion brevirostris), classified as vulnerable on the IUCN redlist, were also present, but only within the lagoon of Diego Garcia. They were exclusively present within an existing restricted area where juvenile lemon and blacktip sharks are regularly visually sighted, further supported the spatial protection offered to the area. This project provides an important snapshot of how the island may be supporting shark populations within the MPA and it is hoped data can be used to reinforce conservation policy and raise awareness on-island of what species are present and their distribution.

Photo, video or graphic to be used for publicity and communications.

Please upload at least one relevant and engaging image, video or graphic that you consent to be used alongside the above text in Defra, JNCC or NIRAS communications material.

DPLR3_1016_Whitetipshark_DiegoGarcia_ChagosArchipelago_ChrisKerry
12/04/2025
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png 514.44 KB

DPLR3_1016_NurseandgreyreefsharksDiegoGarciaChagosArchipelago_ChrisKerry
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DPLR3_1016_NurseandgreyreefsharksDiegoGarcia_ChagosArchipelago_ClaireCollins
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Photo, video, and/or graphic captions and credits.

DPLR3_1016_BRUVequipmentsetupinintertidalareas_southlagoonDiegoGarciaChagos_Archipelago_ClaireCollins

DPLR3_1016_Whitetipshark_DiegoGarcia_ChagosArchipelago_ChrisKerry

DPLR3_1016_NurseandgreyreefsharksDiegoGarcia_ChagosArchipelago_ClaireCollins

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DPLR3_1016_LemonsharkssouthlagoonDiegoGarcia_ChagosArchipelago_ChrisKerry

DPLR3_1016_BlacktipreefsharkDiegoGarciaChagosArchipelago_ClaireCollins

I agree for the Biodiversity Challenge Funds Secretariat, Administrator, and/or JNCC to publish the content of this section.

⦿ Yes, I agree for the BCFs Secretariat and/or JNCC to publish the content of this section.

Please list any accounts that you would like tagged in online posts here. This can include project pages, partners' pages or individuals' accounts for any of the following platforms: LinkedIn, Facebook, Twitter, or Instagram.

NA

Section 7 - Darwin Plus Contacts

Please tick here to confirm that you have read and acknowledge the BCF's Privacy Notice on how contact details will be used and stored and that you have sought agreement from anyone that you are sharing personal details with us on their behalf.

⦿ I confirm I have read the Privacy Notice and have consent to share the following contact details

Project Contact Details

Project Contact Name	Dr Claire Collins
Role within Darwin Plus Project	Principal Investigator
Email	[redacted]
Phone	[redacted]
Do you need further sections to provide additional contact details?	⦿ No