Darwin Plus:
Overseas Territories Environment and Climate Fund
Annual Report

Submission Deadline: 30th April 2022

Darwin Plus Project Information

Project reference	DPLUS090
Project title	Reducing the impacts of plastic on the BIOT natural environment
Territory(ies)	British Indian Ocean Territory
Lead partner	Zoological Society of London
Project partner(s)	British Indian Ocean Territory Administration Swansea University
Darwin Plus grant value	£330,476
Start/end dates of project	1 April 2019 - 31 August 2022
Reporting period	Apr 2021 – Mar 2022 Annual Report 3
Project Leader name	Rachel Jones
Project website/blog/ social media	https://www.facebook.com/HelloDGGoodbyeOceanPlastic www.marine.science Twitter - @Marine.Science and @ZSLMarine Instagram - @BIOT.science
Report author(s) and date	Rachel Jones, Fiona Llewellyn, Alice Chamberlain, Heather Koldewey, Nicole Esteban, Milly Fellows 29/04/2022

1. Project summary

The beaches of the British Indian Ocean Territory (BIOT) are globally significant as nest sites for sea turtles. Up to 20% of the regional population of green turtles and 51% of hawksbills come to BIOT from across the south-western Indian Ocean to breed. The high level of protection and the low level of coastal development across this archipelago provide a vital haven for these threatened species. BIOT's coastal ecosystems are impacted by the accumulation of large volumes of ocean-borne plastic debris. Consumption of single-use plastic (SUP) on Diego Garcia (DG) also creates waste streams that are hard to manage in this remote location. This project will empower BIOT stakeholders to implement cleaning strategies on target beaches, mitigating the impacts of plastics on nesting turtles. We will develop long-term strategies to enable systemic change, reducing DG's SUP consumption, improving disposal and recycling practices.

Figure 1. The British Indian Ocean Territory. The area in blue is a 640,000km^2 no-take Marine Protected Area which includes the entire EEZ apart from a 3nm exclusion zone around Diego Garcia.

2. Project stakeholders/partners

The project made excellent progress in this reporting period in engaging first hand and extensively with key stakeholders at every level. Having delayed in person activities due to the travel restrictions arising from the pandemic we received enthusiastic support and engagement when the team finally made it to DG for five weeks in October 2021.

New BIOT Environment Officer Milly Fellows joined the team in 2021 at the end of the previous Environment Officer's contract and immediately became a valuable addition. Travel restrictions have meant Milly's work intervals in DG have been much longer than usual for this role. This has resulted positively for our project in that she has been able to increase engagement with the community on environmental issues and collect regular data on beach waste throughout this extended time in DG.

The campaign activities in October and November provided us with a novel and attractive 'hook' with which we could attend social gatherings (sports events, bingo, thrift sales) and have interested people visit us at a stand for more information on what we were doing. This informal approach was particularly successful with the contractor community that we were targeting as key to the success of the programme.

A key development in this reporting period has been engaging with the Community Liaison Officers in DG, who provided an effective way to communicate with the communities and identify suitable points to access groups of people. As a group they are committed to the objectives of our project – SUP reduction. They are also enthusiastic about sustaining activities and are already actively organising and running volunteer beach cleans under their own initiative.

The 2021 fieldwork culminated in a 'Plastics Summit' meeting in DG attended by senior stakeholders and decision makers for the territory, including the two most senior personnel: Brit Rep (Steve Drysdale) and the US Military Skipper (Richard Payne).

The team proposed SUP reduction actions for inclusion in a revised 'Best practice document' being drawn up by the FCDO legal team (detail in Appendix 1) which we hope will embed the goals of the project into everyday processes in DG.

Finally, we have been working with ZSL colleague Surshti Patel, a technical specialist on plastics in communities, to review our engagement and plan ahead for the final few months of the project. Surshti brings expertise in plastic reduction in diverse community settings and is helping the project team consider activities and outcomes that are accessible and equitable across different sectors of the DG based populations.

From top-down and bottom-up the team has successfully engaged with stakeholders to create an inclusive and effective approach to SUP reduction in the last year.

3. Project progress

3.1 Progress in carrying out project activities

Output 1. Characteristics of plastic waste pollution on BIOT marine turtle nesting beaches, and negative effects on nesting turtles and hatchlings, are understood with appropriate mitigation measures developed and implemented.

Activity 1.1 Surveys of nesting beach interactions between plastic and nesting behaviour
Surveys of turtle nesting behaviour at study site beaches were conducted 12 times in this reporting period by the turtle team during their extended fieldwork in 2021. Encouragingly no excavations were reported as aborted due to plastics. However, it is challenging to observe and validate nest digging obstructed by plastic in the sand after the fact – see Figure1 which shows an abandoned excavation hole, plant roots can be seen obstructing the cavity; a natural obstacle, but harder to see is the sub-surface layer of plastics around the entrance to the cavity.

Figure 2. Abandoned turtle nest excavation Index Beach Diego Garcia

To supplement these observations the team plans to conduct observations of nesting during nocturnal surveys to verify that post-nesting track observations of minimal effect of plastics on excavation success are correct. These surveys are planned during fieldwork in June/July 2022 and results will be reported in the final project report.

The project team is also distributing communications in DG to encourage reporting on entangled or stranded turtles. The aim is to conduct necropsy examinations specifically to establish the role of plastic entanglement and ingestion as a contributory factor of morbidity or mortality. To this end, a chest freezer has been purchased and, after some delay, delivered and installed in DG for storage of turtle carcasses. A standardised guide to necropsy has also been produced and distributed to Environment Officers to perform necropsies on stranded turtles if time permits – see Appendix 1. Carcasses will be stored in the freezer ready for annual visits by sea turtle scientists so that data on turtle health and plastic accumulation in gut can be built up. This work will continue after the end of this Darwin project.

Nestor Guzman of the Public Works Department (PWD) in DG retired last year and since then the regular turtle nesting surveys he conducted for many years have not continued as frequently. There is an opportunity for this regular monitoring to form part of the responsibility of either the Naval Facilities Engineering Systems Command (NAVFAC), PWD, or the BIOT Environment Officer, but this may require additional resources or support (a second Environment Officer is currently in recruitment).

Activity 1.2 Deployment of 30 temperature data loggers on Index Beach

Temperature data loggers were deployed at four sites just outside of the Index Beach during an experimental trial to investigate the effects of sub-surface microplastics on nesting temperature, as reported previously. Additional control loggers were placed at a range of depths (30-70 cm) in the two nesting zones (shaded and unshaded) and at two other sites on the beach.

Figure 3. Location of the four experimental plots on Index Beach in Diego Garcia

Figure 4. Four experimental treatments applied at trial plots (4 x 1m^2 treatment quadrats per plot)

Treatment Number	Treatment	Justification
1	Undisturbed	Only disturbed by temperature logger deployment
2	Disturbed but no plastic added	Disturbed similarly to microplastic treatments without plastic addition
3	68.56g of plastic added	Beach with most dense microplastic contamination (Cyprus; Duncan et al., 2018)
4	685.6g of plastic added	10x current maximum density of microplastics at Cyprus turtle rookery

Conclusions of this experimental work show that the plastics treatments were non-significantly cooler than controls but that there were high levels of intra-beach variability at the study site.

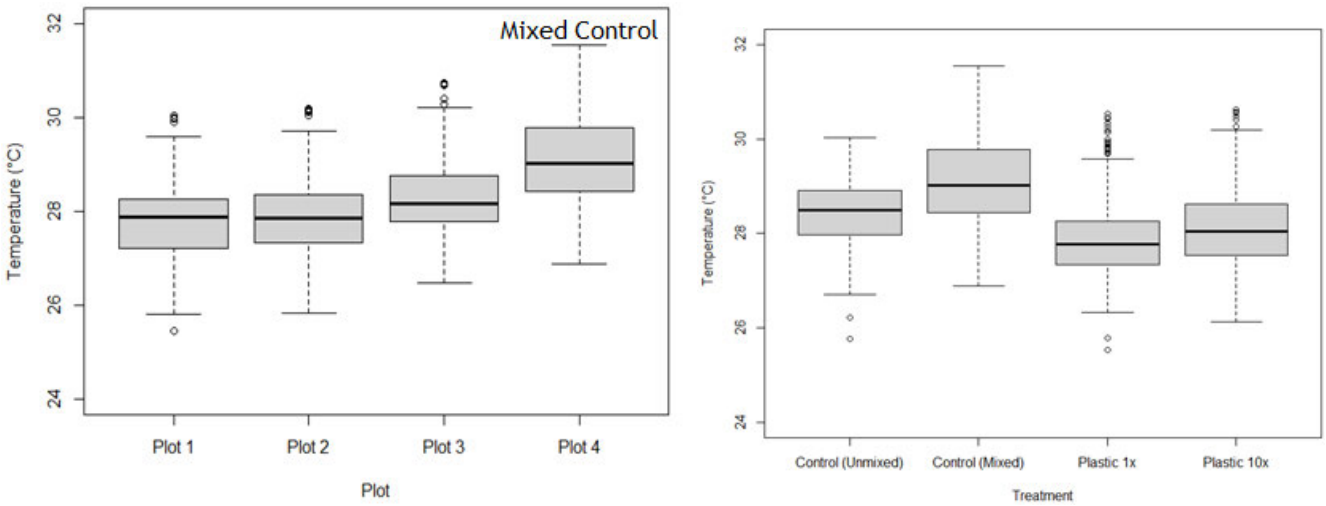

Figure 5. Natural variability in temperature along sea turtle nesting beach (left plot) was greater than the effect of temperature caused by plastics at individual sites, for example plot 4 (right plot).

This activity leads to further questions and opportunities for subsequent research to explore:

- How these experimental methods work at other *in situ* sites used for turtle nesting?
- What effects do different plastic materials have on temperature?
- What results can be achieved in controlled laboratory experiments?

To this end follow up research is underway at Swansea University to:

1. Test these methods on turtle nesting beaches at another location (Dalyan, Turkey) in July-August 2022.
2. Explore the effects that different microplastic polymers have on incubation temperatures in *ex-situ* experimental trials in constant temperature rooms. Research is ongoing and will not be available until after project end.

Activity 1.3 Analysis of waste collected during beach cleans to establish main sources and composition. MSc study to analyse source/circulation of plastic debris arriving in BIOT

Regular surveys of beach debris continued with data contributing to the dataset started in 2019. Since April 2021, 36 additional transects have been carried out across eight survey dates at our five monitoring sites at Index Beach on DG.

- Plastic continues to be the most common type of marine debris recorded during surveys, making up 93.80% of all litter recorded.
- Comparing data across years shows a substantial increase in 2021 of the average amount of plastic recorded per transect.

- In 2021, plastic fragments were the most common category of plastic item recorded (71%), whereas plastic bottles represented 20% of the plastic items recorded.

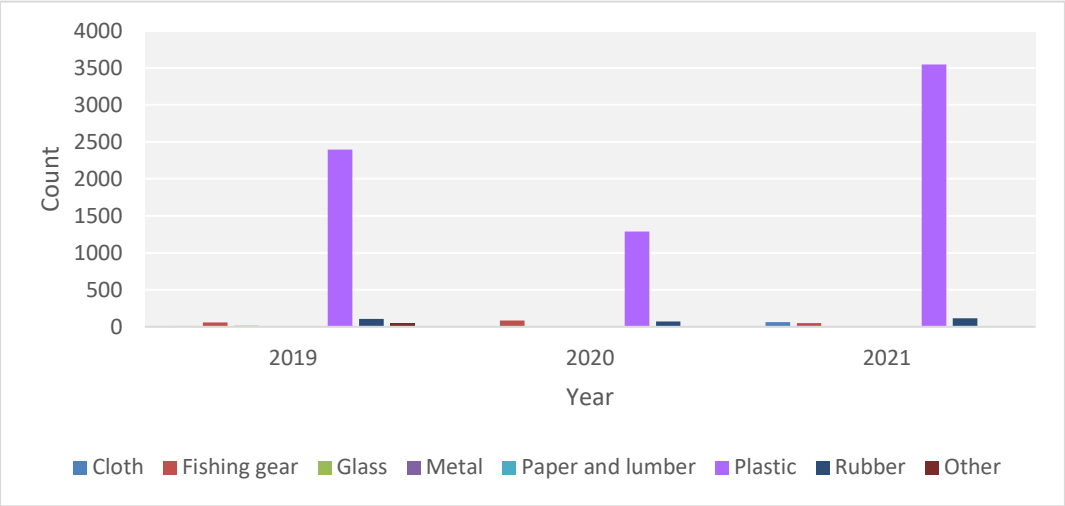

Figure 5. Items recorded by material across five 100 m transects on Index Beach on Diego Garcia each year (taking average count per transect as number of transects differed between years).

MSc student Morgen Biggin at Swansea University will review the data set to assess re-accumulation of plastics on Index beach DG beach in 2021, when the MDT App was used during beach clean-ups to survey one section of the beach on a monthly basis. We anticipate this analysis will also contribute to a peer reviewed manuscript.

During fieldwork in Oct and Nov 2021 the team recorded 11,286 items of beach debris at project study sites on Index beach DG and at Egmont atoll, again dominated by plastic as a material class, but with hard plastic fragments forming the most commonly recorded item - see Figure 6. The latter finding is relevant to the experimental work being done by the Swansea University team into the variable effects on nest conditions by different types of plastic polymer (Activity 1.2).

A repeat beach clean was conducted along the seaward beach of Ile de Rats in the north of Egmont atoll – the second of three beach cleans planned for this project. The team, plus volunteers from DG, spent approximately four hours collecting debris from along the oceanside beach and the sand spit at the northern tip between the strandline and into the vegetation. All plastic waste was collected in 39 x 50-litre reusable sacks and loaded onto the daughter craft when full before being ferried back to the British Patrol Vessel. This was only possible due to the support of both the British Forces and the Captain and crew of the BIOT patrol vessel, as well as participating volunteers.

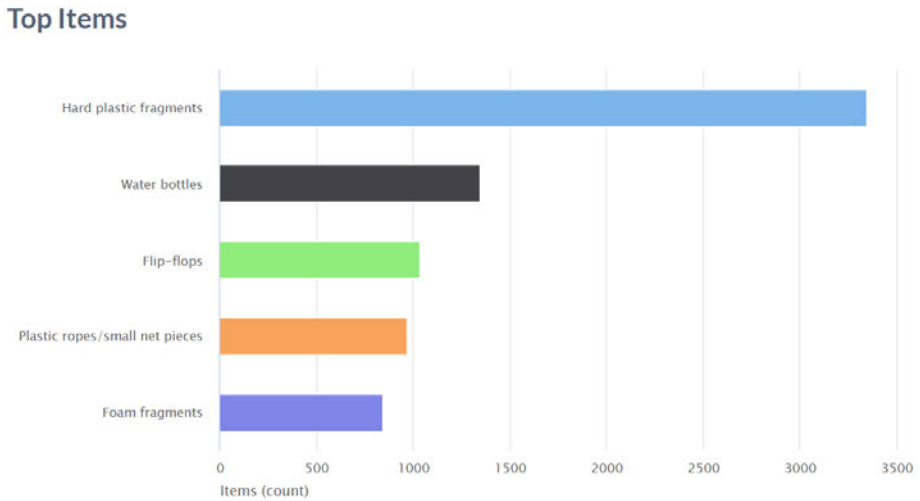

Figure 6. Top categories of items recorded during Oct/Nov fieldwork at both study sites (Index Beach DG and Egmont atoll)

Water bottle labels and lid samples were brought back to the UK and the bottle data collected will be analysed by Jessica Savage as part of her PhD project (see Yr 2 annual report for more detail of this

project) exploring both countries of origin and most commonly recorded brands. See Appendix 2 for a full explanation of the methods and data.

Preliminary results are shown below – Indonesia leads the countries contributing the most bottle waste by some way. This makes intuitive sense as it is 'upstream' of BIOT for much of the year, has an immense and spread-out coastline and very poor waste management infrastructure (85% of its plastic waste in rural areas being uncollected). As the largest economy within the Association of Southeast Asian Nations (ASEAN), Indonesia has an ambitious plan to reduce marine plastic debris by 70% by 2025. Of interest is a major new research project there (PISCES) aiming to pilot a nationwide transformation to a circular economy and we have already established collaborative links with this project.

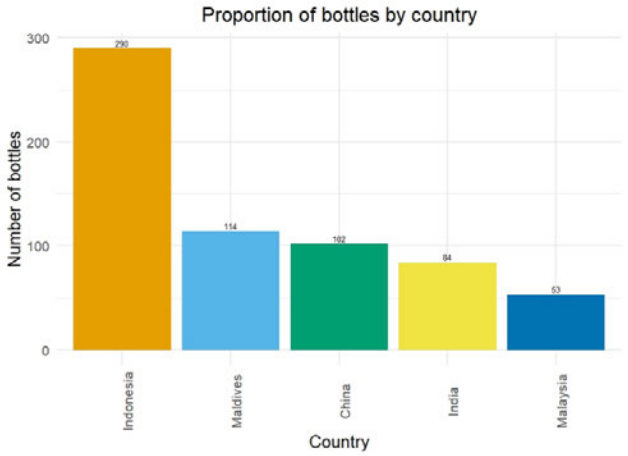

Figure 7. Bottles recorded by country of manufacture

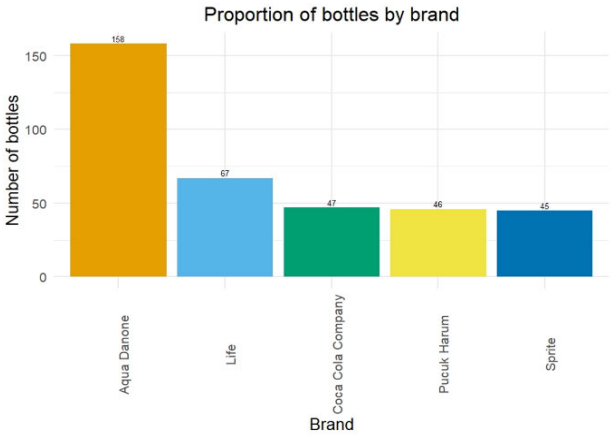

Figure 8. Bottles recorded by brand

Activity 1.4 Nesting beaches identified and mapped with nesting seasons recorded, optimum timings for beach cleans written into beach clean best practice guidelines. Each nesting beach assigned a beach clean team of volunteers.

We have previously reported on the identification of priority turtle nesting beaches across the archipelago, and the creation of beach clean guidelines which include the time and locations of peak turtle nesting activity. The final agreed and distributed guidelines will be included in the final report.

We expect to be able to update the beach clean guidance at the end of the project to include our findings on differential effects of type of plastic on turtle nesting conditions, and to identify a matrix of the highest priority sites across the MPA in space and time, in order to effectively target limited resources for beach cleans.

Permanent signage for Index beach on DG is in production and these signs will indicate the importance of the site for turtle nesting and the contributions made by regular volunteer beach cleans. The signs are large (A0), robust and will last *in situ* for years provided a great legacy beyond the end of the project. See Appendix 3 for design and layout of signage.

The volunteer scheme Adopt-a-Beach continues successfully and collected 4,316 kg of debris in 2021 (Appendix 4). There was a break in the previously fortnightly cleans on Index Beach due to resource constraints which started in October 2021. The regular cleans were due to restart in April/May 2022. The accurate quantification of effort and volumes of debris collected is challenging to obtain but nevertheless this activity remains a popular and effective engagement tool in encouraging environmentally responsible behaviour and linking beach plastic to turtle nesting. This programme is well supported on DG and runs independently of the Darwin project. Visiting vessels and contractors also carry out independent beach cleans in their spare time. The participants get a letter of appreciation from the Brit Rep.

As a standalone event during our campaign activity the project team also worked closely with the Environment Team in the Public Works Department to organise an island-wide beach clean – see activity 2.7 for further detail.

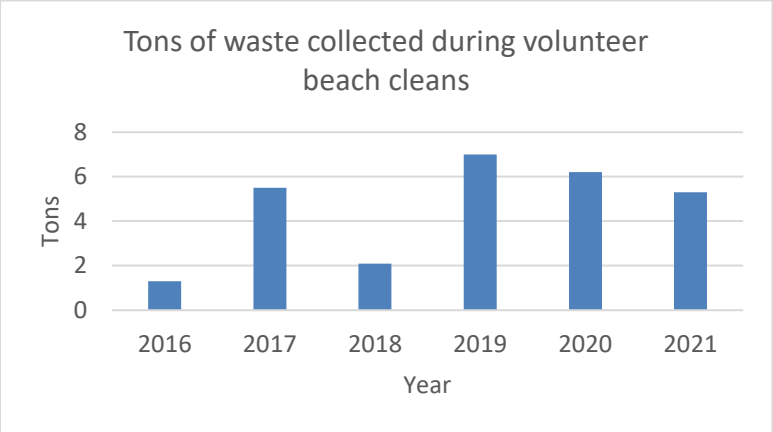

Figure 9. Tonnes of waste collected on DG by volunteers between 2016 and 2021.

Output 2. The system of SUP in DG is understood, with a proposed strategy developed to reduce SUP in identified priority areas, with pilot completed to reduce SUP water bottles, increase refilling and enhance connection between personnel and the ocean.

Activity 2.1. Collect and analyse supply chain data

Building on data analysed in Year 1 and Year 2 of the project; data for 2018 (pre-project baseline), 2019 and 2020, the team secured 2021 data on retail sales from the 'Ship's Store' (the only grocery store in DG). Data included number of units sold for plastic bottled drinks (still water and Gatorade) and for 'non-biodegradable' (plastic) disposable items (cups, bowls, plates, and cutlery). The data indicate that the total number of SUP water bottles sold per year has decreased by 38% since 2018 (2018 n=320,448; 2019 n=296,640; 2020 n=206,988; 2021 n=200,069). However, when comparing the 2021 data to one year before (2020), the decrease is only 3% overall, suggesting the decrease has plateaued. This could potentially be explained by population size increase in DG (see section 3.4); a levelling off of those willing to drink tap water after or linked to new measures relating to the Covid-19 pandemic and is something the project team will be exploring further. Additionally, two new plastic bottled products were introduced in 2021, which is something the project team plan to discuss with the Ship's Store and procurement managers in DG during the next expedition in June 2022. Appendix 5 for sales data and analysis.

Activity 2.2 Interview procurement officers, retail and waste managers

This activity was completed as planned in Y1Q1 and reported in Annual Report 1. The research plan for the final round of fieldwork in June/July includes a follow up audit of changes made to the supply and disposal chain for plastic. The final project report will compare the baseline audit conducted in 2019 with this final audit in 2022.

Activity 2.3 Conduct before and after attitudes and behaviour survey with 300 people to assess personal use of SUP and levels of awareness around environmental impacts of ocean plastic in general and effects on BIOT turtles specifically

This baseline for this activity was established in Year 1 with the delivery of the 'before' surveys of 130 people. In this reporting period the 'after' survey has been drafted (Appendix 6) and a pilot version is being distributed in DG for testing at the time of reporting. The final version will incorporate feedback from this trial phase and check it meets key requirements:

- Can the survey be clearly understood and completed independently by respondents?
- Do the questions elicit the correct form of data in response?
- Do we have questions that capture feedback from people exposed to our SUP reduction campaign implemented in Oct/Nov 2021, as well as those new to DG?

Finally, the survey will be translated into Tagalog to ensure representative inclusion of the contractor community on DG and will be distributed widely before and during the June/July 2022 team visit. The survey objective is to describe whether the respondents report a reduction in their personal use of SUP water bottles, an increase in the use of tap water and refillable bottles, and a clear understanding of the impacts of plastic on ocean health and turtle conservation. This final round of data collection will be analysed, compared to the baseline data, and reported on in the final project report.

Activity 2.4 SUP system map for DG formulated and distributed for comment that identifies current procurement, use, waste disposal and recycling strategies/barriers
This activity was completed as planned in Y1Q1-4 and reported in Annual Report 1. The final project report will include a concluding system map that shows the impacts of project activities over the lifetime of the project.

Activity 2.5 System map used to identify key intervention points with most impact and for each point identify alternative behaviours/products/approaches that could be used to reduce SUP use
This activity was completed as planned in Y1Q4 and reported in Annual Report 1. Key interventions were creating trust in drinking water and removing barriers for refilling both key messages through our campaign.

In Year 1 we reported the positive use of a water refill point in the gym in DG, in Year 2 a second one was added, and in this reporting period there are now three in operation in DG – in total they have dispensed the equivalent of 123,773 plastic bottles worth of water. As we identified in our previous report, they are a positive initiative taken by the contractors on island and likely contribute to a reduction in SUP use. Our final system map due at the end of the project will incorporate initiatives like these that work in tandem with our project activities to reduce SUP use.

Another barrier identified by systems mapping was a legacy of signage referring to water being unsafe for drinking. As a response ‘safe drinking water’ stickers have been designed to be placed by all taps and we will be trialling these during our June/July fieldwork – see Appendix 8.

During the October fieldwork a plastics summit was convened on DG with the project team and key decisions makers. An open discussion highlighted a range of possible actions and interventions to further reduce SUP and provide alternatives. Appendix 8 details actions and progress and the team will follow these up again in our next round of fieldwork.

Activity 2.6 Rank interventions to identify highest priority actions with greatest impact and work them into a SUP reduction campaign
This activity was completed as planned in Y1Q4 and reported in Annual Report 1.

Activity 2.7 Develop and implement SUP water bottle reduction campaign, including drive for residents to sign the #OneLess pledge
This activity was originally planned for June 2020 but delayed by Covid travel restrictions. Despite delays the campaign was successfully delivered in October and November 2021.

<u>Hello DG, Goodbye Ocean Plastic:</u>
The team’s objective was to implement the ‘Hello DG, Goodbye Ocean Plastic’ campaign. Our message was simple: ‘Drink water the DG water and say #GoodbyeOceanPlastic by not using SUP water bottles’. Instead, all military personnel and civilians were encouraged to turn to more ocean-friendly options including the drinkable tap water, refillable water bottles, drinking fountains and refill points all available on the island. The links between this behaviour change and the benefits for turtles and ocean health were clearly made in our campaign film (see section 2.9).
This behaviour change was facilitated by asking people to sign a pledge that committed them to stop using plastic water bottles in exchange for a free, limited edition refillable water bottle. Early meetings with the Community Liaison Officers and the Environment Team within the Public Works Department provided valuable guidance and support.

Within a few days, Hello DG had spread across the island. Branded posters (written in English and Tagalog to improve accessibility in the contractor communities) had been put up at every bus stop and shop entrance. Live radio interviews and a short commercial recorded with the project team were broadcasted via AFN (Figure 10 below).

Pledge stations were set up at island wide events including the ‘Halloween Zombie Run’ and Community Flea Market (Figure 11 below)

and key island locations such as the Ship’s Store and the gym (Figure 12 below).

A short presentation was given at the start of a bingo evening and a separate full presentation given in the Island Rooms.

By the end of the expedition, nearly 1,000 individuals had pledged to stop using plastic water bottles – that's the equivalent of 1 in 3 personnel in DG choosing to use a refillable bottle instead of buying SUP bottled water. The team were regularly seeing the Hello DG reusable bottles being used across the island. The project team also worked closely with the Environment Team in the Public Works Department to organise an island-wide beach clean, so everyone could get involved. The turn-out for the event was exceptional – with 85 individuals taking part to help clean DG's beaches of plastic waste (Figure 13). All participants received a T-shirt, cap or bag all branded with the campaign logo (see Appendix 9). In just 1.5 hours, volunteers collected and removed 535 kg of rubbish and over 3,000 plastic bottles. Two Marine Debris Tracker App transects were completed during the beach clean and all bottles removed for further analysis.

Figure 13. Participants in the 'Hello DG' beach clean 2021

Activity 2.8 SUP water bottle amnesty held in DG to raise awareness of project and distribute refillable bottles with information - a stand at the July 4th street celebrations

Changes to the campaign dates due to travel restrictions meant we had to re-think opportunities for engaging with DG residents. Instead of the July 4th celebrations acting as a focal point as originally planned, the team had a presence at a range of smaller events during their time in DG. See 2.7 for campaign activities during other events in DG.

Activity 2.9 Film commissioned, produced and shown in cinema, radio materials produced, and interviews given on MWR radio station and in Tropical Times newsletter

The film was completed in Y1Q4 and reported in Annual Report 1 (it can be viewed at this link with password TMM). It has been shared in turtle volunteer presentations in Feb and March 2021, as well as in briefings for new contractors and shared with the DG HQ team. The film is now hosted on the 'Hello DG Goodbye Ocean Plastic' Facebook page link and is included with the digital assets that will be left with the DG team as legacy from the project.

Activity 2.10 Plastic waste sampled quarterly from waste storage area and numbers of plastic bottles/ tonne of waste estimated

We have continued to use retails sales records obtained from the Ship's Store to estimate the annual use of SUP bottles, as reported in Year 1 and Year 2. We are confident that this continues to be a reasonable indicator of most of the SUP bottles going through the DG system.

Data from 2021 (Year 3 of the project) compared with data from 2018 (before the project started), shows a **38% reduction in the total number of SUP water bottles sold** in the Ship's Store. Appendix 5.

In contrast to this, the data reveal that sales of flavoured drinks in plastic bottles (Gatorade and Powerade) have increased by 3.5% in 2021 compared to 2018 (2018 n=45,444; 2021 n=47,050). This could be explained by an increase in population size in DG; the project team is keen to explore this further.

The data show a decrease in the sales of SUP plates by 100% over the project lifespan (2018 n=984; 2021 n=0); and a decrease in the sales of SUP cups by 44% (2018 n=3,048; 2021 n=1,703). However, sales of SUP cutlery had increased over this period by 51% (2018 n=2968; 2021 n=4,474). We noted in previous reports how much more expensive bamboo cutlery was than SUP cutlery and better alternatives such as metal reusable items will be part of our discussions with decisions makers during June/July fieldwork. Supply chains have been particularly challenging with many reusable items reportedly selling out very quickly in the Ships Store, which will need to be further discussed.

Activity 2.11 Report produced that analyses changes in attitudes and behaviours, as well as actual number of SUP water bottles used in DG, over lifetime of project

The baseline data for this report has been established via methods outlined in Activities 2.2 and 2.3 and reported on in Annual report 1. Data collection via survey in June/July 2022 will form the comparison for analysis at the end of the project. Draft survey is in Appendix 6.

From personal communications with the team members based in DG there appears to more general acceptance of tap water as a reasonable source of safe drinking water and our campaign refill bottles have been seen still in use across DG six months on from the campaign.

There was a temporary hold on tap water due to an issue with the treatment plant which may have impacted levels of trust in its safety. Our survey is deigned to pick up reservations about tap water and will be reported on at the end of the project.

Output 3. Strategy for recycling DG-generated plastic waste and plastic waste collected during beach cleans developed and recommendations made to BIOT administration.

Activity 3.1 Design sampling strategy based on estimates of total plastic waste collected annually

This activity was completed as planned in Y1Q2 and reported in Annual Report 1.

Activity 3.2 Samples taken from beach cleaned plastic and DG generated plastic and most common items sorted and quantified by plastic waste stream type

This activity was completed as planned in Y1Q2 and reported in Annual Report 1.

Activity 3.3 Each plastic type assessed for suitability for circular economy type approach - all alternative reuse and recycling options considered against matrix of cost, benefit and environmental impact (Y3Q3)

This activity will be pushed back to the last six months of the project as it relies in part on the last visit to DG to discuss some options for waste management with the current team there. We have identified the most common types of single use plastic waste generated on a) DG and b) beach litter (Appendix 9). The quantities and materials have been identified, with approaches to reduction, reuse, and recycling identified in each case based on exploratory meetings with relevant companies, monitoring the literature, participation in conferences and workshops, and consultation with experts. Each option has been categorised to consider feasibility and cost. The next steps are to run an expert workshop in May 2022 to review and critique these approaches, as well as addressing any gaps. The team undertaking fieldwork in June/July 2022 will gain input from stakeholders on DG to inform the resulting feasibility report that will be submitted at the end of the project. See Appendix 9. for matrix of materials and options for reduction, alternatives and recycling.

Activity 3.4 Report produced summarising options and making recommendations for plastic waste management to BIOT managers (Y3Q4)

The final round of fieldwork planned in June/July 2022 will gather further data on current waste management strategy and plans for the future, recognising different strategies are involved for plastic waste on DG and externally generated beach litter. The project team will hold meetings with the relevant

stakeholders and decisions makers to discuss some of the alternatives outlined in 3.3 and review the feasibility of each of them. Summaries and recommendations will be included in the final project report. It is clear that an absolute reduction in plastic use on DG is the most effective action and should be the first to consider in any waste management strategy, so to this end the team made a suite of recommendations for plastic reductions actions for the DG 'best practice document'. The document lays out standard operating procedures for DG and a revision of its contents by the FCDO legal team provided the project with an opportunity to suggest including the objectives we have been working to into everyday processes. Appendix 10 details these recommendations.

Activity 3.5 Convene a workshop to host practitioners and stakeholders from the UKOTs to discuss their approaches to plastic waste management, discuss new technologies and propose innovative solutions (Y3Q2)

This work was initiated in Year 1 - refer to Year 1 Annual report for notes on the 'Plastic waste in the UKOTs' discussion group on 1 August 2019 at the Blue Belt Symposium at Exeter University Penryn campus. Subsequently, the project team has begun conducting surveys with the UKOTs to understand the issues and challenges they face with marine debris, plastic pollution and plastic waste infrastructure, as well as what interventions they have or plan to implement (Appendix 11 for survey). Surveys have so far been conducted with five UKOTs (Ascension, St Helena, Monserrat, BIOT and Anguilla), with further surveys planned with other Territories over the coming weeks. Data from the surveys is being coded and analysed in preparation for writing up short case studies for each Territory, which will be included in the final project report.

Additionally, the case studies will be fed into a new UKOTs Plastic Pollution Steering Group, which ZSL will initiate and coordinate as part of a newly funded Darwin Plus project (DPR10S1\1014: Turning the tide on plastic pollution: Ascension and St Helena). Findings from the surveys will inform the inaugural discussion of this steering group (planned for June/July 2022), and help to frame the focus, priority issues, and remit of the group going forward.

3.2 Progress towards project Outputs

Output 1. Characteristics of plastic waste pollution on BIOT marine turtle nesting beaches, and negative effects on nesting turtles and hatchlings, are understood with appropriate mitigation measures developed and implemented.

Progress on this output has been very good; regular monitoring of fixed transects on Index beach and at Egmont atoll continue to provide data on the impacts of regular beach cleans and describe the distribution and types of plastic debris impacting nest turtles.

Turtle nesting impacts have been explored experimentally *in-situ* in DG and are planned at other field sites in Turkey for comparison as well as *ex-situ* in laboratory conditions at Swansea University. Results so far show natural temperature variability exceeds that driven by plastic waste, but impacts may vary by polymer type and further testing is exploring the detail of these observations further.

Beach cleans continue regularly via the Adopta-Beach programme and during an island wide event as part of our campaign activities.

Beach guidelines have been finalised and will be distributed in DG. Permanent signage for Index beach describing the value of the beach to turtle nesting, the impacts of plastic pollution and the importance of regular beach cleans is in production and will be in place by the end of the project.

The baseline condition at the start of the project was that turtle nesting beaches had high volumes of plastic waste, unmanaged and undescribed, and of unknown impact on turtle reproduction. We have now characterised the types, volumes and origins of plastic waste on beaches, described how it is distributed

and experimentally explored some of the physical effects it may have on turtle reproduction. We have supported an active management strategy for this waste on Index Beach and others across DG and Egmont atoll, with clear guidelines and a legacy of permanent signage to last after the end of the project. The combination of our project activities with the Adopt-a-Beach programme and opportunities to volunteer with the turtle team has created an engaged and committed community of DG personnel who are motivated to continue beach cleans.

Output 2. The system of SUP in DG is understood, with a proposed strategy developed to reduce SUP in identified priority areas, with pilot completed to reduce SUP water bottles, increase refilling and enhance connection between personnel and the ocean.

Progress on this output has been very good; with the system of SUP use described in DG and a strategy devised and delivered to encourage use of refills and reduction in SUP use. Throughout, communicating about turtles and their conservation has proved to be a successful bridge to attitude and behaviour change around plastic use and ocean health.

The baseline condition was that 50% of survey respondents rarely or never drank tap water, with 13% citing the cost or lack of availability of refillable bottles as a barrier to doing so. Systems analysis identified messaging and campaign activities to engage with the DG communities which were delivered successfully; with 1,000 people signing a personal pledge to reduce their use of SUP and taking a refillable water bottle. Those bottles are in active use around DG and more are in production for on-going engagement efforts. Safe drinking water stickers to be placed by all taps have been designed and are in production to remove concerns about water safety (another barrier identified by systems mapping). Information on SUP reduction and drinking water is now included in all on-boarding for new contractor staff.

A final assessment of the effects of project activities on behaviours and attitudes to plastic and ocean health will be assessed via the next survey and reported on at the end of the project.

Output 3. Strategy for recycling DG-generated plastic waste and plastic waste collected during beach cleans developed and recommendations made to BIOT administration.

Progress on this output has been satisfactory; we have focused on reduction and replacement activities in this first part of the project. In the remaining six months we will focus on comparative assessment of various strategies for reduction and replacement in the first instance. We are aware of a new waste management contract that has been put in place in DG (led by the US Navy) and we will explore then options for treatment of waste plastic off island via this contract during our fieldwork in June/July.

3.3 Progress towards the project Outcome

Effective beach cleaning reduces plastic waste on BIOT beaches, improving turtle nesting success, while DG personnel, better connected to the ocean and conservation, drive a decline in SUP.
Overall progress against the project outcome is good. Despite the limitations of Covid-19 and other issues in DG that took resources away from beach cleaning, volunteers still managed to remove 4.5 tons of waste from turtle nesting beaches along the atoll. The long deployment of turtle researcher Holly Stokes has meant ample opportunity for volunteers to work hands-on with turtles and better understand their biology, ecology and the value of the protection the territory affords these endangered species. We are seeing active support for SUP reduction activities and ideas from all elements of the communities in DG, both military and contractors. This is happening ‘bottom up’ from community groups and community liaison officers, and ‘top down’ from decision makes and senior managers encouraging the inclusion of plastic reduction objectives to guidance documents and briefings. Our campaign had great reach and communicated messages of personal plastic reduction in an engaging and fun way.

Despite fluctuations in population size over the reporting period making a per head assessment of plastic consumption difficult, we have seen a 38% reduction in SUP water bottle sales in DG over the life of the project to date. We have seen good progress against elements of the outcome we are working to.

3.4 Monitoring of assumptions

Assumption 1.1: Reduction in SUP in DG is reflected in a reduction in proportion found in waste streams.

Comments: The project views the volumes of plastic waste entering the DG system through retail sales to be a reasonable alternative measure of efforts to reduce consumption. Retail sales data as shown in Appendix 5 are detailed and by commercial necessity, accurate. An assumption we made early on was that the population size in DG would remain relatively level over the life of the project. This has proven incorrect as various factors (from changes in movement due to the Covid-19 pandemic, to increased military activity) have led to increases in population in DG and specifically to an increased need for bottled water. In addition, the quarantine required for new arrivals caused an increase in provision of bottled water over this reporting period. We are working on a continued assumption that the population is on average somewhere between 2,500 and 3,000 but also recognise that this figure is very variable at short notice, operationally sensitive and that the size and demographics of the population can impact the demand for bottled water.

Assumption 1.2 Level of plastic waste accumulating on BIOT beaches from non-DG sources remains constant during the lifespan of the project.

Comments: This assumption remains true as measured by continued surveys showing the consistent return of beach debris, dominated by plastic items, even on beaches that have been recently cleared. A particular observation is the high number of small plastic fragments being encountered in the turtle nesting zone see Figure 6. – with implications for nest conditions that we are testing experimentally.

Globally the production of plastic continues to rise as does the overall production of solid waste both as a function of an increase in both populations and levels of consumption:

From the Pew report Breaking the plastic wave: *Without action, the annual flow of plastic into the ocean will nearly triple by 2040, to 29 million metric tons per year (range: 23 million-37 million metric tons per year), equivalent to 50 kg of plastic per metre of coastline worldwide.*

As noted in previous reports the countries that border the Indian Ocean are amongst the worst globally for mis-managed and leaky waste streams that contribute to ocean pollution. This observation is borne out by the data we have collected showing counties ‘upstream’ of BIOT (i.e. north and east reflecting prevailing currents for much of the year) contributing high proportions of the plastic water bottles recorded on beaches in the territory. The exception is the high number of bottles of Chinese origin, one hypothesis is that these bottles are coming from cargo ships in transit across the Indian Ocean. This is being tested through Jess Savage’s PhD which is looking at input from ships with regional oceanographic modelling.

Assumption 1.3 SUP water bottles are an effective flagship item to represent the issue of marine plastic pollution and connect people better to the ocean, as has been the case in the London-based #OneLess campaign.

Comments: The use of water bottles both as a symbol of ocean (and turtle) health and as a vehicle for our messaging has continued to work well (see campaign film in 2.9). The bottles are highly visible and easy to retrieve from beaches – the data that can be collected from them describe the regional scale of the plastic pollution issue and raises possibilities of targeted interventions up-stream. The refillable bottles we have created to replace SUP bottles during the campaign have great appeal as they feature the recognisable DG ‘sky-line’ and became very collectable (Appendix 8). The water bottle has proved to be a very effective communications tool.

Assumption 1.4 A values-based approach increases engagement in marine conservation.

Comments: During our campaign activities the team encountered a high degree of engagement with and enthusiasm for the aims of the project. A general level of ‘literacy’ around the impacts of plastic pollution can be detected from conversations with DG residents. In tandem a genuine affection for turtles and an

interest in them as a visible and accessible part of nature is a widely shared value. This project would not have been as successful without the link between turtles and plastic and this link has enabled us to appeal to emotions as well as logic when seeking to engage. This assumption will be fully tested post-survey in the final reporting.

Assumption 1.5 Project team can continue to access DG through military flights during the project period within the same parameters and constraints known from over five years of conducting research in DG.
Comments: Access to DG has improved slightly since the last report. Flight frequency is still only fortnightly and remains vulnerable to frequent changes at short notice. This means that teams need to be in DG for a month at a time which increases costs (met by match funding from other sources as discussed in previous annual reports).
However, the quarantine period in DG has recently been reduced to five days which is down from the previous two weeks.

Assumption 2.1 Data available from retail outlets and surveyed stakeholders accurately captures volumes and movement of SUPs.
Comments: Noting assumption 1.1 re: population size we continue to view the flow of plastic sold through the Ship's Store as the principal indicator of overall SUP use in DG.
We have previously established that retail sales from the Ship's Store represents the single greatest source of plastic waste generated in DG, including 94% of the SUP water bottles (Annual report 1 Appendix 11). This provides us with a simple but powerful indicator to measure changes in the volume of SUP passing through DG and straight into waste. We have data from before the project started (2018) and for each of the three project years (2019-2021) showing a reduction in sales of SUP bottled water (by 38%), but an increase in sales of flavoured SUP bottled drinks (by 3.5%) over the project lifetime to date. This assumption remains true – this metric is useful in identifying changes to the volume of SUP waste generated in DG.

Assumption 2.2 Beyond SUP water bottles, additional priority intervention points and practical alternatives can be identified.
Comments: This assumption was confirmed by the meeting held in DG between the campaign team and senior stakeholders and decision makers. Decisions and actions from that meeting are detailed in Appendix 7 but in summary several additional intervention points/alternatives and actions were identified over and above those laid out on our project activities. Engagement with plastic reduction is on-going and not limited to the project team which is encouraging.

Assumption 2.3 An effective campaign can be implemented in an environment with relatively high turnover of military personnel.
Comments: Our campaign was delivered effectively in this reporting period. As part of that activity pledge signers were asked to share their email addresses for follow up surveys and 750 did so. This enables us to contact respondents that may have left DG as well as those still there when we conduct our follow up survey in summer 2022. We also see ongoing engagement after people have left DG through our Facebook pages (for turtles and plastics respectively).

Assumption 2.4 Majority of individuals pledging to go #OneLess will maintain behaviour change beyond the life of the project.
Comments: Our follow up behaviour change surveys asks specific questions about respondents' likelihood of continuing to use refillable and reduce SUP bottles as a result of the campaign. In addition to those signing pledges we expect that the messaging in DG (i.e., in immigration information given to new arrivals and in on-boarding presentations and training and on stickers next to taps) is now in parallel with our campaign messaging to 'drink water the DG way' and will become the new normal for behaviour across the island.

Assumption 2.5 More 'ocean friendly' alternatives can be procured and supplied to DG.
Comments: Alternative products to replace SUP items have already been made available in the retail outlet (Ship's Store) in DG. In particular items made of bamboo or paper provide good alternatives, but sales are variable with the latest data showing a rise in sales of plastic cutlery from baseline. We have noted in previous reports big price discrepancies between e.g., plastic and bamboo cutlery which may be a factor here.

The report we will produce at the end of the project that seeks to compare alternatives for SUP reduction and waste management will prioritise reduction as the primary and preferred mechanism for achieving that. A comparison of products currently in use and proposal of alternatives will form a key part of that approach. A list of SUP alternatives was compiled for the project team in October 2021 and this list is being built into our wider marine science programme standard operating procedures and shared with visiting expedition teams across other grants going forward; most recently the CEH led Darwin project team visiting DG in June. See Appendix 12 for detail.
Further interviews with teams with procurement responsibilities planned for fieldwork in June/July 2022.

Assumption 2.6 Waste sorting and management allows for data collection and analysis.
Comments: As described in our Year 1 annual report the project team cannot get regular enough access to the waste management site to make this data collection feasible, nor is there currently sufficient sorting in place to make this a viable method. The sales of SUP are now being used as an alternative indicator that measures plastics in, rather than plastics out, of the system. This indicator has performed well to-date and this was confirmed as an acceptable change by the reviewer of our first annual report.

Assumption 2.7 Personnel are willing and able to participate in multiple surveys.
Comments: The levels of engagement with our project team have been high and has been greatly aided by the long periods spent in DG by Milly Fellows, the Environment Officer. Our final survey is comprehensive, but we aim to increase accessibility by making it viable to complete independently, delivering it in digital and paper form and by translating it so it is available in both English and Tagalog. The project team will spend time in person in June/July ensuring that the survey is as widely distributed as possible to maximise our chances of getting a representative response rate.

Assumption 2.8 Personnel on short rotations can be contacted once off DG to complete follow up surveys,
Comments: The follow up survey due to be delivered through June and July in DG can be distributed by email in a digital form (SurveyMonkey). Pledge signers were asked for permission to be contacted by the team at a later date and we received permission and contact emails from 722 respondents. This enables us to contact them with the follow up survey.

Assumption 3.1 DG beach cleans continue and beach cleans in Northern atolls from patrol vessel are conducted as planned.
Comments: Beach cleans in DG have continued via the Adopt-a-Beach programme but have been reduced on Index beach due to resource constraints in the team assigned this stretch of coast.
Beach cleans were conducted at our study site on Egmont atoll in 2021 but cleans planned for June/July 2022 may be postponed due to lack of access to a vessel. The project team will work with the teams in DG to try and identify the next opportunity to deliver this activity.

Assumption 3.2 Dependent on resources for beach cleans in DG remaining available from US authorities and patrol vessel is available and not required for enforcement duties.
Comments: See 3.1 these activities continue but have been limited in this reporting period due to resource constraints. The relevant decision makers in DG are supportive of our activities and are currently exploring alternative ways to allow us to continue access to these sites during our June/July fieldwork.

Assumption 3.3 Plastic types are identifiable, and condition of plastics are suitable for treatments under consideration in great enough quantities.
Comments: As reported in Annual report 1, an initial investigation into the quantities and types of plastics available in the two waste streams in DG has been conducted. Further research is on-going to explore options for further waste treatments and are to be reported on at the end of the project.

Assumption 3.4 Report is considered by BIOT administration and findings incorporated into decision making framework
Comments: Assumption remains the same as in Year 1. This reporting period has seen engagement with the objectives of the project with senior decision makers and stakeholders in DG. Plastics summit meeting on DG and submission of suggestions for plastics reduction objectives to the new Best Practice Document all signal engagement at that level. The final reporting from the project will feed into the Interim Conservation Management Plan (ICMP) with particular reference to turtle conservation and aims to make practical suggestions to the BIOT administration as managers of this MPA that will help to mitigate the negative effects of plastic as laid out in the project logframe. The BIOT administration has plans to review the ICMP in June 2022 and the project team will ensure that issues of SUP reduction and plastic pollution control remain a key objective in any revised document.

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

The UK Government's 25-year Environment Strategy identifies the status of endemic and globally threatened species and the extent and condition of terrestrial and marine protected areas in the UKOTs as indicators relevant to the Convention on Biological Diversity Aichi Targets 11 and 12 and Sustainable Development Goals 14 and 15. It is particularly relevant to SDG 15 via the restoration of healthy shoreline habitat to prevent biodiversity loss.

The two species of sea turtle this project focuses on are both globally threatened; green turtles are Endangered, and hawksbills are Critically Endangered according to the IUCN Red List of Threatened Species (2021), and both are heavily exploited across the western Indian Ocean. The team's research into the effects of sand temperature on turtle hatchlings will increase knowledge of the potential effects of climate change on turtle nesting success and will result in a manuscript in a peer-reviewed journal.

Nicole Esteban presented data from the project at the UNFCCC COP meeting in Glasgow see section 11.

Our previous annual report flagged papers in press at that time co-authored by project team member Nicole Esteban and relevant to the work of this project and as evidence of climate impacts on our target species. The research explored the effects of extreme weather events that cause anomalously warm temperatures during marine heatwaves (MHW). The 2016 MHW in BIOT resulted in high sea surface temperatures leading to major coral bleaching. Recent comparisons between data collected for sea surface temperatures around DG and turtle nest depth on the Index Beach demonstrate that this MHW also caused high sand temperatures on sea turtle nesting beaches. Model predictions suggest that the 2016 MHW caused the highest female-skewed hatchling sex ratio and the lowest hatchling emergence rates in the past 70 years.

1. Hays. G.C., Chivers, W.J., Laloe, J-O., Sheppard, C. and **Esteban, N**. (2021) Impacts of marine heatwaves for neighbouring sandy beaches. *Biology letters.* https://doi.org/10.1098/rsbl.2021.0038
2. Laloë J-O., Chivers W.J., Esteban N., Hays G.C. (2021). Reconstructing past thermal conditions in beach microclimates. Global Change Biology. https://doi.org/10.1111/gcb.15903

In addition, Heather Koldewey published a paper on the links between plastic pollution and climate change which received extensive media coverage leading up to and during the Glasgow COP. This paper acknowledges the Darwin Initiative.

3. Ford, H., Jones, N., Davies, A., Godley, B., Jambeck, J., Napper, I., Suckling, C., Williams, G. Woodall, L., **Koldewey, H.** (2021). The fundamental links between climate change and marine plastic pollution. Science of the Total Environment. https://doi.org/10.1016/j.scitotenv.2021.150392

5. Consideration of gender equality issues

As noted in previous reports the demographic of the human population in DG does not reflect a natural gender or age distribution as that population is one of appointed employees (military and contractors), rather than a typical community. The population is therefore skewed in age (younger) and gender (more male – 86% of the total) than a natural population. Where the project surveys the DG population randomly, we request optional information on gender to establish the relative proportions of respondents. We also design all project activities to be inclusive of all genders. The gender distribution of people completing the final survey will be tracked and controlled to ensure that there is equal opportunity of participation across genders despite an unequal distribution in the DG population.

6. Monitoring and evaluation

Monitoring and evaluation of the project continues to be shared amongst the three main project partners, ZSL, Swansea University and BIOTA with information and project work stored on a shared servers with access restricted to team members only.

A large proportion of our activities fall under monitoring and evaluation:

- We identified beaches across the archipelago with significant turtle nesting activity and identified our study sites in DG and Egmont using nesting surveys.
- Regular surveys are conducted at both study sites to record nesting activity and interruptions and to record beach debris on fixed transects.
- We monitor categories and volumes of plastic debris on nesting beaches and use data from plastic water bottles to identify sources (countries and brands) contributing the most to this debris. Items monitored on Debris Tracker contribute to a global open access database.
- We monitor retail sales data annually to track the consumption of SUP to DG comparatively across project years and with a pre-project baseline.
- We deployed instruments buried at turtle nest depths both in and ex-situ to monitor nest conditions and evaluate impacts on these conditions from plastic in the substrate. We are also collecting data from nesting beaches in other locations (Turkey) to compare data to those collected in BIOT and produced in the lab at Swansea University.
- In year 1 we used a systems analysis approach to create a baseline description of plastic use in DG and to identify barriers and levers of change that could be overcome or applied to change that system. In year 3 we will use survey data to re-examine the system and compare change against that baseline condition this will evaluate the overall success of our approach in meeting the objectives of the project.
- Our campaign explicitly requested that respondents make a pledge to change their behaviour (reduce plastic use) and share their email addresses, so we were able to follow this behaviour change up at the end of the project.
- Our behaviour and attitudes survey (Appendix 8) will use a combination of quantitative and qualitative questions to evaluate views of DG residents and establish any change in their use of plastic over the lifetime of the project.

We have noted in Appendix 13 items of M&E related activity with a budget implication.

7. Lessons learnt

With travel difficulties last year, we came close to finding an alternative to the in-person campaign we had long planned as it was continuing to be extremely challenging to get to the territory. We weighed up a range

of alternative options for delivering the work (Year 2 Annual Report) but concluded that we would continue to press on with this approach believing it to be the most effective way of creating change. In the event we feel our approach was vindicated – as travel opened up we were able to deliver our campaign with a full team on the ground, even though it involved last minute staffing changes due to Covid-19, as well as additional logistics and costs (8-day quarantine, Covid testing, PPE etc.) for which we leveraged counterpart funding. The effect of a concentrated few weeks of activities focused on turtles and plastics generated a great deal of interest and support in DG. We feel that the 'buzz' surrounding a campaign like this is an important part of its effective delivery and in retrospect feel that an alternative approach would not have been as successful.

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

The team were very pleased with the feedback that we received from the Darwin reviewer for last year's report. The reviewer suggested that 'the project should think about how it might be able to harness learnings from the extensive data collection and analysis to create a repository of knowledge/lessons learning for the industry/other projects once this project has come to a close'.
We formulated this project's structure in part based on lessons learned by ZSL's OneLess Bottle project and in turn learning from this Darwin project have contributed to the project design of new grant applications (to Darwin Plus and to the John Ellerman Foundation) to explore the impacts of plastic on wildlife in other UKOTs and to apply lessons we have learnt with this project to plastic reduction efforts across a range of other UKOTs. This has been further informed by stakeholder interviews with other UKOTs and the planned establishment of a new UKOTs Plastic Pollution Steering Group. We have disseminated the project through several talks and conference presentations and further scientific papers are in development.

9. Other comments on progress not covered elsewhere

There is some risk from delays to our planned final round of field activity in Egmont atoll during our visit in June/July 2022. We had not anticipated that the patrol vessel we generally use for access would be out of commission for a period over our visit. We are working hard with the authorities in DG to identify alternative ways of getting to our field sites but would like to flag that this activity may have to be delayed beyond the formal end of the project as a result.

A note on personnel change on the team in this reporting period – Emma Levy left the team for maternity leave and her contribution was backfilled by Alice Chamberlain and Sharmin Rouf.

10. Sustainability and legacy

Most of the members of the Darwin project team will continue to work in DG after the end of the project (either as part of other grants or employed by the BIOT administration) and will continue to pursue the objectives of the project; promoting the conservation of sea turtles and encouraging on going reduction in single-use plastic.
The role of the BIOT Environment Officer is key to our project delivery and an additional EO is due to be recruited shortly – they will be immediately included in the team and their efforts to promote SUP reduction will continue to be part of their professional remit after the end of our project.
We are building recommendations of the project into policies and procedures on DG so they are embedded and supported across stakeholder groups, including procurement policies.
In the final year of the project, we retain some budget for use in campaign relevant activities and we will target this spend to those activities with most chance of having a sustained legacy.
In practical terms the messaging of 1) the benefits of beach cleaning for turtle nesting sites, 2) SUP reduction and 3) use of tap water, can now be found in guidelines, signage, immigration briefings and induction training, and the objectives of the campaign are being taken up by on island groups such as the Public Works Department and the Community Liaison Officers team.

11. Darwin identity

The Darwin Initiative is acknowledged as the funder on communication and project outputs. The Darwin logo was used in a presentation at the UNFCCC COP meeting in Glasgow, where Nicole Esteban spoke about the impacts of climate on turtle reproduction at the Government of Turkey's pavilion - Figure 15.

The Darwin logo was also used at the Royal Society conference on the 50-year anniversary of the Aldabra research station where Heather Koldewey presented on the conservation of iconic species in the Indian Ocean.

Nicole Esteban spoke about the project (and included Darwin funding recognition and logos) at the ZSL Symposium: *Changing the System – a new approach for ocean conservation* on 27-28 April 2022.

In addition the Darwin logo is well represented in all our campaign material – Facebook page, signage, stand flags, refillable bottles, posters etc. which were used all across the island during the campaign in October/November 2021.

An article on our project was included in the March 2022 edition of the Darwin Newsletter on the conservation of charismatic species

Figure 14. Dr. Nicole Esteban speaking at COP 26 using data from this project

Rachel Jones included data from the project in the 2022 Webby Award-winning 'Ocean Matters' podcast plastics episode and via a webinar event on 'Plastic Pollution in the Indian Ocean' which had attendees joining live from 15 different countries. Nicole Esteban also contributed to the Ocean Matters sea turtle episode.

12. Impact of Covid-19 on project delivery

Covid-19 has impacted our project heavily over the last few years, including delaying travel, delivery of activities, procurement, and provision of equipment. It has significantly increased our costs across the project both as general costs have gone up but also Covid-19 specific expenditure such as PPE or accommodation and subsistence during two-week quarantine periods in DG. These extra costs have all been met by match funding from the project partners.
Overall it has meant extending the project by six months in order to have time to conduct our last round of fieldwork and to assess the impacts that our project work has had on the ground. However, as we approach the last six months of the project we are largely back on track and expect to be able to complete all delayed activities on time by the end of the project 31 August 2022.

13. Safeguarding

Please tick this box if any safeguarding violations have occurred during this financial year. ☐

If you have ticked the box, please ensure these are reported to ODA.safeguarding@defra.gov.uk as indicated in the T&Cs.

ZSL has invested heavily in its safeguarding policies and procedures both in the UK and globally. The Council of Trustees and Executive Management Committee have formally recognised safeguarding as a key area of responsibility and are fully committed to strengthening and rolling out ZSL safeguarding approach. Where necessary these efforts are applicable to staff, partners and other stakeholders ZSL works with. Relevant policies have been updated and new policies and procedures implemented and aligned to this commitment including; Dignity and Respect at Work ,Global Safeguarding Policy; Safeguarding Policy for UK staff; Global Whistleblowing Policy and Procedure; Global Code of Conduct; DBS and Criminal Convictions Policy; Employing Younger Workers Policy; Disciplinary Policy and Procedure; Reference Request Policy; Violence and Aggressive Behaviour Policy; The 4 Rs safeguarding procedure; Staff handbook.

These policies are easily accessible on ZSL's internal intranet and have been translated into languages relevant to our work. Existing and newly joined staff, consultants and partners are made aware of the requirements of these policies and ZSL standards. They participate in an induction into the policies, related procedures and implications irrespective of the length of time they will be working/collaborating with ZSL.

ZSL has also implemented measures to ensure the effective delivery of these policies by:

- designating a Safeguarding Lead (Head of Legal, Governance and Risk Management, Simon Lee).
- a number of Designated Safeguarding Officers and Deputies.
- DSL meets DSOs and DSDs quarterly and with the DG monthly to consider the rollout of safeguarding and to provide direction. Our Safeguarding Trustee, Designated Safeguarding Lead, along with a wider working group to help lead implementation.
- receiving updated global safeguarding training from independent experts including 'train the trainer' sessions to allow safeguarding leads to provide this training in-house in ZSL; and
- raising awareness of the updated Global Whistleblowing Policy by creating posters in different languages to be distributed amongst ZSL staff.
- rolling out more formal feedback mechanisms to report any safeguarding issues as part of international programming.

14. Project expenditure

Table 1: Project expenditure <u>during the reporting period</u> (1 April 2020 – 31 March 2021)

Project spend (indicative) in this financial year	**2020/21 D+ Grant (£)**	**2020/21 Total actual D+ Costs (£)**	**Variance %**	**Comments (please explain significant variances)**
Staff costs	[redacted]	[redacted]	[redacted]	Increase in staff salaries in reporting period
Consultancy costs	-	-		
Overhead Costs	[redacted]	[redacted]	[redacted]	Associated with other higher costs
Travel and subsistence	[redacted]	[redacted]	[redacted]	Increased costs associated with PPE, Covid-19 tests and quarantine period in DG
Operating Costs	[redacted]	[redacted]	[redacted]	
Capital items	-	-		

Others (Please specify)	[redacted]	[redacted]	[redacted]	Some costs for signage production allocated to staff time for design
TOTAL	[redacted]	[redacted]		

Checklist for submission

	Check
Is the report less than 10MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	✓
Is your report more than 10MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	x
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.	✓
Do you have hard copies of material you need to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number. However, we would expect that most material will now be electronic.	x
Have you involved your partners in preparation of the report and named the main contributors	✓
Have you completed the Project Expenditure table fully?	✓
Do not include claim forms or other communications with this report.	