Darwin Plus:
Overseas Territories Environment and Climate Fund
Annual Report

To be completed with reference to the "Writing a Darwin/IWT Report" Information Note: (https://dplus.darwininitiative.org.uk/resources/reporting-forms-change-request-forms-and-terms-and-conditions/). It is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

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Darwin Plus Project Information

Project reference	DPLUS097
Project title	Regional-scale marine conservation through multi-territory tracking of frigatebirds
Territory(ies)	Cayman Islands, Anguilla, BVI, Turks & Caicos, Montserrat, Bermuda, UK
Lead organisation	University of Liverpool
Partner institutions	Department of Environment, Cayman Islands Government Anguilla National Trust, Anguilla Jost van Dykes Preservation Society, British Virgin Islands Department of Environment and Coastal Resources, Turks and Caicos BirdsCaribbean
Grant value	£305,882
Start/end dates of project	April 2019 – March 2022 (note revised end date)
Reporting period (e.g. Apr 2020-Mar 2021) and number (e.g. Annual Report 1, 2)	April 2020 – March 2021 AR2
Project Leader name	Dr Jonathan Green, Dr Rhiannon Austin
Project website/blog/social media	Twitter: @CaymanSeabirds, @SEG_UL, @RhiAustin www.caymanseabirds.weebly.com
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1. Project summary

The United Kingdom Overseas Territories (UKOTs)

The Caribbean region is home to 6 of the UK's 14 overseas territories, which are scattered over distances of greater than 2000 km (Fig. 1). Anguilla, the British Virgin Islands (BVI) and Montserrat are located in the Lesser Antilles in the eastern Caribbean, the Cayman Islands and Turks & Caicos Islands are distributed in the western Antilles, and Bermuda is found further north in the Atlantic Ocean basin. While each of these territories has its own unique features, including a diverse array of habitats and associated fauna, the many islands that make up the Caribbean archipelago are interconnected both ecologically, and through commonly shared socioeconomic and management considerations. The marine and coastal environments of the Caribbean UKOTs benefit from varying levels of protection and conservation action, and there is thus recognition that efforts to foster multilateral discussions and cooperation could be extended.

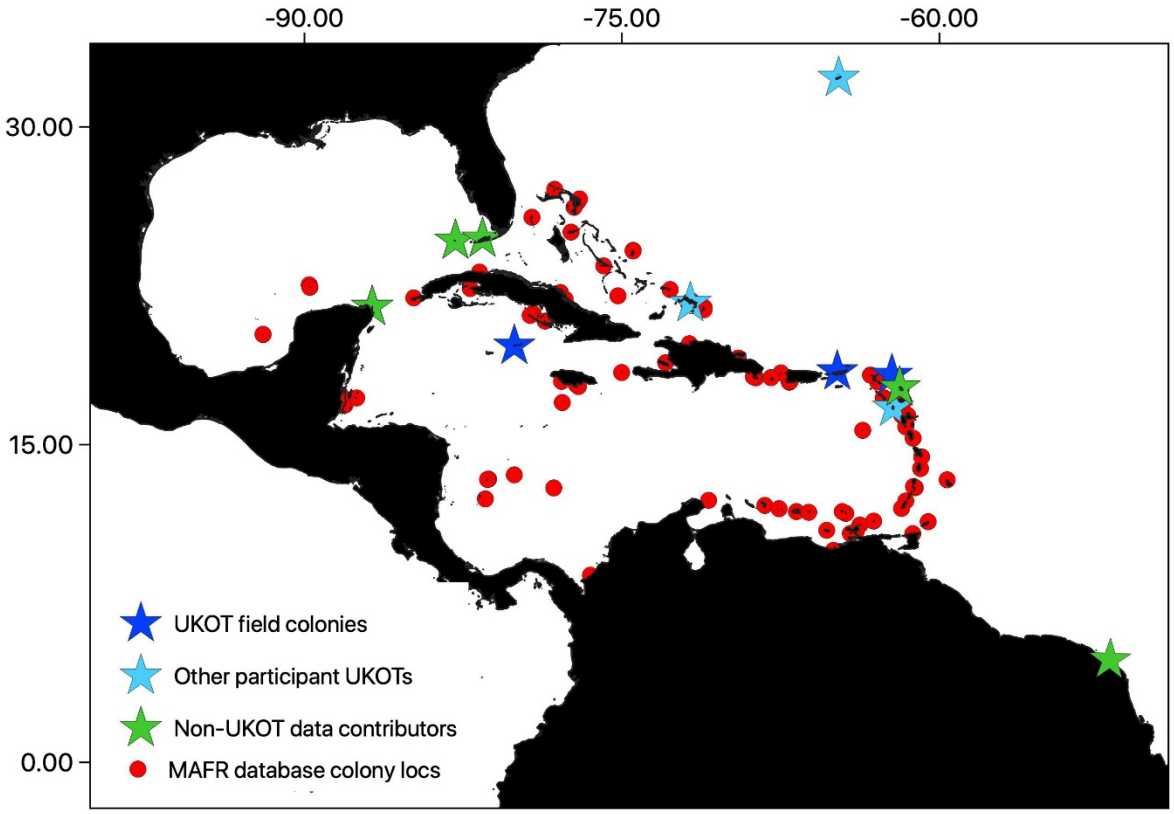

Fig. 1. Map of the UKOTs in the western Caribbean Sea. UKOTs with populations tracked during this project (dark blue stars), other partner/collaborating UKOTs (light blue stars), other territories for which tracking data already exist in the Caribbean (green stars) are shown. Locations of all known or possible frigatebird colonies throughout the region are provided in red (source: WIBA MAFR database).

Project background & key issues addressed

The marine and coastal ecosystems of the UKOTs face multiple anthropogenic pressures including those associated with fisheries, pollution, introduced predators, habitat destruction, offshore development and climate change. Ecosystem-based management approaches are increasingly being recognized and used as effective tools to address such threats and deliver sustained maximum benefits for ecosystems and stakeholders. Essential to this is the identification of biodiversity hotspots, which may be designated and managed as protected areas. For example, the UK Government's 'Blue Belt' programme is creating large, highly regulated and protected zones in the EEZs of several isolated UKOTs across the globe. However, this approach is unlikely to work in the Caribbean UKOTs, where an additional understanding of the interactions and connectivity between different states and territories is essential, as is consideration of the diverse range of stakeholders and socioeconomic challenges in these densely populated areas.

Seabirds are highly mobile marine top-predators that are potentially powerful management tools for identifying biodiversity hotspots relevant to a diverse range of fauna. We know from previous territory-specific Darwin+ projects in the Caribbean that magnificent frigatebirds are an exemplar indicator species, due to their tendency to use and link onshore roost sites, coastal habitats and offshore marine areas, while travelling amongst multiple states and territories. This project is thus using this species and its unique traits as a tool to identify ecologically valuable areas for protection in marine and coastal environments, and encourage discussion and development of regional-scale trans-boundary management strategies, based on approaches that are appropriate to the challenges faced in the Caribbean UKOTs.

Project aims

This project aims to provide regional-scale ecological data and analytical tools for identifying important habitats, and a framework within which to develop management cooperation, which in

combination will improve the ability of managers and policy makers in all six Caribbean UKOTs to recognize, designate and protect vulnerable ecosystems onshore, nearshore and offshore.

Project objectives

1. *Identify at-sea and onshore distributions and movements of adult and juvenile magnificent frigatebirds from globally and regionally important populations on Anguilla, BVI and the Cayman Islands during breeding and/or non-breeding periods*
2. *Identify habitat preferences of adult and juvenile magnificent frigatebirds, and develop repeatable methods for identifying and defining marine and coastal productivity hotspots*
3. *Discuss with collaborative local and regional conservation management agencies about how magnificent frigatebirds can be used to indicate marine and coastal biodiversity hotspots, and agree on the utility of this approach for improving transboundary regional-scale marine and coastal management strategies*
4. *Identify training, data and management needs relevant to future cooperative marine and coastal management strategies in the Caribbean UKOTs, and develop plans to fill them*
5. *Make initial steps to address territory identified gaps in training, data and management and, based on lessons learned during these supporting activities, assess the feasibility of future project development in each of the UKOTs*

2. Project stakeholders/partners

This project is being conducted as a direct partnership between the University of Liverpool, Anguilla National Trust (Anguilla), Department of Environment - Cayman Islands Government (Cayman Islands), Jost van Dykes Preservation Society (BVI), Department of Environment and Coastal Resources – Government of the Turks and Caicos (Turks and Caicos), and BirdsCaribbean (regional conservation organization), with additional collaboration of the Department of Environment – Government of Montserrat (Montserrat) and Department of Environment and Natural Resources – Government of Bermuda (Bermuda). Thus, all 6 of the Caribbean UKOTs are directly involved. The project application stemmed from initial conversations between Dr Austin and representatives from the 6 UKOTs in 2016, and developed with involvement from all project partners in the proceeding years as new information was gained under other projects. Thus, all partners were involved in the project's early development, as well as in the application process. While Montserrat and Bermuda were not able to sign up as official project partners, owing to existing project commitments, both territories were highly supportive of the project during its early stages (see supporting letters in the application), have actively participated in workshops and management discussions, and are keen to benefit from supporting activities and knowledge that will arise from the project action.

Early in the project, a meeting between all project partners was held (21st June 2019; see Y1 Annual Report). This ensured that all partners were in agreement with the planned work, both in Y1 and over the remainder of the project, and further helped to build inter-partner relationships. In March 2020, representatives from all 6 UKOTs, BirdsCaribbean and the UoL attended (either in person or in the case of the Cayman Islands DoE, remotely) and participated in the project's Initial Workshop in Anguilla (see Y1 Annual report). This allowed face-to-face discussions over a 3-day period, which substantially improved inter-partner relationships, and provided an invaluable opportunity for all partners to contribute to the steering of the project in Y2 and Y3 to ensure maximum sustained impact.

As other sections of the report will detail, the COVID-19 global pandemic has had a significant impact on our project. This includes partner interactions, with the inability to travel to and within the region preventing opportunities to interact directly with partners and partner organization as we did in Y1. Contact has been maintained via videoconference and email, with a Steering Group meeting held online in November 2020. However, contact between the UoL and main UKOT partners has been relatively limited this year, as all individuals and organisations have faced changed working conditions and new priorities. There have also been staff changes in some of the partner organisations, requiring new relationships to be established. These changes and limitations have also curtailed opportunities for development of links to local communities and other technical specialists in the UKOTs.

Despite these challenges, new links, partners and stakeholders have been engaged. Project co-leaders Green and Austin were invited to an online workshop focused on a Darwin Plus funded Marine Spatial Planning project in the Turks and Caicos Islands in September 2020 (DPLUS094), which allowed helpful new contacts and links in the region to be established. Project co-leaders Green and Austin also attended the UKOTCF online conference in March 2021 which introduced us to a diversity of stakeholders (individuals and organisations) working in the UKOTs, including the 6 UKOTs involved in our project. This helped us to further understand stakeholder points of view and has shaped some aspects of the current project as we move into Y3 (see later sections for details). Finally, we have expanded our network of collaborators willing to share frigatebird data from the region to include data contributors from Florida (ARCI), Barbuda (University of New Brunswick and DECC), Mexico (Max Planck Institute of Animal Behaviour and Amigos de Isla Contoy) and French Guiana (CNRS and Technosmart). Furthermore, we are working with habitat modellers at the Université Catholique de Louvain (UCLouvain), Belgium to ensure that the most up-to-date and relevant approaches are developed and used during this project.

3. Project progress

3.1 Progress in carrying out project Activities

As outlined below, the COVID-19 Global Pandemic has curtailed progress on several project activities in Y2. This has resulted in a rescheduling of some activities from Y2 into Y3 and an extension of our project end date from September 2021 to March 2022.

Output 1: At-sea and onshore distributions of magnificent frigatebirds
1.1 *Track adult magnificent frigatebirds from globally and regionally important colonies in Anguilla, the Cayman Islands and the British Virgin Islands using GPS-GSM loggers*
1.2 *Track juvenile magnificent frigatebirds from globally and regionally important colonies in Anguilla, the Cayman Islands and the British Virgin Islands using GPS-GSM loggers*
1.3 *Identify onshore, nearshore and offshore IBAs for adult and juvenile magnificent frigatebirds from the three UKOTs and produce distribution*
The COVID-19 Global Pandemic has severely curtailed progress in activities for Output 1. Neither project co-leader Austin nor our partners in Anguilla or BVI were able to conduct fieldwork in 2020 or early 2021, nor to tag either adult or juvenile frigatebirds. However, a small number of tags deployed on fledglings in Y1 continued to transmit data into Y2 (Cayman: n = 5 transmitted to May, Anguilla: n = 3 transmitted to August), and further data collection on BVI and Cayman will take place in Y3. Unfortunately, project partners in Anguilla do not have the capacity to tag more birds in Y3 due to current priorities and competing pressures from other projects. Data collection in Y3 squeezes the time available for analysis, so we submitted a change request to extend the end date of DPLUS097 by six months to March 31st 2022. As the project co-leaders will both be salaried from other sources during this period, we remain confident that data collected in Y3 will be incorporated into project activities and outputs. To date, we have tracked 32 new adults, 6 immature birds and 37 fledglings during this project. We have been able to conduct preliminary analyses of tracking data collected so far from this and historic projects to identify candidate IBAs for all three territories using the Birdlife International approach (Annex 4), and to map core distributions of birds (Annexe 3). These will be updated after data collection is complete in Y3.

Output 2: Frigatebird habitat preferences and hotspot identification
2.1 *Develop habitat suitability models using generated tracking data, to identify key features of preferred habitats of different life stages and populations, and produce habitat preference maps*
2.2 *Apply habitat suitability models to predict and identify marine and wetland hotspots at a regional scale, and produce hotspot maps*
2.3 *Produce non-technical report outlining methods and results and disseminate to local and regional conservation and management agencies*
2.4 *Present project findings to conservation practitioners community at a conservation conference(s)*
2.5 *Produce peer-reviewed scientific manuscript(s) for publication to disseminate developed approach to wider scientific community*

Significant progress has been made on activities relating to Output 2, combining data collected to date with historic data from our project team on the three focal UKOTs. This has been supplemented by additional data from four more sites obtained through collaboration. Inclusion

of data from multiple relevant locations across the region brings fantastic power to these analyses. However, as data were collected using different devices and different protocols, there have been substantial, time-consuming, challenges in assimilating, standardising and combining the datasets. Progress in activities for Output 2 was also aided by project co-leader Austin attending a remote online training course in Bayesian Species Distribution Modelling hosted by PR Statistics with teaching from experts in this field of spatial statistics. New methodologies learned during the course have enabled us to apply a range of distribution models to the data allowing us to identify the most appropriate and advanced tools for analysing our data, which will notably improve our ability to meet Output 2 and maximise on the results that will be generated during this project, once all data are available during Y3.

Analyses to date include i) development of state space models for identifying behaviour, ii) development of preliminary habitat predictability models on the two largest datasets in the project (Cayman and Anguilla), involving a comparison of different model frameworks to identify the most appropriate method (i.e. Bayesian versus frequentist inference, Maximum entropy modelling, machine learning), and iii) tests of model transferability between populations (Annex 5). A new method for generating pseudo-absence data sampled within environmental space that is informed by the core distribution of birds has also been developed with collaborators at UCLouvain, and will be shortly applied to the tracking data (Annex 5). Once habitat models are complete they will reveal key environmental variables that magnificent frigatebirds use when selecting their habitats both in marine and onshore coastal environments. This progress has enabled us to create preliminary maps of the probability of presence of frigatebirds at a regional scale. We plan to update these analyses over the coming months, and further investigate how robust these models for predicting suitable habitat across seasons and populations, in order to better understand how consistent this species is in its habitat use in the Caribbean region (Annex 5). This information should provide valuable in decision making processes and marine spatial planning into the future. Peer-reviewed projects and reports will follow in due course along with presentations to conservation practitioners at relevant conferences. Such conferences have been cancelled and postponed but we have plans to present in Y3 via World Seabird Twitter Conference (May 2021) and BirdsCaribbean Symposium at American Ornithological Society Virtual Conference (August 2021) and global audience via World Seabird Union Virtual Conference (October 2021).

Tracking data from the Cayman Islands population has also been used in a PhD chapter by a student from the University of Milan that Dr Austin has been overseeing and has generated a scientific manuscript that is currently in peer-review with the journal ‘Behavioural Ecology’ (Annex 6).

Output 3: Development of regional management strategies

3.1 *Run regional Final Workshop to present tracking and hotspot identification methods, and plan cooperative management strategies*

3.2 *Produce a Final Workshop Report, agreed by project and workshop participants and outlining regional management strategies*

As the COVID-19 global pandemic unfolded through 2020 and into 2021 it became clear that our plans for the Final Workshop would have to change. In Y1, we modified our project and created a Final Workshop to tie in with the BirdsCaribbean (BC) regional conference to be held in Trinidad in July 2021. This would enable us to ensure attendance by interested delegates from around the region, with the aim of creating new face-to-face connections among people and organisations, and a better understanding of biological connectivity that is exemplified by frigatebirds. As it became clear that the BC conference would be cancelled and in-person workshops would be unlikely to be going ahead, we needed a new plan. Project co-leaders Green and Austin spent considerable time planning an extensive online workshop to be held in August 2021 that would still attempt to meet the identified themes of understanding biological connectivity and improving connectivity among stakeholders working in the region. However, several factors conspired to require us to change our plans once again. Firstly, attendance at events such as the UKOT Conservation Forum conference highlighted the current needs and priorities of the Caribbean UKOTs, in part shaped by the COVID-19 pandemic. Secondly, the UKOTCF further highlighted the need for activities such as workshops to have better balance between the bottom-up stakeholder agenda and top-down ideas from external organisations. It was also evident that while large-scale regional collaboration remains important, at this time the

individual UKOTs are focussed first and foremost on meeting their own pressing individual in-country needs and requirements, which vary widely in nature between territories. While our workshop concept was developed with our project partners at the Initial Workshop, it became clear that an expansive online workshop focused on themes such as marine and stakeholder connectivity will not meet their needs at this time. Thirdly, the project partners identified fatigue with online workshops through 2020 and early 2021, and thus the online workshop that we were planning was unlikely to be successful in its purpose. Fourthly, we had been struggling to attract the external speakers and guests that we believed would ensure that the event was successful and high profile. This suggested that our planned event was indeed not likely to be a priority for those for whom we were targeting.

As a result of all of these factors we have devised a new plan for the Final Workshop that is best suited to the times and status of our project, and the altered priorities of our project partners in the UKOTs. Towards the end of Q2, or start of Q3 of Y3, the Final Workshop will now take the form of a short lower-profile online workshop for project partners only. Here we will present data from the frigatebird tracking and analyses, and discuss ways for these findings to be used by the project partners. Exposure to, and dissemination of, the project findings to other stakeholders in the region will be achieved instead via documentation (peer-reviewed papers, non-technical reports) that will be sent directly to relevant individuals, as well as through wider dissemination at practitioners conferences in Y3. Wider stakeholder groups will be targeted by our partner BC, and through the activities that project co-leader Austin is undertaking to help to revitalising the Seabird Working Group of BirdsCaribbean as a working group co-chair. BC has developed an extensive database of contacts in all relevant Caribbean states and territories. Findings will be fed directly to them, supported by activities such as webinars and the BC Seabird Working Group Facebook site. A Final Workshop of this format will release some funds in Y3 of the project. Some of these will need to be used to support increased fieldwork costs due to COVID-19 requirements (e.g. quarantine, testing) but there should be some funds available to support further Supporting Activities in the partner UKOTs. The partners are in favour of this further disbursement and the other topic for discussion at the Final Workshop will be to report on Supporting Activities to date, and develop plans for further or expanded Supporting Activities. This will all be documented in the Final Workshop report. Annex 7 formally describes the consultation for the Final Workshop currently underway with all project partners.

Output 4. Identifying training, data and management needs

4.1 *Run an Initial Workshop to present preliminary analyses, and make initial steps to identify training, data and management needs*

4.2 *Produce a report outlining the training, data and management needs in participant UKOTs identified during the Initial Workshop*

Activities in support of Output 4 were completed in Y1 (see Y1 Annual Report).

Output 5. Support, development and capacity building

5.1 *Undertake supporting activities in participant UKOTs (e.g. site visits seabird population assessments in Turks and Caicos – see Q14)*

5.2 *Produce and disseminate non-technical reports on activities in individual territories and future plans for addressing gaps in skills and expertise*

5.3 *Identify future funding streams and prepare draft funding applications as appropriate*

The COVID-19 global pandemic has also had a substantial impact on the Supporting Activities planned for Y2. Activities in Anguilla, TCI and Bermuda have all been delayed until Y3. At the time of writing, Supporting Activities have taken place on Montserrat. An Uncrewed Aerial Vehicle (UAV or ‘drone’) to aid in seabird surveying has been purchased and shipped. Seabird surveys are currently underway, and will allow an updated assessment of species and numbers of individuals breeding on and around Montserrat, as well as identifying non-resident species such as frigatebirds that visit and forage in nearshore waters around Montserrat. These surveys will provide the first assessment of seabirds on the island since 2009, and will form the basis of future management and conservation actions, and possible future project work and funding applications. Annex 8 describes the surveys and survey plans in detail.

The Final Workshop will be an opportunity to discuss how outputs from the Supporting Activities conducted by all the UKOT project partners might form the basis of future funding applications to schemes identified in the Initial Workshop (see Y1 Annual Report). A non-technical workshop report will be generated and made available following the planned workshop.

3.2 Progress towards project Outputs

Output 1: At-sea and onshore distributions of magnificent frigatebirds

Prior to this project, tracking data from magnificent frigatebird populations in the Caribbean were sparse in most territories, with the exception of a sizable 'short-term' dataset from the Cayman Islands constrained to the 2017 early chick-rearing period, and a handful of tracks from populations on Anguilla and the BVI, again during early chick-rearing. In Y1, considerable effort was made to improve this situation, resulting in generation of a large stream of new data from birds originating on both Anguilla and the Cayman Islands. These included the first data on fledgling movements in this species that we are aware of, new data on immatures (adding to a small number of tracks from preliminary work on 2 birds from the Cayman Islands), and extended movement data of adults from both populations, covering much longer durations than were previously available (Annexes 3 and 4). As detailed in the Y1 report, there were setbacks in tagging and data collection from frigatebirds on the BVI, which delayed this work into Y2. As noted above, COVID-19 has further delayed this but we hope to complete this work in Y3 as well as adding further tracking data from the Cayman Islands. Despite these challenges, with a year left to the extended project end date, we believe that we will collect the outstanding data and achieve our objective of understanding the habitat use. Also, while we expect to gain ample data from the UKOT sites, we have expanded relevant data collection by other means and added additional datasets from other non-UK Caribbean populations. We have also gained new collaborators since the Y1 report, and thus we are confident of having sufficient data to characterise the habitat preferences of this species in difference periods of the year and over the entire region. This is substantial progress on the baseline condition of 'poor data coverage'. Distribution maps, preliminary spatial analysis and map layers have already been produced with the data generated and collated for adult birds (see Y1 Report). We have now produced marine IBA maps for adult birds based on these data (Annex 4). Tags deployed on fledglings continued recording into Y2, and we provide new maps showing movements of immature and fledgling birds (Annex 3), as well as marine IBA maps for these birds (Annex 4). Distribution maps and GIS layers remain the best indicators.

Output 2: Frigatebird habitat preferences and hotspot identification

Further development of modelling approaches using the datasets collected in DPLUS097, and made available through collaborators, indicates that we will have ample data within the time-revised constraints of this project to identify habitat preferences of magnificent frigatebirds. This will allow us to predict suitable habitat over unsampled areas across the Caribbean, and assess the use of this species for hotspot identification. This is compared to a baseline of 'no data' on habitat preferences of this species, and 'no data' outside of the breeding period, or on other life stages and the non-breeding components of the population, which is often that which is highly vulnerable to at-sea threats. During Y2, habitat models were further developed leading to the generation of repeatable modelling methods and preliminary habitat suitability maps (Annex 5). Ultimately, GIS layers for practitioners, and scientific papers remain the most appropriate indicators of success which will be generated in Y3.

Output 3: Development of regional management strategies

Regional-scale management action, and multilateral cooperation, for highly mobile marine fauna remain challenging in the Caribbean, and past efforts towards building capacity for cross-territory working on seabirds are either limited to small groups (e.g. DPLUS007), or have not focused directly on the UKOT network (e.g. BirdsCaribbean's 2012 NFWF Seabird Support project, see seabird links at www.BirdsCaribbean.org). Thus, to help address this deficit, and using the tools developed in the project, we planned to bring representatives from multiple UKOTs, and other non-UKOTs, together to encourage international discussions and strengthen and build new working relationships. Conversations during the Y1 Initial Workshop emphasised the importance of establishing and maintaining in-person connections, and we drew up initial plans to hold a workshop at the 2021 BirdsCaribbean conference in Trinidad with themes on biological and stakeholder connectivity. As detailed above, COVID-19 has forced us to abandon this original

plan and partners agree that a default replacement with virtual activities is also not appropriate. This is in part due to the priorities of the UKOT partner organisations having shifted somewhat. This can be attributed to the stresses posed by the current global situation (see section 3.1) but also to our Initial Workshop and plans for Supporting Activities, which have highlighted other pressing local needs. We now plan for a much smaller scaled-back Final Workshop (Annex 7) and will drive regional collaboration through the revamped BirdsCaribbean Seabird Working Group. For example, a regional census is planned for 2023 and our project outputs can contribute to this through capacity building for seabird surveys and monitoring activities, and by generating the tools for increased participation in the UKOTs.

As detailed in the Y1 report, an originally planned single MOU no longer reflects the development of our activities towards Output 3. Evidence of achievement will come from a Final Workshop Report as well as other documentation of Supporting Activities (see Output 5) that contribute to Output 3, and as other evidence of activities via the BC Seabird Working Group (see Annex 6 for examples of this). Further evidence comes from activities in the region by the project co-leaders such as Dr Austin's participation on the Marine Spatial Planning Working Group for the TCI. Despite these changes to activities and means of verification, we still believe that actions supported by DPLUS097 will maximise this project's legacy and lead to completion of Output 3. Relevant stakeholders in the region will be informed of how we can use movement data from magnificent frigatebirds as indicators of marine and coastal biodiversity hotspots. With support through the BC Seabirds Working Group, will show how this approach can be used to improve transboundary regional-scale marine and coastal management strategies.

Output 4. Identifying training, data and management needs
This Output was completed during Y1 of the project. See Y1 report for full details.

Output 5. Support, development and capacity building
Supporting Activities in one of the six UKOTs (Montserrat) commenced in Y2, while all others have been originally scheduled for, or delayed into, Y3. As outlined in the Y1 Report, partners have identified priorities for spending the funding allocated in the budget for this task, and 'plans of action' were developed to plan these activities. Actions for next steps in these Supporting Activities lie primarily with the partners, though as mentioned above, COVID-19 has influenced priorities and capacities to action this work. However, despite this, we remain confident that outstanding activities will be complete in Y3. Partners at the UoL and BirdsCaribbean remain on standby to help discuss and develop these plans with partners, and provide support during implementation stages if required and updates are discussed at Steering Group Meetings. Reconfiguration of activities and the Final Workshop should also allow further release of funds towards extended or additional Supporting Activities to be discussed, both during the Workshop and other Steering Group Meetings. Non-technical reports, meeting reports and draft funding applications remain relevant verifiers. In Montserrat, project partners have made great progress in their Supporting Activity of updating population data on seabirds, supported by purchase of an Uncrewed Aerial Vehicle (UAV or 'drone'). See Annex 8 for details and verification.

3.3 Progress towards the project Outcome

The overall Outcome statement of our project is to 'use movement data from Caribbean magnificent frigatebirds to develop an approach for protected area definition onshore, nearshore and offshore that can be applied for conservation management at a regional scale'.

A year ago, we reported being well on course to achieve this overall project outcome. Despite the many difficulties suffered this year that have slowed progress, we are further forward than a year ago and we have moved closer to achieving the project Outcome. Extending the project end date will help us reach the project Outcome by the end of the project, as will the rescaling of some of the more ambitious elements in terms of regional cooperation, which our partners feel are not their main priority at this taxing time. However, we believe that as set out in Annex 1, there is strong evidence that we will achieve the Outcome by the end of the funding. As set out elsewhere in this report, the majority of the proposed indicators remain adequate for measuring achievement of the Outcome and, where not, alternatives have been implemented and outlined.

3.4 Monitoring of assumptions

The major assumptions of this project are associated with amenability of management agencies to the project and its outputs, the availability of wild animals for tracking and capacity, and weather conditions.

Amenability of management agencies to the project: All project partners were involved in the development of the project from its earliest stages, thus ensuring engagement and its relevance. During Y1, project partners actively participated in meetings and the Initial Workshop, and field partners (staff of ANT and DoE) participated in fieldwork and training to maximise capacity and data collection, and ensure transfer of skills and knowledge. As highlighted elsewhere in the report, the COVID-19 global pandemic has shifted the focus of project partners to more immediate domestic concerns. While the outputs of our project remain of great value for local-scale marine spatial planning and coastal management activities in the future, the whole-region cooperative elements of our project are not currently the highest priority. Projects such as ours should remain flexible and responsive to the demands of our project partners and there is mutual understanding among the partner group in these unprecedented times that things have changed. The result of this is that while the potential benefits of our project findings and activities to regional cooperation and conservation management strategies remain, these benefits may not be realised within the lifetime of the project. We will ensure that the messages and findings are disseminated to all stakeholders in the region through our partners and roles at BirdsCaribbean, and will be ready to consult and participate when the time is right. An example and precedent for this came through the project co-leaders being invited to a Marine Spatial Planning Workshop for the TCI government. It was evident that the data layers of coastal and marine biodiversity hotspots that will be generated during our project are, and will be, an integral component of and contribution to these and similar exercises in the UKOTs. Similar exercises have taken place in the South Atlantic UKOTs as part of the Blue Belt programme, leading to designation of large-scale protected areas, and these are a model for what could happen in the Caribbean UKOTs.

Availability of wild animals / weather conditions: The project assumes that focal seabird species will be present at colonies during tracking periods, and available in ample numbers, to ensure 1) collection of sufficient data to capture the range of movement strategies present in the breeding populations, and 2) robust analyses to provide an evidence base for conservation planning. Fieldwork for this project began prior to the Darwin+ 2019 start date (1st April 2019), with UK staff having relocated to the Caribbean, and multiple partners having started work on the project in early March 2019 to ensure its success. Fieldwork and field staff remained flexible in spring/summer 2019 to ensure that as much tagging work could be completed as possible, within logistical and weather-related constraints. We assumed that planned fieldwork would take place during suitable weather conditions and this assumption largely held during Y1. However, capacity was built into the project in Y2, to allow for a second field period should weather conditions inhibit data collection. This activity has now been further transferred into Y3 which does demonstrate inbuilt resilience in our project. Project partners in BVI and the Cayman Islands remain committed to this fieldwork which should allow completion of these project elements.

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

Our project's focus is tightly linked to Darwin Plus' overarching objective of supporting the UKOTs to achieve strategic long-term outcomes for the natural environment. It aims to aid conservation actions by providing tools that allow identification of priority habitats for protection, and determine their regional interconnectivity. Through this process, we also aim to help develop cross-territory discussions and management cooperation. While progress this year has been limited as described elsewhere in the report, the project as a whole remains committed to this overarching objective. Identification of training data and management gaps, and steps towards addressing these by planning Supporting Activities in each UKOT, which should lead to future project actions, represent progress towards improving management capacity in the UKOTs.

Seabirds, which represent the top of biodiversity pyramids, are key components of marine ecosystems and are under severe threat from multiple stressors. The 1992 UN Rio Convention requires the development of holistic ecosystem-based management approaches, which are being adopted by states around the world. Partner UKOTs are committed to incorporating these approaches into their marine and coastal management practices. Our project aids this process

by bringing together relevant stakeholders to work collaboratively at a regional level, and generating information that is required to further develop National and Regional Biodiversity Strategies and Action Plans. For example, the project will help identify priority hotspots for protection relevant to fauna from multiple UKOTs, thus providing information that should aid MPA and TPA network creation under multi-lateral environmental agreements (i.e. the SPAW Protocol to the Cartagena Convention).

5. OPTIONAL: Consideration of gender equality issues

Our project team is well-balanced in terms of race and gender and we do not feel these aspects are particularly relevant to our project.

6. Monitoring and evaluation

The primary means of M&E in our project are via scheduled workshops and Steering Group Meeting,s and evaluation of progress on the logframe as required by the Darwin+ reporting schedule. Steering Group meetings are usually well attended, though it is reasonable to say that enthusiasm for and during these meetings has waned during Y2 as a result of the impacts posed both professionally and personally to the project team from the COVID-19 global pandemic. However, we do not have an alternative suggestion, and we are continuing with this approach as we are familiar with it and it does facilitate reflection and evaluation of progress by the project co-leaders at least. We have found that the Outputs and Activities have been very effective in driving progress towards the project Outcome. This is evidenced by the ease with which we have been able to complete and update Annex 1. Very little time has been spent on activities that are not listed in the LogFrame. M&E is led by project co-leaders Austin and Green at the University of Liverpool. Project partners contribute relevant details and approve all reports.

7. Lessons learnt

In Y1, collaboration between partners worked very well, with knowledge and expertise contributed from all angles to make the project run smoothly. We have amassed an impressive amount of data that will contribute considerably to conservation goals in the Caribbean UKOTs, and we have been able to draw on expertise and existing capacity that was built in partner OTs during previous baseline Darwin Plus project work. The Initial Workshop was a key event where meeting and sharing ideas in-person helped to identify progress and obstacles effectively, as well as further foster inter-territory relations. As noted elsewhere in the report, while virtual communications are a valuable supplement to these interactions, they are not a substitute. For collaborative projects to work with partners that are small organisations with multiple competing priorities, being present in person and in the moment remains the most effective way to make progress, from all perspectives.

Related to points on communication, the COVID-19 global pandemic has further influenced the importance of territory-specific issues and challenges. While there are common, unifying environmental problems across territories, and important information to share, local conservation and biodiversity problems remain at the heart of both daily activities and the short to medium-term plans of stakeholder organisations. Indeed, our Initial Workshop and plans for Supporting Activities have highlighted some of these within the current project. Looking ahead at potential solutions for future problems when there are imminent pressing issues to deal with is a challenge, considering that most partner organisations are working under tight financial and logistical constraints. Therefore, while collaboration is important in terms of learning lessons and avoiding repetition of mistakes, training, education and information sharing are often the best approach, rather than working simultaneously together on a common problem. While our goal for regional collaboration on biodiversity hotspots and marine conservation is important, it is simply not high up on the list of priorities in the current climate while the world is experiencing an ongoing pandemic. Indeed, it is notable that some of the most evidently successful elements of our work are the territory-specific Supporting Activities. The diversity of activities planned, and associated discussions around future project needs, highlights divergence in issues and goals for marine and coastal conservation in the Caribbean UKOTs and Bermuda. For a project led by an external

organisation, it is important for us to be respectful of this key point. As the lead organisation, our realisation of this has been heightened in Y2, supported by attendance at the recent UKOTCF conference and its resulting report (Annex 9). We will continue to provide the information generated from tracking work in usable formats for future use, as such data have proven highly valuable in marine spatial planning (MSP) exercises in other UKOTs, and will help to inform MSP processes when the time is right. Attendance at the MSP workshop in TCI highlighted that some territories are ready to use these data, but other partners may not yet be in the place to actively and directly incorporate generated information into management activities.

As noted in the Y1 report, there are lessons learned that are important for improved project management. The timing of the Darwin Plus projects means that project work always starts part way into, or at the beginning of, seabird breeding seasons in the Caribbean. This results in limited flexibility and wiggle room for project initiation and administrative activities (i.e. immediate steering group meetings). Project staff have to initiate field activities immediately, and this relies on in-kind contributions of time from our team before the official project start date to ensure that activities run smoothly after 1st April. For example, Dr Austin worked for 6 weeks on this project in-kind prior to its start date. This has always worked well within our hard-working collaborative group in past projects, as it has during the current project. However, one angle of our project management that could be improved on in the future is organisation and communication between partners with respect to finances, collaboration agreements and what is required from all. For example, delays in signing of collaboration agreements and issues with international bank transfers contributed to field delays in the BVI. When projects involve a large number of partners from multiple organisations and territories, and have tight schedules, we recommend that focused finance / administrative meetings are scheduled early on by the lead organisation, following the announcement of grant success, to ensure that all partners are aware of the required processes to allow smooth running of the project. Furthermore, while we have undertaken publicity for this project, this could be expanded on through various channels in existing frameworks within the partner OTs, which we hope to follow through with in Y3. For example, there are opportunities for Dr Austin to talk at local community meetings on Little Cayman, and opportunities in territories including the BVIs, Montserrat and TCI for public engagement (e.g. student talks) through local NGOs.

8. Actions taken in response to previous reviews

Three actions emerged from the review of Year 1:

1. "*It would be useful for the project to consider longer-term impacts of the pandemic on the project such as limited ability of UK staff to travel in summer 2020 and longer term safety considerations for staff when travel is required.*"
   Response: As anticipated by the reviewer, travel remained challenging throughout 2020 and, in the end, Health and Safety considerations prevented further travel in Y2. We have addressed this point elsewhere in the report but it is noted and agreed that travel will continue to be subject to stringent national guidelines (in the UK and the UKOTs), as well as local rules and risk assessments imposed by the partner organisations.
2. "*Provide differentiated data for adult and juvenile frigatebird populations where appropriate to meet stated outputs.*"
   Response: We have addressed this point directly (see Section 3 and Annexes 3 and 4).
3. "*Submit a change request to Darwin to approve suggested changes made to the logframe. You may want to consider making further changes to the logframe to make indicators 'SMARTer', for example by making them timebound where appropriate.*"
   Response: Given continued uncertainty over timings in our project, we did not consider it sensible to give timebound indicators as they would likely have to change again. We have extended the project end date and aim to complete all activities, indicators and outputs by then.

9. Other comments on progress not covered elsewhere

No further comments.

10. Sustainability and legacy

The project gained interest in the UKOTs in Y1 through TV interviews, news reports and social media (see Annex 6). The work has also been promoted through a number of blog articles and through partner project websites which continued into Y2 (Annex 6). As noted elsewhere, partner organisations had other priorities in Y2, not least issues related to COVID-19, and understandably to some extent our project had to take a back seat to more immediate and pressing priorities. As noted elsewhere in the report, we now intend to disseminate our main findings to a wide range of Caribbean stakeholders in Y3 via the rejuvenated BirdsCaribbean Seabird Working Group. This should support and enhance future activities such as the planned regional 2023 Caribbean Seabird Census. As noted elsewhere, a lack of fieldwork in Y2 prevented building of further capacity in monitoring and data management skills, and opportunities for staff to improve skills that commenced in Y1 (see Y1 Report).

The activities undertaken during the project, and the data generated, will provide an evidence base for future coordinated management strategies in the Caribbean (e.g. protected area networks) that could account for biological connectivity between the UKOTs and other surrounding territories, and will complement the UK's 'Blue Belt' commitments. On a National level, outputs are being passed, and will continue to be passed, directly to management and conservation bodies to assist spatial planning processes (e.g. Species Conservation Plans under the National Conservation Law of the Cayman Islands), benefitting biodiversity conservation in the Caribbean, and ensuring a sustained ecological legacy. Participation in the recent MSP workshop in the TCI highlighted the utility of data layers that are being generated by our project.

In terms of our exit strategy, BirdsCaribbean are involved actively in this project, and through their extensive regional network, will advocate the approaches developed to ensure that support and enthusiasm for collaborative approaches will continue long-term. This is greatly enhanced due to the rejuvenation in Y2 of their Seabird Working Group, co-chaired by project co-leader Austin. The outputs of our project also meet the long-term goals of conservation organisations that operate in a sustained way in the region (e.g. the RSPB), and partners are currently being consulted on whether it would be of benefit for the external organisations to be invited and represented at our Final Workshop, in order to facilitate a sustained legacy from this work. Furthermore, we hope that by building capacity, identifying existing training and data gaps, and developing proposals for future priority projects with partners, that we will be able to build on the knowledge gained during this project to continue contributing to long-term positive outcomes in the Caribbean UKOTs.

11. Darwin identity

All media releases associated with this project acknowledged the Darwin Initiative as the major funding source, and the Darwin logo was used in public presentations and educational materials (Annex 6). Partner twitter feeds (i.e. @CaymanSeabirds, @DoE, @SE_GUL, @RhiAustin), and project websites (www.caribbeanseabirds.org.uk, https://seguliverpool.wixsite.com) were also used during Y2 to further publicise the project work, and the Darwin Initiative were acknowledged through all of these social media channels. All of the Caribbean partner UKOTs have benefitted from a number of other high-profile projects that the Darwin Initiation have funded (i.e. DPLUS019, 18-016, EIDPO045), and the general public of these host countries are familiar with this grant scheme. This project and its future outputs moving into Y3 will continue to be clearly identified as stemming from Darwin Initiative funding, and the Darwin logo will be displayed on all project material.

12. Impact of COVID-19 on project delivery

As mentioned elsewhere in the report, COVID-19 has had a dramatic impact on our project in three major aspects.

1. No fieldwork has been possible in Y2 for frigatebird data collection. Supporting Activities involving travel and/or fieldwork were nearly all delayed from Y2 into Y3. In addition to this, the project co-leaders (especially Dr Austin) have invested considerable time in

planning and re-planning field work and travel and organisation to extensive risk assessments involved in this during a pandemic. Logistics of travel and increased health and safety considerations (see below) have become more complex and time consuming, only for these efforts to have proven fruitless on several occasions as lockdowns and travel bans have come and gone. At the end of the year, almost nothing has been achieved in this area, but a lot of time has been used, which is a subtle but important point to make.

2. As mentioned elsewhere, the priorities of project partner organisations in the Caribbean UKOTs have shifted and narrowed to local issues of immediate concern. Our project can help with this, but Outputs 1&2 are now less of a current priority.
3. This has been a tough year for all individuals and organisations involved in this project. Individuals have had to work at home and deal with a variety of challenging and difficult personal circumstances. Nobody has worked anywhere near to their full capacity, and each person's ability to work on this project has consequently been limited. All of this has naturally limited progress with our project overall.

Other parts of the report have described our response to this in further detail. We have extended the end date of the project and delayed fieldwork and Supporting Activities into Y3. We expect that this will enable the project Outcome and Outputs to be delivered largely as originally planned.

Health and Safety considerations have been the main driver underlying the changes to fieldwork and Supporting Activity plans. For activities led by the lead organisation (UoL) at least, the resumption of these activities is subject to an enhanced risk assessment procedure which takes into account a range of measures relating to health and safety in the light of COVID-19. These include considerations relating to international travel (testing, quarantine etc. tuned to individual states and territories), as well as interactions in the field, vehicles, accommodation etc.

Our project itself is not particularly relevant to the response to COVID-19 or future pandemics.

In terms of new ways of working, then there is no doubt that increased use and development of technology relating to virtual meetings and events is something that will continue into the future. However, experience within our project and our project partner group demonstrates that these tools, while useful, are also limited in their scope and utility. As noted elsewhere, our project team are already experiencing fatigue of this form of meeting and communications. It remains the case that we achieved more for the cooperative elements of our project during the 3-day Initial Workshop in Y1 than in all other online interactions before and afterwards. The revision of plans for the Final Workshop, informed by feedback from project partners, is an example of the importance of using virtual interactions sparingly and appropriately, rather than as a complete replacement for face-to-face equivalents.

13. Safeguarding

The UoL has an extensive Safeguarding Policy to ensure that it maintains the highest possible standards to meet its social, moral and legal responsibilities to safeguard those that its work involves and brings it into contact with (e.g. children, young people and vulnerable adults: see full policy here: https://www.liverpool.ac.uk/studentsupport/staffhub/safeguarding/). UoL's HR department also has disability, mental health, sexual assault, harassment and hate crime policies and procedures that it strictly adheres to ensure a safe working environment (https://www.liverpool.ac.uk/studentsupport/policiesproceduresanddownloads/). These ways of working feed down through all levels of the University, including to our overseas project activities and field staff.

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]			
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items				
Others (Please specify)				
TOTAL				

Underspend agreed with Darwin+ and carried forward to Y3 via change request

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2020-2021 – <u>if applicable</u>

Project summary	Measurable Indicators	Progress and Achievements April 2020 - March 2021	Actions required/planned for next period
Impact This project will improve the ability of managers and policy makers in all six Caribbean UKOTs, and more widely, to recognize, designate and protect vulnerable ecosystems onshore, nearshore and offshore.		Capacity is being built amongst partner UKOTs that will contribute to towards the development of effective and appropriate regional management strategies for vulnerable onshore, nearshore and offshore ecosystems.	
Outcome Use movement data from Caribbean magnificent frigatebirds to develop an approach for protected area definition onshore, nearshore and offshore that can be applied for conservation management at a regional scale.	0.1 Marine IBAs for magnificent frigatebirds identified in nearshore and offshore zones using Birdlife International criteria. 0.2 Key roosting and breeding sites for magnificent frigatebirds in onshore habitats (usually vulnerable mangroves) identified. 0.3 Awareness of the broader importance of key habitats indicated by magnificent frigatebirds increased among local and regional conservation management agencies. 0.4 Regional-scale management strategy for use of magnificent frigatebirds as hotspot indicators agreed upon. 0.5 All project participants agree future goals to fill gaps in data, expertise, and understanding, as well as the applicability of our approach.	0.1 Preliminary IBA maps for adults, fledglings and immatures created. 0.2 Preliminary data on on-shore distributions of frigatebirds from multiple populations produced using Y1 tracking data, and other existing datasets, to be updated following completion of Y3 data collection (currently ongoing). 0.3 New habitat models developed using current data following new procedures and approaches developed after attendance on habitat management training course. 0.4 Partners engaged new strategy for Final Workshop where use of frigatebirds as hotspot indicators will be presented. 0.5 Supporting Activities underway in Montserrat. Activities planned for Y3 in other partner territories.	0.1 Undertake remaining tracking work that was not possible in Y1 or Y2 and combine new data under collection with existing datasets to update candidate marine IBAs in nearshore and offshore zones. 0.2 Undertake remaining tracking work that was not possible in Y1 or Y2 and combine new data under collection with existing datasets to identify important onshore roosting sites of frigatebirds over sampled Caribbean areas. 0.3 Further develop methods used for identifying habitat suitability, run models, create regional scale maps of suitable habitat and identify hotspots. Share information amongst project partner organisations. 0.4 Hold project group Final Workshop among partners in Q2-Q3 of Y3 to present findings of analyses and agree use of frigatebirds as hotspot indicators.

Project summary	Measurable Indicators	Progress and Achievements April 2020 - March 2021	Actions required/planned for next period
			0.5 Continue Supporting Activities and interactions with project partners to meet territory-specific goals.
1. At-sea and onshore distributions and movements of adult and juvenile magnificent frigatebirds from globally and regionally important populations on Anguilla, BVI and the Cayman Islands identified during breeding and/or non-breeding periods.	1.1 Distribution maps and GIS layers produced from tracking data highlight core onshore, nearshore and offshore areas of adult magnificent frigatebirds, and are accessible to stakeholders both in 6x UKOTs and regionally. 1.2 Distribution maps and GIS layers produced from tracking data highlight previously unknown core onshore, nearshore and offshore areas of juvenile magnificent frigatebirds, and are accessible to stakeholders both in 6x UKOTs and regionally. 1.3 2x sets of maps and GIS layers (produced using Birdlife International criteria) show onshore, nearshore and offshore IBAs for adult and juvenile magnificent frigatebirds in the 3x focal UKOT populations, and are accessible to stakeholders both in 6x UKOTs and regionally.	1.1 No further progress on maps and GIS layers for adults due to delays in data collection. Final distribution maps and GIS layers will be produced and distributed in Y3. 1.2 Data collection on fledglings continued into Y2. Final distribution maps and GIS layers will be produced and distributed in Y3. Evidence: Annex 3 1.3 Preliminary IBA maps for adults and immatures created from historic and Y1 data. Final versions will be produced and distributed in Y3. Evidence: Annex 4	
Activity 1.1 Track adult magnificent frigatebirds from globally and regionally important colonies in Anguilla, the Cayman Islands and the British Virgin Islands using GPS-GSM loggers		No further progress in Y2.	We plan to tag another 10x adult frigatebirds on BVI in Y3.
Activity 1.2 Track juvenile magnificent frigatebirds from globally and regionally important colonies in Anguilla, the Cayman Islands and the British Virgin Islands using GPS-GSM loggers		Tracked fledglings from Y1 deployments continued transmitting data into Y2 (n=5 Cayman to May, n=3 Anguilla to August).	We plan to tag another 30 immatures between BVI and the Cayman Islands in Y3.

Project summary	Measurable Indicators	Progress and Achievements April 2020 - March 2021	Actions required/planned for next period
		Evidence: Annex 3	
Activity 1.3 Identify onshore, nearshore and offshore IBAs for adult and juvenile magnificent frigatebirds from the three UKOTs and produce distribution maps and GIS layers		Preliminary candidate IBAs have been idenfitied for adult (Anguilla, BVI and Cayman Islands) and immature (Cayman Islands) frigatebirds from historic and Y1 data using the Birdlife International IBA approach. Evidence: Annex 4	IBA analyses and maps will be updated in Y3 after data collection is complete. Maps and GIS layers will be circulated.
Output 2. Habitat preferences of adult and juvenile magnificent frigatebirds identified, and repeatable methods for identifying and defining marine and coastal productivity hotspots developed.	2.1 Maps and/or similar outputs from habitat suitability models, developed using existing (DPLUS007/044) and new tracking data (Y1), identify the habitat preferences of frigatebirds (different life stages and populations). 2.2 Maps or and/similar outputs from habitat suitability models, which have been applied to tracking data, predict the location and features of important onshore and marine habitats, and potential marine hotspots throughout the region. 2.3 A non-technical report for local government agencies and regional conservation bodies / working groups informs 20x relevant states and territories in the region about the use of seabirds for identifying and protecting key onshore and marine habitats. 2.4 Dissemination of outputs at 1-2 regional conference(s) educates at least 20-40 conservation practitioners about the use of magnificent	2.1 Habitat models have been further developed using new methods learned through workshop attendance. Analyses are being expanded to include data from all three focal populations and four other populations focussing on adult birds at this stage. Evidence: Annex 5 Adults only so far. Won't work so well for fledglings as don't go far. To be developed for immatures 2.2 Preliminary maps of probability of presence produced at regional scale with assessment of important variables which drive frigatebird presence. Evidence: Annex 5 2.3 No progress as we await completion of analyses (2.1 & 2.2) 2.4 No further progress as target conferences postponed or cancelled.	

Project summary	Measurable Indicators	Progress and Achievements April 2020 - March 2021	Actions required/planned for next period
	frigatebirds as marine hotspot indicators.		
Activity 2.1. Develop habitat suitability models using generated tracking data, to identify key features of preferred habitats of different life stages and populations, and produce habitat preference maps		Habitat models have been further developed using new Bayesian methods learned through workshop attendance. Analyses are being expanded to include data from all three focal populations, and four other populations focussing on adult birds at this stage. New methods allow development of an improved approach to generate pseudo-absence data. Evidence: Annex 5	Development and testing of the most appropriate modelling methods will continue into Y3 and, once data collection is complete, final models and regional habitat preference maps, both for onshore and marine environments, will be produced. Approach will then be applied to immatures.
Activity 2.2. Apply habitat suitability models to predict and identify marine and wetland hotspots at a regional scale, and produce hotspot maps		Using above modelling approaches, preliminary population level habitat suitability maps developed and methods for validating among populations are being applied. Evidence: Annex 5	Through the above modelling approaches, final regional scale habitat suitability maps will be produced both onshore and in marine environments, for adults and immatures. This will allow priority hotspots to be identified.
Activity 2.3 Produce non-technical report outlining methods and results and disseminate to local and regional conservation and management agencies		No progress as we await completion of analyses (2.1 & 2.2).	Non-technical report to be produced in Y3 following completion of analysis.
Activity 2.4 Present project findings to conservation practitioners community at a conservation conference(s)		No presentations possible as target conferences postponed or cancelled. However, project further publicised via multiple outputs. Evidence: Annex 6	Findings to be presented to conservation practitioners community in Y3 via World Seabird Twitter Conference (May 2021) and BirdsCaribbean Symposium at American Ornithological Society Virtual Conference (August 2021) and global audience via World Seabird Union Virtual Conference (October 2021).

Project summary	Measurable Indicators	Progress and Achievements April 2020 - March 2021	Actions required/planned for next period
Output 3. Local and regional conservation management agencies informed of how magnificent frigatebirds can be used to indicate marine and coastal biodiversity hotspots, and agree that this approach can be used to improve transboundary regional-scale marine and coastal management strategies.	3.1 Through the Final Workshop, 6x representatives from the UKOTs, at least 4x from non-UK states and territories, and at least 3x from conservation bodies active in the region will gain an understanding of tracking and hotspot identification methods. 3.2 New regional cooperative marine and coastal management actions and strategies will be agreed by project and workshop participants (6x Caribbean UKOTs, at least 2x regional conservation organisations, and at least 4x non-UK states or territories) through outputs produced during the Final Workshop.	3.1 Revised Final Workshop to be held in Y3 planned and plans then further developed in response to shifting views among project partners and wider stakeholders. New dissemination plan will target relevant non-UKOT stakeholders via documentation (peer-reviewed paper and non-technical reports) and online presence via revitalised BirdsCaribbean network and Seabirds Working Group. Relevant individuals will be targeting directly. Final Workshop will be limited to Project Partners to focus on sharing project findings and planning future activities, stimulated by Supporting Activities. Evidence: Annex 7 3.2 Discussion and agreement on regional marine and coastal management actions and strategies will be achieved via the revitalised BirdsCaribbean seabird Working Group and their activities in the region including webinars, social media, websites and the BC contribution to the AOS conference.	
Activity 3.1 Run regional Final Workshop to present tracking and hotspot identification methods, and plan cooperative management strategies		The Final Workshop will take place in Y3. Plans for this have been developed via consultation with project partners and other stakeholders. Evidence: Annex 7	Continue to work with project partners to develop Objectives and Agenda for Final Workshop.
Activity 3.2 Produce a Final Workshop Report, agreed by project and workshop participants and outlining regional management strategies		No progress as we await completion Final Workshop (3.2).	Final Workshop report to be produced following workshop in Y3.
Output 4. Training, data and management needs relevant to future cooperative marine and coastal management strategies in the Caribbean UKOTs identified, and plans developed to fill them.	4.1 Current marine/coastal species and habitats of conservation concern identified for all participant UKOTs during Initial Workshop. 4.2 Training, data and management needs in relation to marine/coastal species and habitats of conservation concern documented during Initial Workshop.	The Initial Workshop took place in Y1, with participants from all 6x UKOTs, plus BirdsCaribbean, in attendance (either in person, or remotely in the case of DoE). Current marine/coastal species and habitats of conservation concern were identified for all participant UKOTs along with training, data and management needs in relation to marine/coastal species. This is detailed in the Y1 Annual Report.	

Project summary	Measurable Indicators	Progress and Achievements April 2020 - March 2021	Actions required/planned for next period
Activity 4.1 Run an Initial Workshop to present preliminary analyses, and make initial steps to identify training, data and management needs		See Y1 Annual Report	No further action required.
Activity 4.2 Produce a report outlining the training, data and management needs in participant UKOTs identified during the Initial Workshop		See Y1 Annual Report	No further action required.
Output 5. Initial steps made to address territory identified gaps in training, data and management and, based on lessons learned during these supporting activities, feasibility of future project development in each of the UKOTs assessed.	5.1 Supporting activities in UKOTs in Y2 and Y3 (e.g. site visits and seabird population assessments in the Turks and Caicos – see Q14) provide initial steps to address gaps in training, data and management during last six quarters of project. 5.2 New funding applications and/or draft project proposals outline appropriate future activities / project work in individual territories identified and agreed upon by end of project.	5.1 Funding for supporting activities in Anguilla and Montserrat were transferred during Y2. Supporting activities have commenced in Montserrat but have been delayed in Anguilla. Supporting activities for TCI and Bermuda were deferred to Y3. Evidence: Annex 8 5.2 No further plans have been made for future funding applications.	
Activity 5.1 Undertake supporting activities in participant UKOTs (e.g. site visits seabird population assessments in Turks and Caicos)		Supporting Activities consisting of seabird surveys are underway in Montserrat. An Uncrewed Aerial Vehicle (UAV or 'drone') has been purchased. Supporting activities in the other 5 UKOTs delayed to or planned for Y3. Evidence: Annexe 8	Supporting activities planned and described in the Y1 report will be further planned and executed in Y3.
Activity 5.2 Produce and disseminate non-technical reports on activities in individual territories and future plans for addressing gaps in skills and expertise		Supporting Activities are either in progress (Monserrat) or planned for Y3. Hence reports not yet available.	Non-technical reports will be produced following Supporting Activities in the UKOTs.
Activity 5.3 Identify future funding streams and prepare draft funding applications as appropriate		No further progress, in part due to delays in execution of Supporting Activities.	Appropriate funding applications for project ideas that arise through collaborative working under this project to be drafted in Y3 following completion of Supporting Activities.

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

N.B. if your application's logframe is presented in a different format in your application, please transpose into the below template. Please feel free to contact Darwin-Projects@ltsi.co.uk if you have any questions regarding this.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Impact: This project will improve the ability of managers and policy makers in all six Caribbean UKOTs, and more widely, to recognize, designate and protect vulnerable ecosystems onshore, nearshore and offshore.			
Outcome: Use movement data from Caribbean magnificent frigatebirds to develop an approach for protected area definition onshore, nearshore and offshore that can be applied for conservation management at a regional scale.	0.1 Marine IBAs for magnificent frigatebirds identified in nearshore and offshore zones using Birdlife International criteria. 0.2 Key roosting and breeding sites for magnificent frigatebirds in onshore habitats (usually vulnerable mangroves) identified. 0.3 Awareness of the broader importance of key habitats indicated by magnificent frigatebirds increased among local and regional conservation management agencies. 0.4 Regional-scale management strategy for use of magnificent frigatebirds as hotspot indicators agreed upon. 0.5 All project participants agree future goals to fill gaps in data, expertise, and understanding, as well as the applicability of our approach.	0.1. Marine IBAs listed on Birdlife International online database. 0.2. Onshore IBAs (coastal wetlands/mangroves) listed on Birdlife International online database. 0.3 Non-technical reports produced, uploaded to partner and project websites, and disseminated to relevant government agencies responsible for marine environmental management. Agencies acknowledge receipt of project findings. 0.4 Memorandum of understanding (MOU), agreed by all project participants, held on project website and distributed to all involved. 0.5 Workshop reports, and if appropriate future funding applications, logged on project website.	Sufficient data collected to represent the range of at-sea movements seen in the focal populations. Local and regional conservation management agencies amenable to incorporating provided information into management strategies.
Outputs: **1**. At-sea and onshore distributions and movements of adult and juvenile magnificent frigatebirds from globally and regionally important populations on	1.1 Distribution maps and GIS layers produced from tracking data highlight core onshore, nearshore and offshore areas of adult magnificent frigatebirds.	1.1 Links to tracking data on www.movebank.org and/or the Birdlife International Seabird Tracking database 1.2 Map layers of tracking data and marine IBAs held by, and available	Both adult and juvenile magnificent frigatebirds will be available at colonies during scheduled fieldwork in the three UKOTs, and accessible for capture, to allow sufficient data that represent the

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Anguilla, BVI and the Cayman Islands identified during breeding and/or non-breeding periods.	and are accessible to stakeholders both in 6x UKOTs and regionally. 1.2 Distribution maps and GIS layers produced from tracking data highlight previously unknown core onshore, nearshore and offshore areas of juvenile magnificent frigatebirds, and are accessible to stakeholders both in 6x UKOTs and regionally. 1.3 2x sets of maps and GIS layers (produced using Birdlife International criteria) show onshore, nearshore and offshore IBAs for adult and juvenile magnificent frigatebirds in the 3x focal UKOT populations, and are accessible to stakeholders both in 6x UKOTs and regionally.	from, local and regional partners and other relevant government agencies. 1.3 Links to updates on project websites.	range of at-sea movements seen in the focal populations to be collected (mitigation: plan for flexible fieldwork periods and multiple field seasons). Tracking devices will operate effectively and remain attached to birds for a long enough duration to collect intended data (mitigation: use of tried and tested devices and allowance for some device losses). Environmental conditions will be favourable for tracking work (mitigation: plan for flexible fieldwork periods).
2. Habitat preferences of adult and juvenile magnificent frigatebirds identified, and repeatable methods for identifying and defining marine and coastal productivity hotspots developed.	2.1 Maps and/or similar outputs from habitat suitability models, developed using existing (DPLUS007/044) and new tracking data (Y1), identify the habitat preferences of frigatebirds (different life stages and populations). 2.2 Maps or and/similar outputs from habitat suitability models, which have been applied to tracking data, predict the location and features of important onshore and marine habitats, and potential marine hotspots throughout the region. 2.3 A non-technical report for local government agencies and regional conservation bodies / working groups informs 20x relevant states and territories in the region about the use of	2.1 Habitat preference maps and GIS map layers held by, and available from, local partners and relevant government agencies, and available eventually in peer-reviewed scientific paper(s) that arise out of this work. 2.2 Regional-scale marine and wetland hotspot maps and GIS map layers held by, and available from, local partners and relevant government agencies. 2.3 Reports containing spatial data and analyses held by, and available from, local partners, government agencies and project websites. 2.4 Copy of powerpoint presentation from talk(s) given at marine practitioners conference(s) and made	Quantity and quality of data collected sufficient for habitat suitability modelling to encapsulate environmental-animal interactions from different life history stages (mitigation: plan for flexible fieldwork periods). Environmental data (e.g. SST, bathymetry) will be available for periods over which tracking data are collected (mitigation: project team are familiar with suitable environmental datasets and data depositories e.g. NOAA).

Project summary	Measurable Indicators	Means of verification	Important Assumptions
	seabirds for identifying and protecting key onshore and marine habitats. 2.4 Dissemination of outputs at 1-2 regional conference(s) educates at least 20-40 conservation practitioners about the use of magnificent frigatebirds as marine hotspot indicators.	available on project websites. Record made of number of attendees.	
3. Local and regional conservation management agencies informed of how magnificent frigatebirds can be used to indicate marine and coastal biodiversity hotspots, and agree that this approach can be used to improve transboundary regional-scale marine and coastal management strategies.	3.1 Through the Final Workshop, 6x representatives from the UKOTs, at least 4x from non-UK states and territories, and at least 3x from conservation bodies active in the region will gain an understanding of tracking and hotspot identification methods. 3.2 New regional cooperative marine and coastal management actions and strategies will be agreed by project and workshop participants (6x Caribbean UKOTs, at least 2x regional conservation organisations, and at least 4x non-UK states or territories) through outputs produced during the Final Workshop.	3.1 Final Workshop report and documentation of other outputs held by partner organisations and relevant agencies, and uploaded to partner and government websites. 3.2 Final Workshop report and documentation of other outputs held by contributing organisations and agencies, and uploaded to their websites and the project website.	Management agencies are amenable to receiving recommendations from project (mitigation: managers were approached at early stage to gain support for project and instrumental in project development – see attached letters of support). Sufficient data / evidence collected to inform development of management strategy.
4. Training, data and management needs relevant to future cooperative marine and coastal management strategies in the Caribbean UKOTs identified, and plans developed to fill them.	4.1 Current marine/coastal species and habitats of conservation concern identified for all participant UKOTs during Initial Workshop. 4.2 Training, data and management needs in relation to marine/coastal species and habitats of conservation concern documented during Initial Workshop.	4.1 & 4.2 Initial Workshop presentations and report held by partner organisations and relevant agencies, and uploaded to partner and government websites.	Management agencies actively engage in identification of training needs (mitigation: managers were approached at early stage to gain support for project and instrumental in project development – see attached letters of support).

Project summary	Measurable Indicators	Means of verification	Important Assumptions
5. Initial steps made to address territory identified gaps in training, data and management and, based on lessons learned during these supporting activities, feasibility of future project development in each of the UKOTs assessed.	5.1 Supporting activities in UKOTs in Y2 and Y3 (e.g. site visits and seabird population assessments in the Turks and Caicos – see Q14) provide initial steps to address gaps in training, data and management during last six quarters of project. 5.2 New funding applications and/or draft project proposals outline appropriate future activities / project work in individual territories identified and agreed upon by end of project.	5.1 Non-technical reports on supporting activities held by partner organisations and relevant agencies, and uploaded to partner and government websites. 5.2 Draft funding applications to address identified territory specific requirements held by and available from partner organisations and agencies as appropriate	Management agencies are amenable to in-territory supporting activities (mitigation: managers were approached at early stage to gain support for project and instrumental in project development – see attached letters of support). Supporting activities can be completed within the £5,000 budget within each territory (mitigation: preliminary discussions with project partners have already identified potential activities that fit within the project scope and budget).

Activities

Output 1) At-sea and onshore distributions of magnificent frigatebirds

1.1 Track adult magnificent frigatebirds from globally and regionally important colonies in Anguilla, the Cayman Islands and the BVI using GPS-GSM loggers

1.2 Track juvenile magnificent frigatebirds from globally and regionally important colonies in Anguilla, the Cayman Islands and the BVI using GPS-GSM loggers

1.3 Identify onshore, nearshore and offshore IBAs for adult and juvenile magnificent frigatebirds from the three UKOTs and produce distribution maps and GIS layers

Output 2) Magnificent frigatebird habitat preferences and hotspot identification

2.1 Develop habitat suitability models using generated tracking data, to identify key features of preferred habitats of different life stages and populations, and produce habitat preference maps

2.2 Apply habitat suitability models to predict and identify marine and wetland hotspots at a regional scale, and produce hotspot maps

2.3 Produce non-technical report outlining methods and results and disseminate to local and regional conservation and management agencies

2.4 Present project findings to conservation practitioners community at a conservation conference(s)

2.5 Produce peer-reviewed scientific manuscript(s) for publication to disseminate developed approach to wider scientific community

Output 3) Development of regional management strategies

3.1 Run regional Final Workshop to present tracking and hotspot identification methods, and plan cooperative management strategies

3.2 Produce a Final Workshop report, agreed by project and workshop participants and outlining regional management strategies

Output 4) Identifying training, data and management needs

4.1 Run an Initial Workshop to present preliminary analyses, and make initial steps to identify training, data and management needs

Project summary	Measurable Indicators	Means of verification	Important Assumptions
4.2 Produce a report outlining the training, data and management needs in participant UKOTs identified during the Initial Workshop **Output 5) Support, development and capacity building** 5.1 Undertake supporting activities in participant UKOTs (e.g. site visits seabird population assessments in Turks and Caicos) 5.2 Produce and disseminate non-technical reports on activities in individual territories and future plans for addressing gaps in skills and expertise 5.3 Identify future funding streams and prepare draft funding applications as appropriate			

Annex 3 Onwards – supplementary material

Annex 3. Updated tracking data from juveniles and fledglings

Annex 4 Candidate IBA Maps

Annex 5 Habitat Model Development

Annex 6 Dissemination of DPLUS097 during 2020/21

Annex 7 Consultation on plan for DPLUS097 Final Workshop

Annex 8 Seabird surveys on Montserrat undertaken during supporting activities in 2021

Annex 8 Table A1 Summary of seabird surveys on Montserrat in March/April 2021

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.	Y
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.	N
Have you included means of verification? You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Y
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.	N
Have you involved your partners in preparation of the report and named the main contributors	Y
Have you completed the Project Expenditure table fully?	Y
Do not include claim forms or other communications with this report.	