



Darwin Initiative/Darwin Plus Projects Half Year Report

Project reference	<i>DPLUS097</i>
Project title	<i>Regional-scale marine conservation through multi-territory tracking of frigatebirds</i>
Country(ies)/territory(ies)	<i>Cayman Islands, Anguilla, BVI, Turks & Caicos, Montserrat, Bermuda, UK</i>
Lead organisation	<i>University of Liverpool</i>
Partner(s)	<i>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</i>
Project leader	<i>Dr Jonathan Green and Dr Rhiannon Austin</i>
Report date and number	<i>HYR2</i>
Project website/blog/SM	www.caribbeanseabirds.weebly.com

1. Outline progress over the last 6 months (April – Sept) against the agreed project implementation timetable (if your project has started less than 6 months ago, please report on the period since start up to end September).

At-sea and onshore distributions of frigatebirds identified: Between April– August 2020, further tracking data were collected from tags that had already been deployed on animals prior to March 2020, and data have been cleaned and processed. An updated summary of new recorded data can be found in Table 1. While field teams on Anguilla and the BVIs attempted to access colonies to tag birds between April – August 2020, continued Covid-19 restrictions (ie.g. Government lockdowns and curfews) prevented further tags being deployed on new animals in these territories, so no further movement data have been collected to date. We plan to resume fieldwork and complete data collection when the global situation allows, hopefully early in 2021.

Habitat preferences and hotspots identified: Data collected in DPLUS097 have been combined with existing data from previous projects (e.g. DPLUS007, DPLUS044) for three UKOT populations. These are complemented by data from another four populations of magnificent frigatebirds provided by external collaborators. Data from all seven populations have been reprocessed, hotspots of marine habitat use have been identified for the three colonies tracked during DPLUS097, using Birdlife International methods for Important Bird Areas (IBAs), and maps /shapefiles have been produced (see Appendix Figs A1 & A2).

To detect foraging behaviour and identify key foraging areas of the different populations, Hidden Markov Models have been trained on speed of movement, turning angle and altitude parameters (Appendix Fig A3). Estimated behavioural states will be used in coming months to produce behavioural-specific maps of distributions. Movement data from the Cayman Islands population have also been analysed by a PhD student being co-supervised by Dr Austin, to investigate the influence of wind and precipitation on bird distributions, and a scientific publication is being prepared. To investigate early life movements, fledgling movement data have also been analysed on a monthly scale over the course of the year.

Dr Austin continues to work with collaborators from the Université Catholique de Louvain, Belgium, to develop robust habitat prediction modelling methods, and apply these to our combined dataset. Dr Austin formed a new collaboration with scientists at CNRS, France, who have agreed to provide data from the seventh colony of frigatebirds from French Guiana for the wider population work.

Table 1 Mean \pm SD transmission durations of GPS-GSM tags in the two study colonies in which frigatebirds were tagged in 2019

	Cayman Islands		Anguilla	
	Days	Months	Days	Months
Adult	115 \pm 51	3.8 \pm 1.7	110 \pm 76	3.7 \pm 2.5
Immature	136 \pm 52	4.5 \pm 1.7		
Fledgling	194 \pm 83	6.5 \pm 2.8	203 \pm 97	6.8 \pm 3.2

Development of regional management strategies:

1. The timing and format of our project workshop component changed in Y1, and an Initial Workshop and associated workshop report were completed within this period. The Final Workshop will take place towards the end of the project in Q2 of Y3, but owing to Covid-19-related uncertainties, planning for this event has not yet commenced. Project partners plan to further develop the theme and line-up of the workshop during the next steering group meeting that will take place at the beginning of November. Considerations will include whether a virtual event might enable us to better achieve the goals of the Final Workshop.
2. Data collected during DPLUS097, and previous related DPLUS projects (DPLUS044), were provided to collaborative organisations (ARCI, the Florida Keys National Wildlife Refuges and Florida Keys National Marine Sanctuary) in a processed form, to aid spatial management and resource protection efforts in the Florida Keys area, US.
3. Dr Austin continued working in her supporting role as co-chair of the BirdsCaribbean Seabird Working Group, which aims to build connectivity amongst partitioners working on various aspects of seabird conservation in the region. Through involving in this group, she has been able to enhance regional awareness of the DPLUS097 project and its objectives / activities.

Identifying training, data and management gaps: In addition to the above, Dr Austin and Dr Green recently participated in a 4-day workshop on Marine Spatial Planning under the DPLUS094 project, run by SAERI in collaboration with DECR, Turks and Caicos Islands Government. Dr Austin gave a presentation on DPLUS097 project, and workshop participants collectively identified data gaps for seabirds and other large mobile fauna around the TCI. Owing to the shared goals of DPLUS094 and DPLUS097, Dr Austin will remain involved in this collaborative effort, as she has accepted an invitation to sit as a member of a working group that formed through the workshop. She will feed the outputs of DPLUS097 into these meetings, as appropriate, to increase the legacy of the project and the tools developed during it.

Support development and capacity building: All supporting activities will take place in Q3-4 of Y2 or Q1 of Y3. Covid-19 has already delayed planning of these activities and is likely to delay the activities themselves (see section 2b).

Project publicity: We have now created a website, run by Dr Rhiannon Austin, with project specific information: www.caribbeanseabirds.weebly.com. The DPLUS097 project, and other collaborative projects that are feeding data into the analyses being undertaken here, are also now being publicized through the BirdsCaribbean Seabird Working Group Website (<https://www.birdscaribbean.org/caribbean-birds/seabirds/active-seabird-projects/>). We

additionally wrote a number of articles in May and June to disseminate information about DPLUS097, including:

1. A BirdsCaribbean blog interview with Dr Austin, June 2020 (<https://www.birdscaribbean.org/2020/06/tracking-pirates-of-the-caribbean-an-interview-with-dr-rhiannon-austin/>)
2. An article in the Darwin Plus Safeguarding Our Seas newsletter, June 2020 (<https://www.darwininitiative.org.uk/assets/uploads/Darwin-Newsletter-June-2020-Safeguarding-our-Seas-FINAL.pdf>)
3. An article in the UK's Seabird Group newsletter, June 2020 (<http://www.seabirdgroup.org.uk/news>)

2a. Give details of any notable problems or unexpected developments/lessons learnt that the project has encountered over the last 6 months (for Covid-19 specific delays/problems, please use 2b). Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities.

Problems not mentioned in AR1, all relate to the impacts of Covid-19 on the project (see section 2b).

2b. Please outline any specific issues which your project has encountered as a result of Covid-19. Where you have adapted your project activities in response to the pandemic, please briefly outline how you have done so here. Explain what residual impact there may be on your project and whether the changes will affect the budget and timetable of project activities.

The main impact of Covid-19 to your project activities continues to be the disruption to our planned fieldwork activities. We have 45-50 tags that need to be deployed on birds, most crucially in the British Virgin Islands where we currently have no new data, but also in Anguilla and the Cayman Islands. However, we are now constrained not only by the availability of study animals due to their annual cycles of colony attendance and breeding, and by our ability to access their colonies in favourable weather and sea conditions, but also by Covid-19-induced travel restrictions. For example, in the BVIs, restrictions on boat use and tight government curfews have prevented access to field sites for many months. There remains a chance that the team on the BVI may be able to access birds in the coming months, but it is most likely that these deployments will now take place in early 2021, as is the case in other UKOTs. Depending on how the situation progresses, we may need to request a small transfer of funds for fieldwork expenses between Y2 and Y3 in either direction, but there remains some uncertainty about this at present.

We are hopeful that this work will be completed and that there is still time to incorporate these new data into analyses and project outputs. However, to make best use of remaining project resources, we also plan to request that Darwin Plus give us a 6-month unfunded extension on delivery of the final project outputs (subject to agreement from all project partners). This will i) build in capacity for continued complications caused by the pandemic as there remains some uncertainty about what the global situation will be in the spring, and ii) allow Dr Austin time to incorporate and make best use of remaining data that would be under collection currently should the pandemic not have happened. Dr Austin has a fully-funded fellowship starting in October 2021, which will focus on similar datasets and conservation science questions to those addressed in DPLUS097, and will therefore have the flexibility and capacity to continue working on final project outputs and reports during a 6-month extension period, should we be awarded this. Dr Green will also have capacity to keep working on this. We will also need to allocate some of the remaining project funds into tag refurbishment for devices that have had to be in storage for a year owing to Covid-19 related delays. However, impacts to international travel and potential changes to the format of our final workshop will mean that there is now enough capacity within our budget to do this.

Covid-19 has also impacted, and may continue to impact, the timing of planned supporting activities within the partner UKOTs. The uncertainty associated with this varies with territory, and we are in discussions with the partner UKOTs on a case-by-case basis to implement plans for making best use of funds within project timescales. Again, there may be a need to transfer funds from Y2 to Y3 depending on how plans progress with respect to Covid-19 and we will keep the Darwin team updated on this. Some UKOTs planned to use the funds to implement activities that rely solely on in-country personal and in these cases the impact may be low. For the TCI, a feasibility study was planned for future tagging/colony work that involved a site visit by Dr Austin. We are hopeful that this will still be possible in the early part of 2021. However, a 6-month extension would also give us more flexibility to complete these plans successfully.

As mentioned in Q1, the format of our Final Workshop may have to change owing to continued restrictions on international travel in 2021, and whether the BirdsCaribbean conference will still take place in Trinidad or now be run remotely. However, if holding the workshop in person looks to be unfeasible then we plan to do this remotely and will organise for this event accordingly.

2c. Have any of these issues been discussed with LTS International and if so, have changes been made to the original agreement?

Discussed with LTS:	No
Formal change request submitted:	No
Received confirmation of change acceptance	No

3a. Do you currently expect to have any significant (e.g. more than £5,000) underspend in your budget for this year?

Yes No Estimated underspend: £

3b. If yes, then you need to consider your project budget needs carefully. Please remember that any funds agreed for this financial year are only available to the project in this financial year.

N/A

4. Are there any other issues you wish to raise relating to the project or to Darwin's management, monitoring, or financial procedures?

No.

Please send your **completed report by email** to Darwin-Projects@ltsi.co.uk. The report should be between 2-3 pages maximum. **Please state your project reference number in the header of your email message e.g. Subject: 25-001 Darwin Half Year Report**