

**Darwin Initiative Main/Post/D+ Project
Half Year Report
(due 31st October 2017)**

Project reference DPLUS044

Project title

Assessment and Conservation Actions for Cayman Islands' Seabird Populations

Country(ies)/territory(ies)

Cayman Islands

Lead organisation

Department of Environment, Cayman Islands Government

Partner(s)

University of Liverpool, UK, University of Exeter, UK

National Trust of the Cayman Islands

Project leader

Gina Ebanks-Petrie

Report date and number (e.g., HYR3)

HYR2

Project website/blog/social media etc.

<http://caymanseabirds.weebly.com> / www.caribbeanseabirds.org.uk

Twitter: @CaymanSeabirds

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

Output 1. At-sea habitat use

- Tracking work continued on seabird colonies at Booby Pond on Little Cayman during April and May 2017. In total, 10 combined datasets consisting of matching GPS, GLS and TDR data were collected from red-footed boobies (RFBs) during season 2, and further unmatched data from 3 GPS loggers, 8 TDRs, 7 GLS, and 7 GPS-GSM loggers (purchased in 2016) where recovered. 23 Magnificent frigatebirds (MFBs) were also tracked at the Booby Pond using GPS-GSM loggers purchased for the project by the Department of Environment. In April 2017, Professor John Arnould (Deakin University, Australia), joined the team at the Booby Pond, and provided supplementary loggers (tri-axial accelerometers and video data loggers), which were used to tag a small number of MFBs (n = 4) to aid behavioural classification methods applied to the wider GSM dataset. In total, the loggers deployed on frigatebirds yielded 196 foraging tracks from 23 individuals.
- Despite further trips to Cayman Brac, no further loggers from brown boobies (BBs) were recovered in 2017, giving a total of 33 successfully tracked birds (out of 36 tagged).
- Preliminary marine Important Bird Areas (mIBAs) of BBs, RFBs and MFBs have been identified using Birdlife International methodologies and maps of at-sea distributions produced for all the three species (see Appendices). These mIBAs will feed into the development of Species Conservation Plans that will be drafted in early 2018.

- Further analysis on foraging behaviour for focal species was undertaken in July – September (e.g. see Appendices). This work is ongoing and results will form the basis of peer-reviewed scientific publications planned for submission over the coming months.

Output 2. Commuting routes and times

- Over-land flight pathways have been identified for RFBs tracked with GPS loggers in 2017 with igotus, and are being compared with the proposed airport sites on Little Cayman to determine potential impact.
- Departure and arrival timings have been identified for RFB, BB and MFB foraging trips recorded in Y2 (see Appendices).

Output 3. Population biology

- **Productivity:** Between April – June, the field team continued to monitor breeding success of experimental and control nests for RFBs, MFBs, and BBs on Little Cayman and Cayman Brac. During the final visits to the colonies at the end of the breeding season, success of all nests was recorded. Productivity of experiment pairs was not found to be significantly lower than control pairs for the study species (see Appendices).
- **Phenology:** Four of the nine trail cameras used to collect information on nest activity of RFBs in 2016-2017 were left in situ at the Booby Pond from April onwards and are being regularly maintained by the DoE to enable continued collection of year-round activity data. Staff and students at the University of Liverpool (UoL) have begun analysing existing images to extract information on phenology.
- **Assess census methods:** All drone imagery collected during population survey in February 2017 was analysed between June – September 2017. Data from the Booby Pond has formed the basis of an MSc thesis by Joe Hanlon (UoL), which provides population estimates obtained for RFBs and MFBs using sample-based methods, as well as results of double observer trails. Drone imagery collected on Cayman Brac for BB monitoring has also been analysed, and population estimates will be obtained in the coming months. A briefing document will be produced before the end of the project to make recommendations for future population surveys.
- **Baseline assessments of diet:** Regurgitate samples of dietary items from RFBs, BBs and MFBs were processed in the lab and identified to the nearest taxonomic level during May – June 2017, and small tissue samples were extracted for stable isotope analysis (SIA) in the UK. Blood samples from tracked birds were also processed, and subsamples were sent to an external laboratory for DNA sexing (RFBs). Dr R. Meier returned to UoL in July 2017 and prepared and analysed the blood and fish prey samples in the dedicated Isotope Lab at this partner organisation (see Appendices).
- **Assess predation rates:** Between April and June, 5x trail cameras (set to trigger when motion was detected) were deployed on Little Cayman to monitoring cat presence at the colony. Staff and students at UoL analysed collected images during July and August, and identified 58x cat sightings (~5-7 individuals), and 1x predation event on an adult frigatebird.

Output 4. Training and community involvement

- Training in tracking and monitoring techniques was provided to an additional DoE staff member at the Booby Pond Nature Reserve in May 2017
- A GIS training session was run at the DoE in July 2017, to train staff in techniques for visualising and analysing tracking data. Further training will be given in 2018.
- Seabird monitoring guides have been finished and are being printed in October 2017 in preparation for the next seabird breeding season on the Cayman Islands

- Results of tracking data were presented via oral presentations at the BirdsCaribbean Conference in Cuba (July 2017), and poster presentation at the 6th International Bio-logging Science Symposium in Germany (September 2017) (See Appendices).
- Magazine articles providing updates on the results of the project and tropicbird surveys were published in the Cayman 'Flicker' magazine in July and September 2017

2a. Give details of any notable problems or unexpected developments/lessons learnt that the project has encountered over the last 6 months. Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities.

During analysis, we detected some problems with flight planning of the drone flights which have resulted in insufficient overlap of aerial imagery in the 2017 population survey on Little Cayman. The team have learnt from these issues and have planned drone routes accordingly to improve future surveys planned by DoE for 2018. Despite some teething problems with the drone, data coverage from 2017 is still extensive and has enabled a first estimate of population size for both RFBs and MFBs, as well as allowed UoL to assess the utility and time commitments of analysing drone footage at this site. These issues will therefore not negatively impact for project, budget or timetable of project activities, and do therefore not require change requests.

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: £

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

Please send your **completed report by email** to Eilidh Young at 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: 22-035 Darwin Half Year Report**