

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

Project reference: DPLUS063

Project title: The Ascension Island Ocean Sanctuary (ASIOS): planning for the Atlantic's largest marine reserve

Country(ies)/territory(ies): Ascension Island

Lead organisation: Ascension Island Government Conservation & Fisheries Department

Partner(s): University of Exeter, SAERI, University of Western Australia, University of Windsor, University of Birmingham, Army Ornithological Survey

Project leader: Dr Sam Weber & Dr Judith Brown

Report date and number (e.g., HYR3): HYR1

Project website/blog/social media etc.

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: Information systems for managing and disseminating spatial datasets gathered during the project are established

A postGIS cloud database and public-facing webGIS has been created, with assistance from SAERI GIS specialist, to manage spatial datasets created during the project and work has begun on populating these. The webGIS is hosted at the University of Exeter and can be accessed at <http://asios.cles.ex.ac.uk/>. A marine vertebrate tracking map has been created as the first product within this online system to collate telemetry data held by various partner organisations along with that collected as part of this current Darwin project.

Output 2: Distributions of species impacted by commercial fisheries are mapped and modelled to identify key usage areas and risk areas.

2.1: All available tracking data for marine vertebrates tagged within Ascension Island's EEZ have now been collated and analysis of this data is in its final stages. The dataset currently includes more than 200 tracks from 15 species. Movement models (Bayesian state-space, hidden Markov) have been applied to this data to separate tracks into discrete behavioural phases (e.g. migrating/resident or feeding/travelling), estimate residence times and produce gridded probability-density surfaces for each species. Work is now underway to combine these species layers and identify hotspot areas for inclusion within the MPA design. This includes estimating the buffer area needed to protect resident and semi-resident populations associated with Ascension Island itself. A manuscript "Residency and reproductive status of yellowfin tuna in a proposed large-scale pelagic marine protected area" containing the results of the yellowfin tuna tracking analysis has been submitted to the peer-reviewed journal *Aquatic Conservation* and preliminary results for many other species can be viewed in the project webGIS. Further tag deployments on pelagic sharks and tuna are planned for January-February 2018 and these data will be integrated into existing analytical frameworks as they are received.

2.2.1: Fieldwork planned to deploy GPS-accelerometer tags on sooty terns during the 2017 breeding season (Y1 Q2) had to be postponed due to the unexpected suspension of civilian flights to Ascension Island which prevented project partners from travelling (see section 2a

below for further details). Air access to the Island will shortly improve with the commencement of a monthly commercial service via St Helena and this work has now been rescheduled for February 2018 (Y1 Q4). However the AIG seabird team deployed 9 tags during May/June 2017 sooty tern breeding season, although unfortunately as it was a poor breeding season and many nests failed only 4 tags were retrieved.

2.2.2, 2.2.3 & 2.4: In May-June 2017, a major research expedition to Ascension Island's three shallow water seamounts was carried out to map the "sphere of influence" of these features on the pelagic ecosystem and develop recommendations for the designation of seamount marine reserves. During the 16 day expedition, which was conducted in collaboration with National Geographic Pristine Seas and the British Antarctic Survey, 56 sites were surveyed along transects radiating out from the seamount's summits to characterise gradients in the abundance and diversity of pelagic organisms across multiple trophic levels. This included 50 baited remote underwater video surveys (BRUVs) for sharks and other predatory fishes, 28 visual transects for seabirds, flying fish and cetaceans, 55 surface and mid-water zooplankton collections and 48 CTD deployments to quantify primary production. In addition, 48 seamount-associated sharks and tuna were tagged with pop-up satellite archival tags, fin-mounted PTTs and surgically-implanted acoustic transmitters which will allow the residence times and ranging behaviour of individual animals to be assessed. Acoustic receiver arrays consisting of 14 units were deployed on the summits of the two southern seamounts and will be retrieved and redeployed during offshore surveys in January 2018 (Y1 Q3) and January 2019 (Y2 Q3) to download detections of acoustically-tagged animals. Laboratory analysis of the surface zooplankton samples that were collected from offshore waters to characterise the productivity and structure of marine foodwebs associated with seamounts is underway.

2.3: Spatio-temporal variation in Ascension Island's physical oceanography (currents, transport fronts, temperature, productivity, eddying) has now been mapped using a range of remote-sensing products and summary datasets will shortly be uploaded to the project webGIS. Technical support from Cefas has been requested to support the mapping of frontal systems using biophysical tracers (temperature/ocean colour) and it is anticipated that this work will be completed in advance of the offshore research cruise planned for the end of Y1 Q3.

Output 3: Threats to marine megafauna from commercial fisheries are quantified including both direct (by-catch) and indirect (food chain) impacts.

3.2: All currently available data from Ascension's historical longline fishery has been collated and work on analysing this will begin in Y2. Unfortunately much of the high resolution (set level) fisheries observer data that is needed to support this analysis is held by foreign fishing authorities and is not currently accessible to Ascension Island Government. Attempts to obtain this data directly have so far been unsuccessful and assistance from Cefas and the UK Foreign and Commonwealth has now been sought to request access at a higher level (e.g. through ICCAT). In September 2017, Ascension Island Government and the University of Exeter signed a research collaboration agreement with [Global Fishing Watch](#) to access their high-resolution, daily gridded datasets of global fishing effort which has significantly improved our ability to map the spatio-temporal distribution of fishing activity in the region. Monthly maps of apparent long-lining effort for 2012-2017 have been produced and reveal clustering of fishing effort in international waters right up to the periphery of the Ascension EEZ. There is currently an embargo on the publication of these data, but once lifted fishing effort layers will be incorporated into the project webGIS.

3.5: Collection of diet samples and tissues for stable isotope analysis from key taxa is well underway. This includes flying fish samples (collected throughout Ascension's zone) processed to obtain tissue samples for stable isotope analysis, to characterise the role of these important species in the marine food web and collection of additional biological samples from inshore waters (groupers and yellowfin tuna) from the recreational fishery (via continued engagement with the local fishing community). An AIG marine scientist presented an aspect of the yellowfin tuna research from Ascension 'Size related dichotomy in the diet of yellowfin tuna at Ascension Island, central Atlantic' at the Fisheries Society of the British Isles (FSBI) annual conference, held at Exeter University.

3.6: Stable isotope analysis and processing of data is also underway with 80 liver and muscle samples from key fish species (mostly tuna) already processed (dried, pulverised and weighed) in preparation for stable isotope analysis.

Output 5: Recommendations for MPA placement are developed based on a synthesis of species distribution data, threat assessments and economic costs/values within a marine spatial planning framework.

Not due to start on this output until Y2, however discussions are underway with Cefas on their assistance with providing technical experts to work with project staff on this output delivery as part of their Blue Belt project support for Ascension.

Output 5: Experimental satellite surveillance technologies are trialled as a cost-effective method for MPA compliance monitoring and enforcement.

5.1 Ascension Island Government has been working with the UK Satellite Applications Catapult to identify potential illegal fishing activity using synthetic aperture radar (SAR) coupled with vessel AIS data. A number of potential infringements have already been detected although no interceptions by the Ascension patrol vessel have been made to date. Ascension Island Government and project staff are currently working with MMO as part of their Blue Belt project support for Ascension to follow up on the recommendations within the satellite surveillance report. Further targeted deployments using SAR will take place in the offshore patrol scheduled for January 2018. In the near future Ascension Government will also have access to AIS gap analysis data made available through the research agreement signed with Global Fishing Watch. Although not suited to real-time enforcement, these data will reveal the identities and overall distribution of potential “dark vessels” (those with AIS switched off) which may assist with patrol planning and follow up investigations with flag state authorities.

Output 6: Biodiversity baselines are established and a robust monitoring framework is developed for evaluating the long-term conservation benefits of the ASIOS.

6.1 As a result of the research expedition described in Output 2, comprehensive biodiversity baselines have now been established for Ascension Island’s three shallow-water seamounts which will help to develop their role as “ocean observatories” for monitoring change in the pelagic ecosystem. These sites will be resurveyed during offshore patrol/research trips in January 2018 (Y1 Q3) and early 2019 (Y2 Q3) and additional monitoring sites established. Surveys collect data on all ecosystem levels (plankton, flying fish, seabirds and higher pelagic predators) as well as oceanography. Survey protocols are being produced to ensure standardised sampling for long term monitoring e.g. zooplankton abundance protocol created.

Output 7: International best practice is incorporated into the design and planning of the ASIOS, and experiences and knowledge gained during the project are widely shared.

In September 2017, project scientists Dr Sam Weber and Dr Andy Richardson attended the 4th International Marine Protected Areas Congress (IMPAC4) in Chile to represent Ascension Island Government and deliver presentations on the plans for the Ocean Sanctuary and project outputs achieved to date. The Congress also provided an opportunity to network with other scientists and practitioners working on issues surrounding large-scale MPAs and receive feedback on the approach being taken on Ascension Island. This included attending the annual [Big Ocean](#) steering group meeting to discuss the process for Ascension Island joining their peer-learning network. Although membership of Big Ocean cannot be formalized until after the designation of the Ocean Sanctuary, there was a clear willingness to support Ascension throughout the planning and designation process, with numerous useful contacts made. During the IMPAC4 conference, Big Ocean and IUCN also launched their [Best Practice Standards for Large Scale MPAs](#) which will provide an invaluable reference resource to assist with the

planning process. Hard copies of this document were obtained for the Ascension Island Government and effectively deliver many of the activities planned for output 7.4 (“review best practice in large scale MPA design and management”).

There has been a large amount of public engagement to date through social media, newspaper articles and a public presentation on Island (by the National Geographic team and Darwin project staff) in particular pre and post seamount expedition.

Output 8: The ASIOS is formally designated and management structures are put in place to ensure its long-term success.

Not due to start on this output until Y3, however the National Protected Area’s Ordinance was updated to include the ability to designate an MPA out to 200nm and made regulations for a Marine Management Plan, therefore the legal framework is now in place to allow designation once science data collected and fully analysed. Work has also commenced on the background sections of the Marine Management Plan.

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.

In April 2017, the Royal Air Force unexpectedly announced the suspension of all direct civilian flights to Ascension Island from the UK until 2019-2020 to allow essential runway maintenance to be undertaken. As a result, a planned visit to the Territory by University of Birmingham and Army Ornithological Society Partners to tag sooty terns in May/June 2017 had to be cancelled, and travel of University of Windsor and University of Exeter partners to participate in the offshore seamounts expedition had to be re-routed via Brazil and Cape Verde to connect with a British Antarctic Survey research vessel travelling to the Island. Access issues also meant that only a single representative from AIG was able to attend the IMPAC4 conference in Chile, compared to the two initially budgeted for, and a planned training visit of AIG staff to the University of Western Australia following the seamounts expedition was also cancelled. Many local fishing charters have temporarily closed as clients cannot currently reach the Island, which has impacted our ability to charter a vessel for setting up inshore pelagic monitoring sites and acoustic arrays. Ascension Island Government’s Marine Team are currently covering this shortfall, but it has resulted in a delayed start to this element of the project.

The announcement of a limited commercial air service to Ascension Island via Johannesburg and St Helena beginning in November 2017 should allow for the remaining project activities to continue as planned and the cancelled seabird tagging expedition has now been rescheduled for February 2018. The cost of this route will be considerably more than that of the direct link on which the budget was based, although the higher cost of travel for overseas partners may be offset by the more limited international travel taken by AIG staff in YR1 as a result of access issues. Until the total cost of the new route can be calculated in the coming months, the overall budget impact is difficult to forecast. As soon as these costs are clear, we will inform LTS International of any potential budget implications and submit Change Request forms as needed.

As of October 2017 there have been no applications for commercial licenses to fish within Ascension Island’s EEZ which has clear implications for the delivery of Output 3.1 (Deploy local fisheries observers on commercial vessels). This risk was acknowledged in the project logical framework. The need for local observer data to quantify by-catch risks may be lessened if historical, high resolution data from national observer programmes (e.g. Taiwan) can be obtained and steps are currently being taken to try to access these data through the Regional Fisheries Management Organisation (ICCAT) and diplomatic channels.

2b. 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: £5000

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.

If you anticipate a significant underspend because of justifiable changes within the project, please submit a rebudget Change Request as soon as possible. There is no guarantee that Defra will agree a rebudget so please ensure you have enough time to make appropriate changes if necessary.

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

If you were asked to provide a response to this year's annual report review with your next half year report, please attach your response to this document. Additionally, if you were funded under R23 and asked to provide further information by your first half year report, please attach your response as a separate document.

Please note: Any planned modifications to your project schedule/workplan can be discussed in this report but **should also be raised with LTS International through a Change Request.**

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**