



**Darwin Initiative Main/Post/D+ Project  
Half Year Report  
(due 31<sup>st</sup> October 2018)**

<b>Project reference</b>	DPLUS064
<b>Project title</b>	Characterising Bermuda's baitfish populations to improve management and fishery sustainability
<b>Country(ies)/territory(ies)</b>	Bermuda
<b>Lead organisation</b>	Bermuda Zoological Society
<b>Partner(s)</b>	Bermuda Government DENR,
<b>Project leader</b>	Joanna Pitt
<b>Report date and number (e.g., HYR3)</b>	HYR2
<b>Project website/blog/social media etc.</b>	

**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).**

**The following outputs had activities scheduled during the past 6 months:**

**1 Annual cycle of baitfish abundance**

1.1 Remote camera monitoring of baitfish schools was replaced with twice weekly visual surveys. These surveys concluded in mid-August. Cameras are still in place at 6 sites (3 that are closed to net fishing and 3 that are unrestricted) to monitor fishing / poaching activity.

1.2 Temperature loggers are in place at 4 locations.

1.345 Baitfish presence and school composition was monitored by twice weekly visual surveys, per the change request a year ago, and these concluded in mid-August. Data from the twice weekly surveys of baitfish presence / absence and school characteristics are currently being analysed.

1.6 / 1.7 The period of peak baitfish abundance in inshore waters has been identified as July through October, with dense schools ("bait balls") forming August through October. The report on this activity is being prepared.

**2 Age, growth and reproduction**

2.1 Weekly sampling for life history parameters is ongoing to corroborate the cycles observed in Year 1.

2.2 – 2.5 Dissections and staging; Gonad sample prep; Fecundity analysis – Dissections and data collection, including staging and fecundity analysis, are ongoing, with ovaries being preserved for later histological analysis.

2.6 Otolith ageing – Otoliths are being extracted from samples on an ongoing basis and processing is underway. The intern budgeted for in year 2 is helping to complete this work.

2.7 Gonad histology – Gonads will be sent for processing in one batch at the end of November in order to save on shipping costs.

**3 Population genetics**

3.4 The genetic analysis is complete and a scientific paper has been drafted for submission. This work will be presented as a poster at the 71<sup>st</sup> Gulf and Caribbean Fisheries Institute meeting in November.

3.5 Genetic sequences will be uploaded following acceptance of the manuscript for publication.

#### **4 BROADSCALE SURVEY OF PEAK BAITFISH ABUNDANCE / DISTRIBUTION**

4.1 Test methods and calibrate against stationary cameras – The aerial drone was tested and was able to distinguish denser schools in clear water over sandy bottoms, but had trouble detecting sparsely schooled fish over more mottled benthos. Stationary cameras are no longer being used in this context.

4.2 Survey 50-60 sites over 10 days – Between mid-July and the end of October, we have surveyed over 150 bays, covering large areas of adjacent shoreline in a single day to get a realistic overview of baitfish presence / absence, relative abundance and species composition, while avoiding confounding by meso-scale movements between surveys. We used an aerial drone where possible, supplemented by visual surveys in areas where the drone was not permitted to fly (i.e. around the airport or too close to houses) or in conditions under which detection of baitfish was less reliable. With practice, visual identification of baitfish species from a stationary or slowly moving boat became a practical way of expanding our spatial coverage. Species composition was validated with net sampling and snorkel surveys as required. A final survey day is scheduled for November 1<sup>st</sup>. By focusing our survey days with the drone contractor on areas where the drone would be most useful, and using alternate vessels at lower cost (i.e. fuel costs only) on other days, we anticipate a total of 13 survey days and coverage of a significant proportion of Bermuda's inshore waters.

#### **5 Report on baitfishing, bait use and fisher perceptions**

This activity was delayed from the second half of the 2017-18 timetable, as discussed in the previous annual report and in emails between the project leader and LTSI. Winter is the slow season for most fishers in Bermuda so this is the best time to schedule interviews. There will be adequate time for analysis by the end of March.

5.1 Develop mail survey and send to registered fishers – The survey is ready for mailing to commercial fishing vessel owners on November 1, either via email or OHMS mailing.

5.2 Semi-structured interviews with commercial bait fishers – Interviews have been scheduled for late November and early December, with overflow into January as needed.

5.3 Develop and conduct roving survey of recreational bait fishers – We have been chatting to bait fishers as we have encountered them through the summer. Formal surveys will start November 2, targeting those fishing for bait directly as well as other people fishing from the shoreline. Surveys will be carried out with the assistance of our intern. Additionally, an online survey will target recreational fishers who fish primarily from boats. This survey will be shared via the local angling clubs and the Marine Resources Facebook page, which is followed by many recreational fishers.

5.4 Analyse and summarise results for report – This will happen once surveys and interviews are completed

#### **Publicity**

An article on the project was published in the summer edition of the DENR / BAMZ newsletter, *Envirotalk*. DEFRA and Darwin Plus were appropriately credited.

**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.**

**2b. Have any of these issues been discussed with LTS International and if so, have**

<b>changes been made to the original agreement?</b>	
Discussed with LTS:	Yes/No
Formal change request submitted:	Yes/No
Received confirmation of change acceptance	Yes/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.

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?**

During the past 6 months, there have been significant and consequential delays between the submission of claims forms and receipt of payments. The grant account does not have a large surplus, and our partners and contractors have been forced to wait for payment. This hinders our ability to engage certain providers in the future. Further, a significant amount of the project leader’s time has been spent chasing funds and dealing with the fallout.

The most significant issue relates to our Q4 claim for the 2017-18 financial year, which was submitted on May 30 and, based on the exchange rate at the time, requested an “in arrears” payment of, to cover an actual expenditure of. The Q4 payment was finally received on August 17, but the exchange rate had changed significantly in the intervening 11 weeks, such that we only received. This resulted in a shortfall of. Some invoices included in the actual expenditure report cannot now be paid out as there are no funds to pay them, and we now face the challenge of matching our books with the audit of funds and invoices. Approximately in Year 1 funds were left unclaimed, in part because of the favourable exchange rate at the time of the claim, so this could have been avoided by making the payment based on our USD expenditure.

The Q2 claim for 2018-19 was submitted on July 26, and it took 8 weeks for funds to be received on September 20. In light of the foregoing, we submitted the Q3 claim early, and funds were received on October 17.

**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 R24 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](mailto: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**