

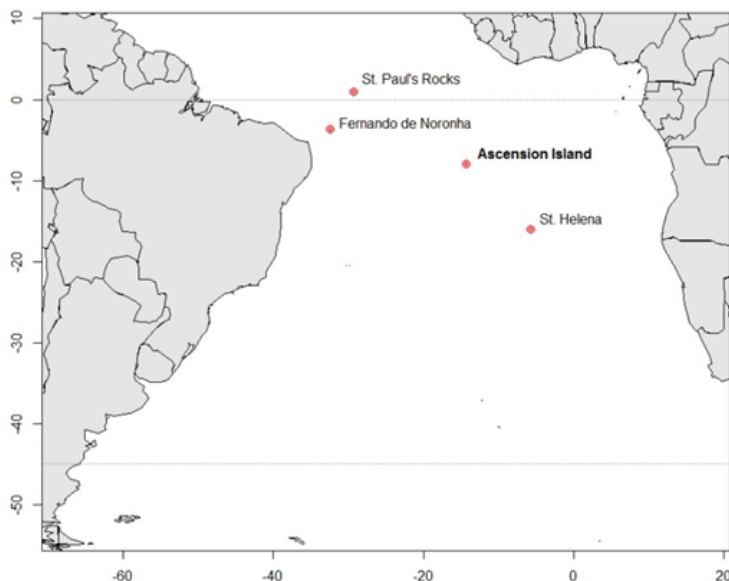
Darwin Plus: Overseas Territories Environment and Climate Fund

Final Report Darwin Project Information

Project Ref Number	DPLUS021
Project Title	Ascension Island Marine Sustainability (AIMS) – A Fisheries and Marine Biodiversity Project
Territory(ies)	Ascension Island
Contract Holder Institution	Ascension Island Government Conservation Department (AIGCD)
Partner Institutions	South Atlantic Environment Research Institute (SAERI), Shallow Marine Surveys Group (SMSG), Royal Society for the Protection of Birds (RSPB), British Antarctic Survey (BAS)
Grant Value	£261,087.00 (+ £246,590.00 in kinds)
Start/end date of project	01/04/2014 – 31/07/2016
Project Leader Name	Dr Nicola Weber / Dr Sam Weber
Project website/Twitter/Blog etc.	www.ascension-island.gov.ac/government/conservation/marine/ Facebook: www.facebook.com/AscensionIslandConservation Twitter: @AIGConservation
Report author(s) and date	Compiled by Dr Andy Richardson (Senior Marine Scientist) with input from all of those involved in the project 31/07/2016

1 Project Overview

Ascension Island harbours globally important marine biodiversity, potentially representing a unique assemblage of western and eastern Atlantic flora and fauna. The Island also supports commercially valuable pelagic tuna fisheries, and an inshore recreational fishery. However, a paucity of baseline scientific data from the marine environment and a lack of capacity in marine and fisheries science within Ascension Island Government have been major barriers to the effective management and conservation of the Island's marine resources. Data on the abundance, distribution and biology of endemic and commercially exploited species have been particularly lacking.



Addressing these issues was identified as a strategic priority for Ascension Island Government through a successfully completed Darwin Initiative-funded project to develop and implement a National Biodiversity Action Plan (NBAP) for Ascension Island (#19-026: www.ascension-island.gov.ac/government/conservation/projects/bap 2012-2015). A Darwin Challenge Award to SMSG/SAERI (EIDCF012: 2012-13) generated some much need baseline data, but was limited in time and scope. By drawing on existing expertise in marine and fisheries science from within the South Atlantic UKOTs (SAERI, BAS, SMSG), as well as the wider NGO community (RSPB), this project aimed to fill some remaining knowledge gaps and build capacity and facilities at Ascension Island to enable the sustainable management of marine resources beyond the lifespan of the project.

2 Project Achievements

2.1 Outcome

Outcome:	Substantially increase Ascension Island’s marine biodiversity knowledge and fisheries science capacity, informing the development of the Biodiversity Action Plan for marine taxa, and providing the science base needed for sustainably managed inshore and offshore fisheries.		
	Baseline	Change by 2016	Source of evidence
Indicator 0.1: Establishment of a Marine and Fisheries Unit on Ascension Island	Nothing formal in existence – marine research carried out on an <i>ad hoc</i> basis by AIGCD members.	A well-staffed and well-resourced Marine Fisheries Unit has been established and fully integrated into the now <u>AIG Conservation & Fisheries Department</u> .	Detailed in Output 1. Table 2.3
Indicator 0.2: Consolidation of existing marine/ fisheries knowledge and significant advancing	Existing data not stored in one location. Clear knowledge gaps relating to both the inshore and offshore marine environment.	Comprehensive literature reviews carried out and all existing data collected & catalogued. Extensive and reliable new data collected, analysed & used to inform policy development.	Detailed in Outputs 2 – 8. Table 2.3
Indicator 0.3: Darwin AIMS project to have a lasting legacy	Funding secured for 2 years 2014-2016 through the Darwin Initiative.	Significant funding has been secured through various sources for the work to continue and for strategies to be developed.	Detailed in Output 9, Table 2.3, Section 2.4 and Table 6.2.

As summarised in Table 2.1 and detailed in Table 2.3, the intended Outcome has been successfully achieved through the implementation of the Outputs by the project team and its partners. Each Output was critical to the effective achievement of the project outcome. Output 1 established the local capacity needed to carry out the project and Outputs 3 and 4 provided the data necessary to fill spatial and temporal gaps in biodiversity data identified in Output 2. Outputs 5 through 8 provided vital data and management options for marine fisheries around Ascension Island, contributing to quality management of marine resources. All of the Outputs combined, create an unparalleled dataset to be used as a basis for future marine spatial planning as part of the Biodiversity Action Plan. Finally, through Output 9, we have ensured that the Darwin AIMS project will have a lasting legacy through the continued high-quality marine research and reliably informed marine management being implemented by AIG.

2.2 Long-term strategic outcome(s)

Data collected from this project will contribute towards an agreement on the most appropriate form of marine management for Ascension Island, particularly with regards to the UK Government pledge to create “a Blue Belt around the UK’s Overseas Territories”, including “a protected area at Ascension Island, subject to the views of the local community”, as stated in the 2015 Conservative Government manifesto. As this decision was made when we were already half way through the Darwin AIMS project, some of our Outputs needed to be adapted.

2.3 Outputs

<u>Output 1:</u>	Establishment of a Fisheries and Marine Science Unit on Ascension Island			Comments (if necessary)
	Baseline	Change recorded by 2016	Source of evidence	
1.1 Appointment of a Project Officer	No dedicated marine science staff at AIG.	Marine & Fisheries Science team established, continuation of the team post-project.	Employment contracts & Staff appraisals (AIG)	Change of Project Officer in August 2014 as original post-holder left the island for personal reasons.
1.2 Appointment of Marine Technicians	No dedicated marine science staff at AIG.	Marine & Fisheries Science team established, continuation of the team post-project. Ascension Island Government Conservation and Fisheries Department formed.	Employment contracts (AIG) Staff appraisals (AIG)	Staff changes after one Technician left the island in July 2014 for personal reasons and remaining Technician took up the post of Project Officer in August 2014. Replacement staff appointed in October 2014 – 2 to be retained after the project and 1 going on to do a PhD.
1.3 Creation of a Marine and Fisheries Laboratory	No dedicated marine and fisheries laboratory facilities at AIGCD.	An operating fit-for-purpose marine and fisheries laboratory, with all necessary equipment for fisheries research. Laboratory use will continue post-project.	Marine and Fisheries Laboratory (see photographs in Report section 2.4).	Laboratory also used regularly by other Conservation Department staff and by visiting scientists and PhD/MSc students.
1.4 Training of project staff in marine survey techniques and the use of fisheries equipment	No trained fisheries or marine science staff at AIG.	Extensive training completed through partner support; training shared with other UKOTs. Experienced marine and fisheries staff employed with continuation of unit post-project. Project scientists’ skills improved and enhanced through continuous training.	Employment contracts (AIG) Staff appraisals (AIG) Training records, certificates and manuals (Appendix 1)	

Output 2:	Existing marine biodiversity and fisheries data are consolidated			Comments (if necessary)
	Baseline	Change recorded by 2016	Source of evidence	
2.1 Review of existing data related to Ascension's marine biodiversity and fisheries	Several separate datasets from SMSG expeditions, past AIGCD surveys, and independent visiting researchers.	<p>Historic catch data from Ascension waters digitised.</p> <p>Marine literature relating to Ascension Island marine biodiversity and fisheries catalogued.</p> <p>Review of historical fishing at Ascension commissioned by AIG and completed by specialists at CEFAS.</p> <p>Species list extracted from literature sources.</p> <p>Previous biodiversity datasets consolidated into single database.</p>	<p>AIGCD digital library.</p> <p>AIGCD/SAERI Metadatabase</p> <p><i>A review of fisheries management options for Ascension Island waters 1: Offshore fisheries</i> (CEFAS report)</p> <p><i>A review of fisheries management options for Ascension Island waters 2: Inshore fisheries</i> (CEFAS report)</p>	
2.2 Creation of a metadatabase catalogue	No capacity for storing marine metadata.	Metadata Catalogue created, marine metadata stored.	<p>Ascension Island Data Centre Metadata Catalogue (AIG)</p> <p>Metadata catalogue fully integrated with SAERI's South Atlantic IMS-GIS data centre</p> <p>http://www.south-atlantic-research.org/metadata-catalogue#http://www.south-atlantic-research.org/metadata-catalogue</p>	
2.3 Creation of databases to house marine biodiversity and fisheries related data	Data held in multiple databases, no dedicated marine and fisheries databases.	Definitive databases created and hosted on AIG's system and within SAERI's IMS and GIS centre.	Databases created: Fisheries biology Marine ecology Oceanography Species database	

Output 3:	Gaps in inshore and offshore marine biodiversity baselines are addressed			Comments (if necessary)
	Baseline	Change recorded by 2016	Source of evidence	
3.1 Monthly surveys of inshore monitoring sites	Short-term biodiversity data exists from SMSG expeditions in 2012 and 2013, AIGCD <i>ad hoc</i> surveys, and work by independent visiting researchers. No long-term datasets.	172 sublittoral biodiversity surveys conducted since June 2014, 120 of these at permanent monitoring plots. Each survey consisted of biodiversity transects and benthic photographs. Quarterly surveys of four intertidal monitoring plots completed for annual period with a species richness record and habitat information.	Databases Data analysed in species-habitat association paper for endemic fish: <i>Richardson et al (in prep) Habitat associations of endemic reef fish at Ascension Island, South Atlantic: identifying priority zones for conservation</i> https://vimeo.com/ascensionconservation	
3.2 Installation and monthly photographing of settlement panels	3 sets of panels deployed during 2013 SMSG expedition and photographed by AIGCD staff around other work demands.	6 settlement panel sites established, full 12 month deployment for 5 sets of settlement panels (one lost in heavy swell) with monthly photographing of each panel. Panel photographs analysed to coarse sessile fauna/flora classification to estimate percentage cover. Panels scraped and material retained for future identification and/or genetic barcoding.	Photographic collection Database of deployment and monitoring data	
3.3 Complete species inventories for marine fishes, invertebrates and plants	No marine species inventory.	Up-to-date marine species inventory compiled through extensive literature search and uploaded to the Ascension Biodiversity Catalogue. For data-poor taxa samples have been sent to expert taxonomists for identification.	Conservation digital library. Marine species inventory accessible through the Ascension Biodiversity Catalogue. Scientific papers published, submitted or in prep for new and updated species records: <i>Brown et al (submitted) New records of marine</i>	

			<p><i>invertebrates from Ascension Island (central Atlantic).</i></p> <p><i>Richardson & Brito (2015) The polygon moray, <i>Gymnothorax polygonius</i> (Poey, 1875) - A new record from Ascension Island, South Atlantic. Arquipelago - Life Mar. Sci. 32</i></p>	
3.4 Collection of offshore biodiversity data by offshore vessel	Offshore biodiversity data extremely limited.	<p>Offshore biodiversity cruise completed October 2015, increasing baseline knowledge of benthic communities at depths between 100 and 1000m up to 12nm offshore.</p> <p>Offshore biodiversity surveys conducted aboard enforcement patrol vessel hired by AIG for 1 month.</p>	<p>JR864 cruise report (https://www.bodc.ac.uk/data/information_and_inventories/cruise_inventory/report/jr864.pdf)</p> <p>Blog links http://www.south-atlantic-research.org/blog/ascension-island-research-cruise/</p> <p>AIG Patrol Report</p> <p>Scientific paper: <i>Nolan et al (submitted) Biological and physical characterisation of the seabed surrounding Ascension Island from 100-1000m. Journal of the Marine Biological Association</i></p>	
3.5 Analyses of video and still image data	<p>Limited video data collected.</p> <p>Still image data collected during short term SMSG expeditions in 2012/13 awaiting analysis.</p>	<p>172 benthic surveys (>4000 photo quadrats) photographed, analysis of still images performed using Photoquad software (including that collected in 2012/13).</p> <p>6 arrays of settlement panels photographed monthly for full annual cycle.</p> <p>Marine species photograph collections hosted on AIG systems.</p>	<p>Scientific paper; <i>Richardson et al (in prep) Habitat associations of endemic reef fish at Ascension Island, South Atlantic: identifying priority zones for conservation</i></p> <p>Species photographs used in Ascension Biodiversity Catalogue</p> <p>Marine species ID guides</p>	
3.6 Circulation of report to stakeholders and development into a peer-reviewed	NA	<p>5 scientific papers prepared for peer-reviewed journals.</p> <p>1 marine species ID</p>	<p>Scientific papers (Annex 2)</p> <p>Marine species ID guides</p>	

paper(s)		guide for use by AIGCD and visiting scientists. Species inventory completed. Databases created.		
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<u>Output 4:</u>	Marine habitats are classified and mapped			Comments (if necessary)
	Baseline	Change recorded by 2016	Source of evidence	
4.1 Development and testing of a fine scale habitat classification system for intertidal, sublittoral and offshore areas	No testing of habitat classification scales.	Very fine scale classification analysed using benthic photographs and biodiversity data from sublittoral habitats. Coarse scale classification used in sidescan sonar habitat mapping.	<i>Richardson et al (in prep) Habitat associations of endemic reef fish at Ascension Island, South Atlantic: identifying priority zones for conservation</i> Inshore GIS layer(s)	Shortfall in scale testing, due in part to the difficulties in collecting habitat information using sidescan sonar (see section 4 – “Lessons learned”)
4.2 Creation of a marine habitat map for Ascension Island	Limited marine habitat information with local Admiralty chart last updated in 1984 and satellite-derived bathymetry from GEBCO.	Multibeam surveys conducted aboard the James Clark Ross cruise from 100m contour out to 11km from the island, covering an approximate area of 1,125km ² . Sections of the inshore marine habitat surveyed using sidescan sonar, with an approximate area of 15km ² recorded and classified. Data transformed into GIS vector layers. Pelagic vertical habitat mapped using CTD surveys from inshore zone to 34km offshore.	Inshore GIS layer(s) Metadatabase JR864 cruise report (https://www.bodc.ac.uk/data/information_and_inventories/cruise_inventory/report/jr864.pdf) Oceanographic database Multibeam SWATH GIS layer (Appendix 3)	
4.3 Circulation of report to stakeholders and development into a peer-reviewed paper	NA	Multibeam SWATH results have been incorporated into a wider manuscript (in prep) about the offshore diversity research conducted during the JR864 cruise to be submitted to a peer-reviewed journal	Species-habitat association paper for endemic fish: <i>Richardson et al (in prep) Habitat associations of endemic reef fish at Ascension Island, South Atlantic: identifying priority zones for conservation</i>	

		Species-habitat association data and analysis has been written into a manuscript (in prep) for submission to a peer-reviewed journal	Offshore biodiversity and habitat paper: <i>Nolan et al (submitted) Biological and physical characterisation of the seabed surrounding Ascension Island from 100-1000m. Journal of the Marine Biological Association</i> Metadatabase of GIS layers	
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<u>Output 5:</u>	Understanding of the age, growth and reproductive biology of the main inshore commercial fish species is significantly advanced			Comments (if necessary)
	Baseline	Change recorded by 2016	Source of evidence	
5.1 Training of project staff and interested stakeholders in collecting otoliths, gonad samples and biometric data	No trained fisheries or marine science staff at AIG.	Experienced marine and fisheries staff employed with continuation of MFU post-project. Project scientists skills improved and enhanced through continuous training. Extensive training completed through partner support, training shared within the department to increase marine science capacity, to visiting interns and researchers and, other UKOT's staff.	Employment contracts (AIG) Staff appraisals (AIG) Training records, certificates and manuals (Appendix 1)	
5.2 At least 1600 otoliths sectioned, processed, validated and read	Otolith collection for Ascension marine species lacking with no in house capability for processing or reading.	1331 otoliths from 18 species collected, processed, validated and read. Majority of otoliths collected (1303) were from 6 commercially important fish species. Otolith collection continues where data are lacking. Otolith archives created and maintained.	Inshore Fisheries Database <i>A review of the life history characteristics of Ascension Island's inshore fish species</i> (Appendix 2) Otolith and gonad processing and identification manual	Collections from main species slowed once reliable growth curves had been established and so target of 1600 was not necessary.

<p>5.3 At least 400 gonads, fixed, stained and sectioned. Condition and gonad indices analysed</p>	<p>Gonad collection for Ascension marine species lacking with no in house capability for processing or reading.</p>	<p>718 gonads from 18 species collected, processed and stage of maturity assigned. Majority of gonads collected (708) were from 6 commercially important fish species. Gonad archives created and maintained. Identification guides for maturity stages of commercially important species completed.</p>	<p>Inshore Fisheries Database <i>A review of the life history characteristics of Ascension Island's inshore fish species</i> (Appendix 2) Otolith and gonad processing and identification manual</p>	<p>Target was surpassed in order to establish annual reproductive cycles effectively. Gonad collection continues where data are lacking.</p>
<p>5.4 Establishment of growth curves, annual reproductive cycles and age at maturity for at least 3 commercially exploited fish species</p>	<p>Data lacking on life history characteristics of commercially exploited fish species.</p>	<p>Increased knowledge on life history characteristics of 6 commercially exploited fish species (Yellow-fin tuna, Wahoo, Amberjack, Rockhind Grouper, Squirrel Fish, Moray eel).</p>	<p>Inshore Fisheries Database <i>A review of the life history characteristics of Ascension Island's inshore fish species</i> (Appendix 2) Otolith and gonad processing and identification manual Scientific paper; <i>Nolan et al (in prep) Life history strategies of rock hind Epinephelus adscensionis at Ascension Island</i> Scientific paper; <i>Nolan et al (in prep) First attempts to age the moray eel Gymnothorax moringa</i> Scientific paper; <i>Downes et al (in prep) Observations on life history parameters of yellowfin tuna, Thunnus albacares, utilising Ascension Island's waters</i></p>	

Output 6:	Development and implementation of a strategy for the on-going monitoring and management of Ascension's inshore line and vessel fisheries			Comments (if necessary)
	Baseline	Change recorded by 2016	Source of evidence	
6.1 Review exercise of past and present practices	Various internal reviews of the status of the inshore fishery by AIGCD.	Commissioning of inshore fishery review, submitted by CEFAS in January 2015.	<i>A review of fisheries management options for Ascension Island waters 2: Inshore fisheries</i> (CEFAS report)	
6.2 Consultation with partners and stakeholders e.g. local fishermen and members of the community through a series of public meetings	Public meeting on proposed licencing in 2004.	Two wider public talks. Inshore Advisory Group set up with representatives from each fishing group (sportsfishing, recreational etc.) and also representatives from UK and US military bases. Also included were other stakeholder groups from the marine environment such as the Conservation Department and local SCUBA divers.	Local newspaper (The Islander) articles Minutes of Inshore Advisory Group meetings Feedback on proposed licencing scheme by advisory group as submitted to island council (Council minutes)	
6.3 Implementation of a licensing scheme and a scheme for reporting of catch and effort in the inshore fisheries	Sports fishing licencing scheme trialled from 2004-2005.	Enacting of umbrella legislation to allow inshore licencing scheme to be implemented, awaiting re-election of island council in September 2016. Catch reporting forms available at Georgetown Pierhead and distributed to sportsfishing vessels.	Database of catch-effort for inshore fishing Fisheries (Conservation And Management) Ordinance, 2015 http://www.ascension-island.gov.ac/wp-content/uploads/2013/04/LN-2-2016-Fisheries-Conservation-and-ManagementCommencement-Order.pdf	
6.4 Circulation of report to stakeholders and partners	NA	Through public meetings and the Inshore Advisory Group, proposed changes and licencing have been discussed.	Council minutes	

		Draft legislation has been circulated to Councillors for voting when council is reinstated in September 2016.		
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<u>Output 7:</u>	Understanding of resource dynamics in the offshore fishery is significantly advanced			Comments (if necessary)
	Baseline	Change recorded by 2016	Source of evidence	
7.1 Geospatial analyses of existing ICAAT data are carried out	<i>An Overview Of Pelagic Fisheries For Shared Highly Migratory Species In The Waters Of Ascension, St Helena And Tristan Da Cunha And Opportunities For The Development Of Harmonised Fisheries Management Activities</i> (MRAG report, 2010)	Commissioning of offshore fisheries and resources review, including ICCAT data, submitted by CEFAS in November 2014. Open access ICCAT data from the period 2012-2013 reviewed and used in predictive models analysis.	<i>A review of fisheries management options for Ascension Island waters 1: Offshore fisheries</i> (CEFAS report) <i>Development of predictive models to attempt to explain patterns of distribution and abundance</i> (Appendix 4)	
7.2 Development of predictive models to attempt to explain patterns of distribution and abundance	No predictive modelling.	Construction and testing of GLMs and GAMs to predict the influence of environmental variables (including remotely sensed) on the abundance and distribution of pelagic fish species using ICCAT catch data from longline fleets. Analysis was conducted at local (Ascension EFZ) and regional (South/Central Atlantic) scales. Models then used to predict abundance.	<i>Development of predictive models to attempt to explain patterns of distribution and abundance</i> (Appendix 4)	
7.3 Deployment of at least 400 mechanical tags and 20 PAT tags are on pelagic fish (e.g. tuna and marlin) in the line/sport fishery	No tagging efforts in waters around Ascension Island.	Approximately 90 mechanical streamer tags have been deployed on yellowfin tuna in the inshore area though catch and release by the sportsfishing businesses. Tag numbers have been reserved and registered with ICCAT for	Database of tagging data <i>Tracking movement of yellowfin tuna (Thunnus albacares, Bonnaterre 1788) at Ascension Island, South Atlantic using pop-up satellite archival tags</i> (Appendix 5)	Appendix 5 is also being prepared as scientific manuscript for submission to a peer-reviewed journal. Number of archival tags

		<p>continuing deployment of tags in tuna and billfish. 500 mechanical tags have been deployed on species important to the inshore reef fishery; grouper and squirrelfish at a series of locations. Tagged individuals were also injected with oxytetracycline to aid age and growth studies using recaptured specimens.</p> <p>Pop-up Satellite Archival Tags were deployed on 13 yellowfin tuna in the inshore area, 11 of which reported back individual data of up to 104 days.</p> <p>Close collaboration with sports fishermen for deployment of tags and increased awareness throughout the fishing community of tagging programmes and reporting of recaptured fish.</p>	<p>Stored in Movebank.org, will be made publically available after publication.</p> <p>ICCAT tagging inventory; http://www.iccat.org/en/InvTagging.htm</p>	<p>was lower than intended due to additional cost of ARGOS satellite time for data retrieval, however, funding has been secured from the FCO, BLUE and Darwin for the deployment of more tags on marine megafauna (>50).</p>
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<u>Output 8:</u>	Initial by-catch risk assessments for seabirds, turtles and sharks in the commercial fishing fleet are completed and on-going observer capacity established			Comments (if necessary)
	Baseline	Change recorded by 2016	Source of evidence	
8.1 AIG employ an at-sea observer, to be funded in the long-term by the sale of licences	No observer coverage.	<p>Observer deployed on licenced commercial longlining vessel in Ascension offshore zone.</p> <p>Fisheries patrol by AIG.</p> <p>Fisheries patrol officers aboard RFA Goldrover for period in offshore waters.</p>	<p><i>Tuna Observer Cruise Report</i> (CapMarine observer report)</p> <p>AIG patrol reports</p>	<p>Suspension of licencing for much of the project due to negotiations at UK Government level about the status of Ascension's offshore area meant a very limited fishing season and so limited opportunity for observer deployment</p>

<p>8.2 AIG observer receives on-the-job training from experienced visiting observer (employed by RSPB)</p>	<p>No observer training or deployment.</p>	<p>Unnecessary as AIG employed a professional, trained observer. RSPB have sent training and guidance materials which remain accessible for future use.</p>	<p><i>Tuna Observer Cruise Report</i> (CapMarine observer report) RSPB documents</p>	
<p>8.3 Geospatial analyses of seabird and turtle tracking data in conjunction with VMS and catch, effort and location data derived from ICAAT conducted to examine potential overlaps</p>	<p>No knowledge of by-catch risk to seabirds and turtles within Ascension Island's EFZ.</p>	<p>Historical VMS data and ICCAT catch effort statistics have been collated into databases, however resolution of data pre-2014 was found to be too coarse for meaningful comparisons with GPS tracking data (maximum 1 VMS location per day and 5 x 5 degree summary of catch data). No by-catch of turtles or seabirds was recorded during the 2015-2016 season after the fishery re-opened (see 8.4).</p>	<p>VMS data summarised in CEFAS (2014) <i>A review of fisheries management options for Ascension Island waters 1: Offshore fisheries</i> (see 7.1). ICCAT data summarised and analysed in Appendix 4 (see 7.2). <i>Tuna Observer Cruise Report</i> (CapMarine observer report)</p>	<p>Following a legislative review and updating of license conditions for the offshore fishery during the project, set-level reporting of catch and by-catch is now mandatory, along with collection of high resolution AIS and VMS data, so this analysis should become possible in the near future.</p>
<p>8.4 By-catch risk assessments ground-truthed by the at-sea observer monitoring over 250,000 hooks</p>	<p>No observers deployed.</p>	<p>18955 hooks deployed during the 9 days while observer was aboard. Limited opportunity as only two licenced vessels coupled with a short season.</p>	<p><i>Tuna Observer Cruise Report</i> (CapMarine observer report)</p>	<p>Suspension of licencing for much of the project due to negotiations at UK Government level about the status of Ascension's offshore area meant a very limited fishing season and so limited opportunity for observer deployment.</p>
<p>8.5 Circulation of report to stakeholders and development into a peer-reviewed paper(s)</p>	<p>NA</p>	<p>Presentation of key findings to Island Council (and Fisheries and Biodiversity Committee) and made available to AIG policy makers.</p>	<p><i>Tuna Observer Cruise Report</i> (CapMarine observer report) Council minutes <i>A review of fisheries management options for Ascension Island</i></p>	

			waters 1: Offshore fisheries (CEFAS report)	
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<u>Output 9:</u>	Project team completes tasks and prepares long-term exit strategy			Comments (if necessary)
	Baseline	Change recorded by 2016	Source of evidence	
9.1 Development of at least 3 SAPs and 2 HAPs for marine biodiversity within the NBAP framework	Ascension Island National Biodiversity Action Plan.	3 SAPs (<i>Epinephelus adscensionis</i> , <i>Thunnus albacares</i> , <i>Palinurus echinatus</i>). 1 HAP for the inshore sublittoral zone. Offshore status has been unclear for some time due to negotiations between AIG, UK government and NGO's so this has hampered opportunity for offshore HAP to be developed. However, a workshop has taken place to develop strategies to inform future offshore HAP, actions being based on results of these strategies.	Online SAPs and HAP http://www.ascension-island.gov.ac/government/conservation/projects/bap/ <i>Ascension Island Ocean Sanctuary: A scientific roadmap</i> (Workshop report)	
9.2 Integrated of data into a GIS platform as a basis for future marine spatial planning	Existing marine biodiversity data from SMSG expeditions in Access database, data from other sources in a mixture of spreadsheets and other formats.	All GIS data layers have been added to metadatabase catalogue and linked to wider SAERI GIS platform.	SAERI GIS data centre http://south-atlantic-research.org/ims-gis AIGCD metadatabase catalogue	
9.3 Submission of final project report and production of a policy paper on inshore fisheries for AIG	NA	Final project report circulated to partners and stakeholders. Inshore fisheries policy has been drafted (see Output 6) but the Island Council is currently devolved, voting and endorsement expected after election in September 2016.	Council minutes/agenda Fisheries (Conservation And Management) Ordinance, 2015 http://www.ascension-island.gov.ac/wp-content/uploads/2013/04/LN-2-2016-Fisheries-Conservation-	

			and-ManagementCom-mencement-Order.pdf	
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2.4 Sustainability and Legacy

The tangible Outputs produced serve as a legacy for the project and ensure continued progress towards marine conservation and sustainable management on Ascension Island. Biodiversity data collected during the AIMS project (Output 3) have created a key baseline dataset for future oceanographic and marine biological monitoring and research. The fisheries science data (Output 5) have also had a significant impact and contribution towards policy development in the inshore fishery (see Outputs 6.2 & 6.3) and indications for offshore resources (Output 7) have begun to inform aspects of policy covering the status of offshore waters of Ascension Island. Additionally, such data have contributed to continuing outputs from previous projects, including the Biodiversity Action Plan (from Darwin project 19-026). Capacity for marine management and conservation has been increased, directly due to the implementation of the AIMS project, with a team of 3 full time staff working to achieve the outputs. AIGCD will retain a marine science/conservation team after the end of the AIMS project, to continue data collection and ensure consistent monitoring in the marine environment. Additionally, in support of the AIMS project, AIG employed a full-time Director of Fisheries to manage the transition of the offshore region into a licenced fishery, following suspension of fishing activities. Although the future status of the offshore area is still under discussion, the Director of Fisheries and Conservation, Dr Judith Brown, is a key lead in these developments.





Before



After

In addition to the retention of trained staff, the capital inherited from the project has added crucial capacity to AIGCD, with the Marine and Fisheries Laboratory and field equipment that will allow continued monitoring as well as making a significant contribution to future projects and work in other areas of the OT's. In August 2016, St Helena Government Marine Staff are to visit Ascension Island, using expertise, equipment and techniques from the AIMS project to train in fisheries science (contributing to project DPLUS052) so that such knowledge can be disseminated elsewhere in the territories. Beyond data collection and equipment, a key legacy of the AIMS project has been engagement and collaboration with the community of Ascension Island. Events organised between AIGCD staff and the local school have enthused and educated many of the younger generation in the value of science and conservation. As a result of working directly with fishermen to obtain fish tissue samples and biometrics and deploying fish tags, a close relationship and mutual respect has resulted between many in the fishing community and AIGCD. This relationship is fundamental for continuing monitoring and conservation progress in the inshore marine environment of Ascension Island.

3 Project Stakeholders/Partners

The premise for the project was jointly devised between AIGCD and a number of project partners, based on several outputs from EIDCF012; hence from the outset it has been a highly collaborative venture. While planning the project, the partners all of whom have long standing interests and commitments to biodiversity conservation both in Ascension Island and also in the other UK OTs, discussed the aims and objectives of the project and the expertise that they could bring to it. Project partners were kept abreast of developments by email circulations and Skype meetings, as well as periodic face-to-face visits to the island. In the course of the project some key aspects of partner support included:

South Atlantic Environment Research Institute (SAERI): Training in fisheries science, particularly tissue and otolith processing (in association with the Falkland Islands Fisheries Department) both on Ascension and an intensive training visit to the Falklands by AIGCD staff. Dr Paul Brickle provided advice for deployment of tags and was crucial in securing funding for offshore diversity surveys aboard the James Clark Ross (JR864). Dr Paul Brickle was also the most frequent visiting partner, facilitating face-to-face meetings and training in project aspects such as histology and otolith processing, ageing and precision.

Shallow Marine Surveys Group (SMSG): The expedition by 8 members in 2015 aided in biodiversity surveys and consolidating species records for Ascension's shallow sublittoral habitat by identification and collection of specimens. Support from Dr Paul Brewin in analysis of CTD and sublittoral community data.

Royal Society for the Protection of Birds (RSPB): Continued publicity of issues facing offshore marine habitat, including that around Ascension Island and the dissemination of guidelines for bycatch mitigation, turtle and seabird handling and best practice guidelines for observers and commercial fishermen. Jonathan Hall, Head of OTs, visited the Island on 5 occasions for meetings with AIG staff, Island Councillors and the wider community. He also facilitated visits of a number of high profile marine scientists/ advocates including Dr Sylvia Earle, Charles Clover, Dan Laffoley (IUCN) & Stanley Johnson.

British Antarctic Survey (BAS): Provision of materials and advice for settlement panel deployment in the shallow sublittoral and significant in-kind support during the JR864 cruise collection of offshore biodiversity data.

Visits by project partners have been extremely useful for providing training to the AIGCD team, carrying out new research, discussing in targets for outputs and publications, and also strengthening relationships. Members of the AIGCD team are in regular email contact with partners with queries relating to routine work and now that



the project is completed, the team are exploring the different options for maintaining the joined up contributions from the overseas partners. All of the project partner organisations were in attendance at a workshop (see output 9.1) which was held by Dr Judith Brown and Dr Sam Weber from AIGCD which gathered leading scientists, NGO's and a representative from the UK Government (James Duddridge MP) and developed the document "Ascension Island Ocean Sanctuary: A scientific roadmap." This proceedings document sets out a strategy for the offshore waters around Ascension Island, continuing engagement with current partners and forging new collaborations with other institutions, such as the Zoological Society London (ZSL).

4 Lessons learned

The management structure within AIGCD and past experience in project planning and working with project partners was key to the success of the AIMS project. The Project Leaders at AIGCD already had an established track record of leading projects, including the development of BAPs, and the Director of Fisheries had experience of marine biodiversity projects and fisheries research. Thus, at the top level of the project, the individuals involved had both the expertise and also an understanding of the issues on the ground, as well as established relationships within the island community. The personal and professional disagreements between two of the original marine staff and their eventual departure had the potential to limit some of the outputs. However, guidance and support from the wider AIGCD team, project leaders and volunteers ensured that remaining staff progress towards outputs was maintained until the appointment of new team members. Despite the rigorous recruitment process employed by AIG, these staffing issues serve to demonstrate that problems can still occur when living and working on a small and isolated island, but also that they can be successfully resolved. Some aspects of fieldwork, such as the mapping of sublittoral habitats, were limited by adverse sea conditions but as the equipment was purchased through this grant, this is a continuing goal beyond the end of the AIMS project. A key limitation was the suspension of offshore fishery licences due, in part, to concerns from NGO's (including the partner RSPB). This uncertainty in the status of the offshore zone resulted in the curtailment of many offshore fishery outputs, such as in-depth bycatch risk assessments and observer coverage. However, the decisions on the offshore zone were made at UK Government levels far above that of AIGCD and so direct input and mitigation by AIGCD was, ultimately, limited. However, following the reintroduction of licence sales under a much improved management system in 2016, progress has been made towards many of these outputs by AIGCD. Work is on-going to

identify the best location for a pelagic marine reserve in Ascension Island waters. This has provided a significant opportunity for study and this work will be the basis for future BEST and Darwin Plus applications. The project did benefit from the 3 month, no cost, extension granted at the end by the Darwin Initiative to work with the AIGCD team in ensuring that the agreed outputs could be finished, and also the Island community (both at the top level and also the general public) to improve the understanding of why Ascension needs marine conservation and legislation, and the value of marine science.

4.1 Monitoring and evaluation

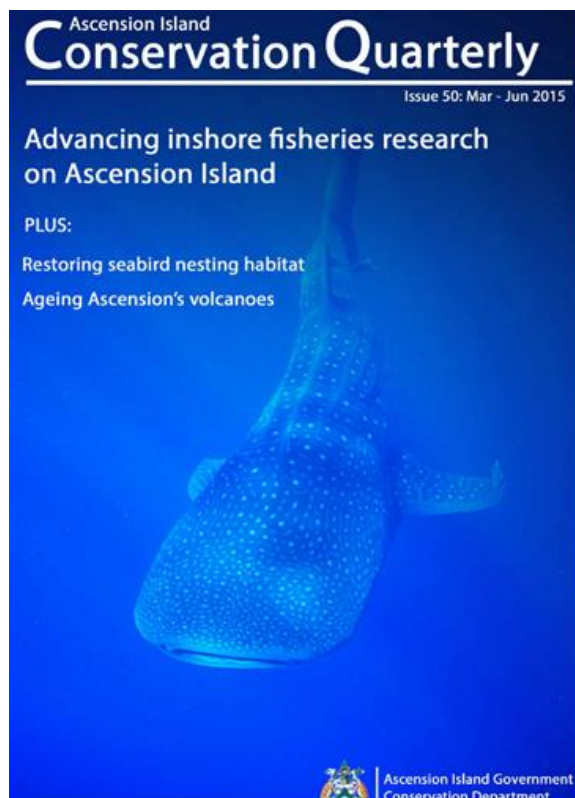
As demonstrated in Table 2.3, major advances have been made when working to meet the Project Outcome – the tangible Outputs and increased local capacity to ensure that this continues. The work has been carried out by the marine project staff with input from the Project Leads who have also overseen the work on-island and by the other overseas partners using the Logframe as an agreed list of measures. As there has been no discernible deviation from Standard Measures, there have been no reasons for concern or significant changes needed to be made to the plan. Despite the diverse range of outcomes from the project, it has still been relatively straightforward to monitor the progress and to ensure that the project stayed on track to meet its goals. Progress has also been reviewed internally through AIG Internal Audits and Staff Appraisals, partner meetings and an External Auditor has also reviewed the project spends.

4.2 Actions taken in response to annual report reviews

Reviewer feedback from the previous annual report raised the issue of whether trained and experienced project staff would be retained after the conclusion of the project. Arrangements are for the Project Officer and one of the technicians to stay on the island in the employ of AIGCD, to continue marine conservation and monitoring work, while the other technician will stay for several months post-project before taking up a postgraduate position in the UK. Funding for this has come from a variety of sources including a private benefactor, administered through BLUE Marine Foundation, the Darwin Initiative (DPLUS046), the FCO, and also AIG directly. The retention of two members of staff will also ensure that there is continuity in communication with project partners, reaffirming the good relationship between AIGCD and external organisations. Additionally, concerns were voiced on the halting of progress towards Output 8 (Initial by-catch risk assessments for seabirds, turtles and sharks in the commercial fishing fleet are completed and on-going observer capacity established). Progress has been halted due to uncertainty as to the future status of the offshore waters of Ascension Island, a change from a licenced longline fishery to potential closed or protected area. It was agreed by the reviewer that these delays towards Output 8 were outside the control of AIGCD. However since the last annual report there has been some well regulated licensed longline fishing within the Ascension offshore zone, with observer coverage of some of this activity. Therefore progress has been made towards some of Output 8, with a monitoring of hooks deployed for bycatch, albeit below the target number and the training of observers was not ultimately required as AIG employed an experienced observer. Finally, the issue was raised over the implementation of a steering committee and online project management system. The management system at AIGCD and the already strong relationships with project partners was suitable for the project and operated well. With no apparent issues raised around the management system, it was felt that the further development of a steering committee was unnecessary. Quarterly and additional *ad hoc* Skype or face-to-face meetings meant that project partners were kept abreast of progress by the project team, and equally partner expertise and advice was disseminated to AIGCD. Additionally, project reports and tangible outputs were circulated to project partners by email. With this regular communication it was felt that an online project management system would add little value than that of the regular partner correspondence.

5 Darwin Identity

Throughout the project, every effort has been made to publicise the Darwin Initiative. All publicity material that has been created e.g. leaflets and posters bear the logo as do our articles in the local newspaper and on social media. Dissemination of photographs and video of marine conservation work towards project outputs on social media has been extremely well received (<https://vimeo.com/ascensionconservation>). This has often promoted questions from co-workers within the government and also the public about what the Darwin Initiative and Darwin Plus are, with a large majority of the Island's population now being familiar with it through project activities. The Darwin AIMS project has a clear identity on the Island, coordinating efforts between AIGCD and marine stake-holders on-island and working with international organisations. The project has increased the profile of marine conservation on Ascension Island and the increased capacity has enabled AIGCD to secure a Darwin Plus award to track marine megafauna around the island (DPLUS046: Tracking marine megafauna at Ascension Island: towards evidence-based 'blue belts').



Ascension Island Marine Sustainability (AIMS) Project: tracking the fish of Ascension Island

Contributed by the Marine & Fisheries Unit Team

The study of pelagic species is crucial, although following individuals in the vastness of the oceans can be difficult. Larger animals

such as whales, dolphins and even large rays may be distinguished and identified by body markings and scars. Cetaceans may also be

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tracked by distinct individual patterns in their songs. The yellowfin tuna (*Thunnus albacares*), however, is a highly migratory and cosmopolitan species which is unsuitable for such methods. As an important commercial fish species, it is important to know how stocks of *T. albacares* migrate and move, both in Ascension waters and the wider Atlantic region. With this in mind, part of the Darwin Plus: Ascension Island Marine Sustainability (AIMS) project is to track the movement of this tuna species using marine tags.

The tagging of *T. albacares* is by-no-means a new concept, with tagging of the species dating back to the 1940s. The conventional method is to catch a tuna, record various biological properties (length, weight etc.), and release the fish alive using a streamer tag. A streamer tag is simply a short length of wire

or plastic which is attached to the fish using a barb beneath the skin. The wire or "streamer" is labelled with a unique code so that if the fish is recaptured, a note of the location and date can be made. By comparing the time between the release and recapture dates and the distance between the locations, an idea of the general distance and direction of movement may be established, the time period between release and recapture being termed "time at liberty". Much of these data from Atlantic tuna are available through the International Commission for the Conservation of Atlantic Tunas (ICCAT). By looking through and analysing this historical data, some interesting trends are revealed. The overall direction of movement and distance travelled during time at liberty of 6, 12 and 24 months is displayed in Figure 1.

Darwin Initiative shared Ascension Island Conservation's post
June 10 at 9:41am

In case you missed it, this week the World has been celebrating #WorldOceansDay! Darwin is proud to support marine conservation projects all over the globe, and this really cool video takes you underwater on a dive with the Ascension Island Government Conservation Department Marine Team...

...there are #dolphins!

To read more about this project, go here:
<http://www.darwininitiative.org.uk/project/DPLUS046/>

Ascension Island Conservation
Published by Nicola Weber [?] · June 8 at 3:48pm

On #WorldOceansDay take a dive into the waters around Ascension Island with the AIGCD Marine Team as part of the Darwin Initiative funded 'Ascension Island Marine Sustainability (AIMS)' project.

<https://vimeo.com/169857466>

Ascension Island Conservation
27 April 2015

In this week's update from the marine team you can learn more about histology (compound of the Greek words: ἵστός histos "tissue", and -λογία -logia "science"): the study of the microscopic anatomy of cells and tissues of plants and animals...

Fish sample collection forms a vital part of the wider study that is currently being undertaken as part of the Darwin Initiative-funded AIMS (Ascension Island Marine Sustainability) research project. Where possible and not exclusively, ...

Continue reading

6 Finance and administration

6.1 Project expenditure

Project spend (indicative) since last annual report	2015/16 Grant (£)	2015/16 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs			0%	Staff costs were accurately calculated for the grant application. The overspend in the previous year due to staff changes was absorbed by AIG and so this year all costs were as predicted.
Consultancy costs			NA	NA
Overhead Costs			NA	NA
Travel and subsistence			+11.6%	The underspend was partly put towards vital chemicals & lab supplies to process the samples collected during the expeditions.
Operating Costs			0%	
Capital items			+5.8%	
Others			-60%	The budget for laboratory supplies was underestimated – partly reconciled with the underspend in other relevant areas.
TOTAL	106,422.00	104,187.87	-2.10%	A marginal underspend in the second year. (First year had an overspend that was absorbed by AIG).

Staff employed (Name and position)	Cost (£)
Dr Andy Richardson, Senior Marine Fisheries Scientist	
Emma Nolan, Marine Fisheries Scientist	
Kate Downes, Marine Fisheries Scientist	
TOTAL	63,000.00

Consultancy – description of breakdown of costs	Other items – cost (£)
TOTAL	NA

Capital items – description	Capital items – cost (£)
Settlement Plates PAT Tags for tuna tracking & Argos time, Mechanical Tags for tuna & grouper	
TOTAL	19,772.45

Other items – description	Other items – cost (£)
Laboratory consumables (chemicals, sampling equipment)	
TOTAL	3278.81

6.2 Additional funds or in-kind contributions secured

Source of funding for project lifetime	Total (£)
AIG & SAERI (staff time, accommodation for visiting scientists, RIB purchase, lab/ office space inc. overheads)	
RSPB (RIB purchase, Partner Support Contract [amended with changing priorities of UK Government])	
SMSG (staff time, equipment rental)	
BAS (staff time)	
Funding from BLUE Marine for JCR offshore cruise	
TOTAL	246,590.00

Source of funding for additional work after project lifetime	Total (£)
DPLUS046: Tracking marine megafauna at Ascension Island: towards evidence-based 'blue belts' (Darwin funding + in-kinds)	
Foreign and Commonwealth Office – Small grant for additional tuna tags	
Private donor administered through BLUE Marine Foundation – Marine science to inform Marine Reserve designation (18 month project)	
Foreign and Commonwealth Office (pending final approval) – Marine management enforcement and inshore science	
Ascension Island Government – Office space, overheads and accommodation for retained marine staff	
TOTAL	>£ 717,595.00

6.3 Value for Money

The budget was worked out on the basis of actual costs incurred during previous projects on Ascension Island with which the partners had been involved, and with advice from AIG. Thus, both the operating budget and timetable of fieldwork were based on prior experience and so proved to be efficient and cost effective. There was extensive matched and in-kind funding (49% of total budget) which highlights the excellent value for money and as a significant proportion of this was staff costs and overheads, shows the partner support for the project. At the end of the project, total Darwin spends were very close to that forecast, with significant funding having been raised for additional work both during and after the project's lifetime, and also overspends covered by AIG in the first year to ensure that the facilities and the project were a success and left a legacy. The significant amount of funding that has been secured (with additional BEST and Darwin PLUS applications still to be considered) demonstrates how successful this project has been at generating the necessary baseline data and encouraging further investment to ensure that Ascension Island is an exemplary case study in a holistic approach to marine management.

Annex 1 Standard Measures

Code	Description	Totals (plus additional detail as required)
Training Measures		
1	Number of (i) students from the UKOTs; and (ii) other students to receive training (including PhD, masters and other training and receiving a qualification or certificate)	1 MSc (Appendix 6) 1 PhD
2	Number of (i) people in UKOTs; and (ii) other people receiving other forms of long-term (>1yr) training not leading to formal qualification	4 x AIGCD
3a	Number of (i) people in UKOTs; and (ii) other people receiving other forms of short-term education/training (i.e. not categories 1-5 above)	3 x St Helena staff (DPLUS052) 6 x AIG Interns
3b	Number of training weeks (i) in UKOTs; (ii) outside UKOTs not leading to formal qualification	25 weeks
4	Number of types of training materials produced. Were these materials made available for use by UKOTs?	4 x posters 3 x databases 3 x video 4 x training manuals
5	Number of UKOT citizens who have increased capacity to manage natural resources as a result of the project	6 x AIGCD 4 x AIG 6 x Fishermen
Research Measures		
9	Number of species/habitat management plans/ strategies (or action plans) produced for/by Governments, public authorities or other implementing agencies in the UKOTs	3 x SAPs 1 x HAP
10	Number of formal documents produced to assist work in UKOTs related to species identification, classification and recording.	5
11a	Number of papers published or accepted for publication in peer reviewed journals written by (i) UKOT authors; and (ii) other authors	1 2 in prep or submitted and awaiting review 5 in prep
11b	Number of papers published or accepted for publication elsewhere written by (i) UKOT authors; and (ii) other authors	1
12b	Number of computer-based databases enhanced (containing species/genetic information). Were these databases made available for use by UKOTs?	6

Code	Description	Totals (plus additional detail as required)
13a	Number of species reference collections established. Were these collections handed over to UKOTs?	6
13b	Number of species reference collections enhanced. Were these collections handed over to UKOTs?	8
Dissemination Measures		
14a	Number of conferences/seminars/workshops/stakeholder meetings organised to present/disseminate findings from UKOT's Darwin project work	3 x workshop 2 x public talks 6 x school events
14b	Number of conferences/seminars/workshops/stakeholder meetings attended at which findings from the Darwin Plus project work will be presented/ disseminated	1 x public talk 1 x conference
Physical Measures		
20	Estimated value (£s) of physical assets handed over to UKOT(s)	£54,334.00
21	Number of permanent educational/training/research facilities or organisation established in UKOTs	3
22	Number of permanent field plots established in UKOTs	19
23	Value of resources raised from other sources (e.g., in addition to Darwin funding) for project work	£246,590.00

Annex 2 Publications

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Nationality of institution of lead author	Gender of lead author	Publishers (name, city)	Available from (e.g. weblink, contact address, annex etc)
Journal manuscript	Richardson & Brito (2015) The polygon moray, <i>Gymnothorax polygonius</i> (Poey, 1875) - A new record from Ascension Island, South Atlantic. Arquipelago - Life Mar. Sci. 32	British: Ascension Island	Male	University of the Azores, Ponta Delgada	http://www.horta.uac.pt/intradop/index.php/pt/2015-no-32
Journal manuscript	Nolan et al (in prep) Life history strategies of rock hind <i>Epinephelus adscensionis</i> at Ascension Island	Irish: Ascension Island	Female	Fisheries Research	AIG on request
Journal manuscript	Nolan et al (in prep) First attempts to age the moray eel <i>Gymnothorax moringa</i>	Irish: Ascension Island	Female	Fisheries Research	AIG on request
Journal manuscript	Downes et al (in prep) Observations on life history parameters of yellowfin tuna, <i>Thunnus albacares</i> , utilising Ascension Island's waters	British: Ascension Island	Female	Fisheries Research	AIG on request
Journal manuscript	Nolan et al (submitted) Biological and physical characterisation of the seabed surrounding Ascension Island from 100-1000m.	Irish: Ascension Island	Female	Journal of the Marine Biological Association of the UK	AIG on request
Journal manuscript	Richardson et al (in prep) Tracking movement of yellowfin tuna (<i>Thunnus albacares</i> , Bonnaterre 1788) at Ascension Island, South Atlantic using pop-up satellite archival tags	British: Ascension Island	Male	Fisheries Research	AIG on request

Journal manuscript	Richardson et al (in prep) Habitat associations of endemic reef fish at Ascension Island, South Atlantic: identifying priority zones for conservation	British: Ascension Island	Male	Marine Ecology Progress Series	AIG on request
Journal manuscript	Brown et al (submitted) New records of marine invertebrates from Ascension Island (central Atlantic).	British: Ascension Island	Female	Arquipelago	AIG on request

Annex 3 Darwin Contacts

Ref No	DPLUS021
Project Title	Ascension Island Marine Sustainability (AIMS) – A Fisheries and Marine Biodiversity Project
Project Leader Details	
Name	Dr Sam Weber/ Dr Nicola Weber
Role within Darwin Project	Project Leaders
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Phone	
Fax/Skype	
Email	
Partner 1	
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Role within Darwin Project	Partner
Address	
Email	
Partner 2	
Name	Dr Paul Brewin
Organisation	Shallow Marine Surveys Group (SMSG)
Role within Darwin Project	Partner
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Fax/Skype	
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Partner 3	
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Organisation	British Antarctic Survey (BAS)
Role within Darwin Project	Partner
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Fax/Skype	
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Partner 4	
Name	Jonathan Hall
Organisation	Royal Society for the Protection of Birds (RSPB)
Role within Darwin Project	
Address	
Email	