Darwin Initiative Annual Report

Important note: *To be completed with reference to the Reporting Guidance Notes for Project Leaders: it is expected that this report will be about 10 pages in length, excluding annexes*

Submission Deadline: 30 April

Darwin Project Information

Project Reference	19-027
Project Title	Strengthening the world's largest Marine Protected Area: Chagos Archipelago
Host Country/ies	British Indian Ocean Territory (BIOT)
Contract Holder Institution	Bangor University
Partner institutions	University of Warwick, Zoological Society of London, FCO BIOT Administration
Darwin Grant Value	£287,788
Start/end dates of project	2012/13 – 2014/15
Reporting period (eg Apr 2013 – Mar 2014) and number (eg Annual Report 1, 2, 3)	2013-2014: Annual Report 2
Project Leader name	Dr John R Turner
Project website	Chagos Environment Outreach Project: http://www.zsl.org/conservation/regions/africa/chagos-coral/chagos-community,1915,AR.html http://www.zsl.org/regions/uk-and-overseas-territories/chagos-archipelago Scientific Expedition 2014: http://chagos-trust.org/2014-biot-expedition
Report author(s) and date	Dr John Turner, Prof Charles Sheppard, Dr Heather Koldewey, Rebecca Short and Audrey Blancart contributed to report and/or annexes. June 2014.

1. Project Rationale

Project Goal: To strengthen the Chagos Marine Protected Area by providing scientific knowledge for effective management, and develop a strategy that engages the support of potential stakeholders through outreach, education and engagement. ***The legacy will be sound management and increased value of what is currently the world's largest no-take Marine Protected Area and a unique and globally important reference site.***

Location: The Chagos archipelago is situated in the middle of the Indian Ocean at the southernmost end of the Laccadive-Chagos ridge. There are 5 atolls with 54 small islands exposed, and 12 submerged atolls and banks. All islands are uninhabited (and have been for over 50 years) except for Diego Garcia atoll, where there is a US naval facility. The British Indian Ocean Territory extends to 200 Nm around the islands, encompassing approximately 640,000km^2 of ocean, between 25% and 50% of the Indian Ocean's most healthy coral reefs including the world's largest atoll structure, and 60,000km^2 of shallow water habitats (Figure 1 map and Figure 2 & 3 BIOT EEZ & MPA).

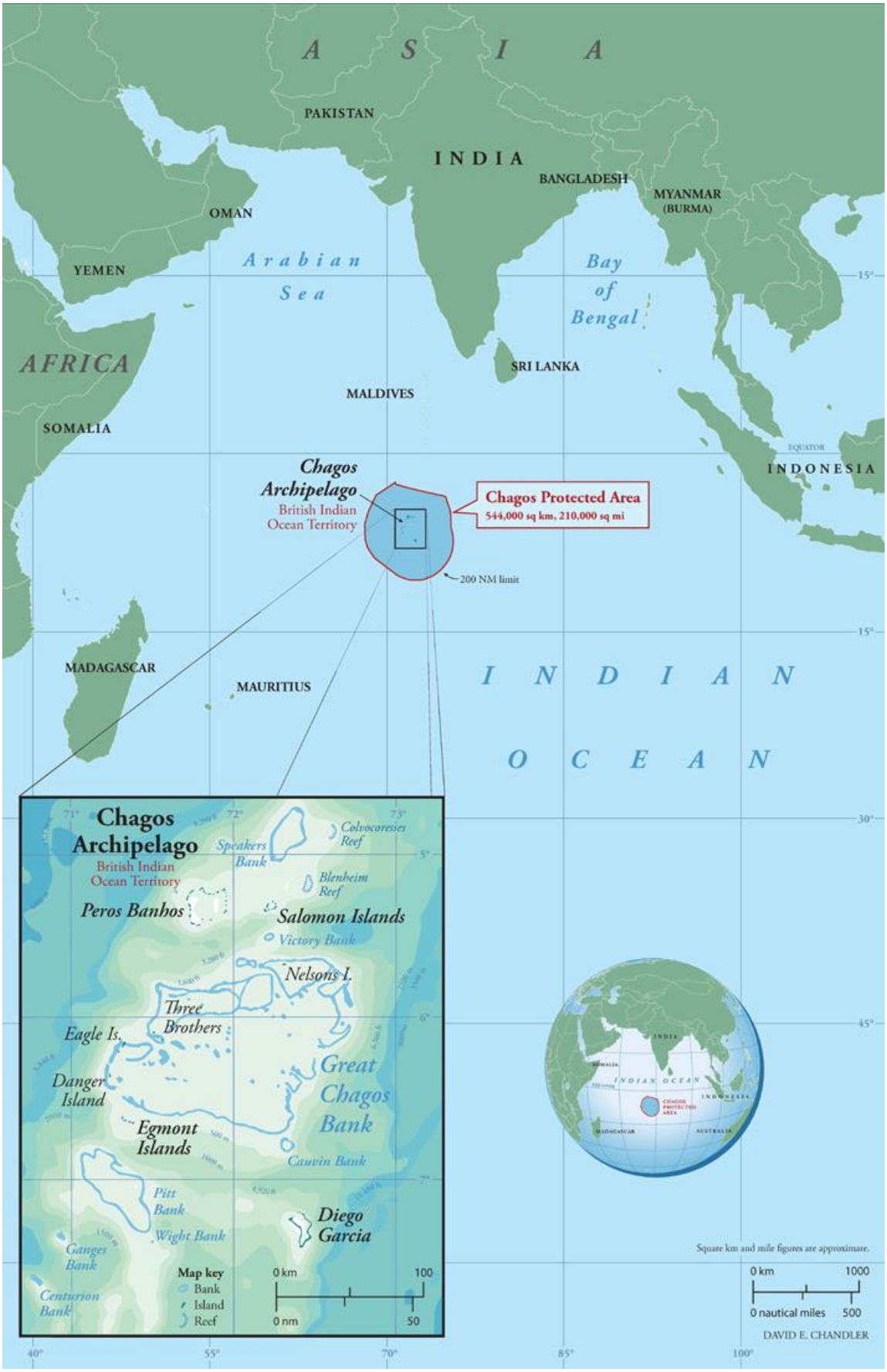

Figure 1: British Indian Ocean Territory, Chagos Marine Protected Area and Chagos Archipelago (inset) in the Indian Ocean. (Source http://chagos-trust.org/sites/default/files/images/chagos_map.jpg)

Rationale: The BIOT/Chagos Marine Protected Area, declared in 2010, is the world's largest MPA representing 60% of the world's no-take area and 16% of protected coral reef. The MPA is of sufficient size to protect site-attached and migratory species in the Indian Ocean by protecting island biota, pelagic, reptile, seabird and sea mammal species at a time of increasing human impact and climate change. The small islands (total land area is 53km^2) were used extensively for coconut plantations from late 1700s and were abandoned by 1970, when the remaining people (now known as *Chagossians*) were relocated to Mauritius or Seychelles from where they descended, and many thence to England. The islands have since been unoccupied, and bird and turtle populations have recovered to internationally significant populations, although rats and overgrown plantation limit recovery of all areas, and poaching (from Sri Lanka) of turtle, sharks, and sea cucumbers remains a concern. The challenge now is to ensure that the Chagos MPA justifies its full no-take status, particularly considering over-fishing in the region, and that it fulfils its role as a unique scientific reference site for marine biodiversity.

Chagos harbours 76 threatened species (*IUCN Red List*) including Hawksbill turtle, Red footed booby, silky shark, Coconut crab, and Bigeye tuna, providing an internationally important refuge and reference site. This Ocean Legacy MPA will protect entire ecosystems rather than species in isolation, including deep sea, pelagic, reef and small island systems including migratory species (cetaceans, sharks, turtles, birds) and those vulnerable to poaching and trade (sharks, turtles, sea cucumbers). The project will address the target of reduced pressures on coral reefs, contribute to restoring at least 15% of degraded areas through conservation and restoration activities, and an effective MPA will exceed the target of protecting 10% of marine/coastal areas.

Scientific understanding will support adaptive management based on data from representative sites and times, allowing the quantification of magnitude and significance of potential impacts from scenarios including climate change, island ecosystem restoration and possible human resettlement. The project will communicate scientific evidence and recommendations to the BIOT Section FCO to implement the management of Chagos.

Aims and Objectives: The aim of the project is to address those aspects that strengthen the Chagos Marine Protected Area (MPA) by providing scientific knowledge for effective management, and to develop a strategy that engages the support of potential stakeholders through outreach, education, and involvement. The rationale is that a very large no-take MPA will protect functional ecosystems and species, benefitting the large but poor human populations around the Indian Ocean. But, only 3% of the archipelago has been explored, and urgency exists in establishing a baseline against which to measure change and mitigate future impact. Direct engagement in science and communicating a broader understanding of the objectives of conservation will strengthen acceptance of the MPA. To achieve this, proactive engagement with major stakeholders is central to the project.

The main objectives of the Darwin Initiative to strengthen the world's largest MPA are:

(1) To establish a permanent monitoring protocol for the coral atoll and island systems of the Chagos; Outputs will establish the condition on commencement of MPA management against which change can be assessed, and will aid understanding of the magnitude and significance of potential impacts. Terrestrial restoration will be expanded with input from Chagossians. Marine surveys will extend to areas previously unexplored, and establish the level of functional redundancy and response diversity in the biodiversity to assess resilience to natural and anthropogenic impacts. Scientific expeditions, lead by Warwick, Bangor and ZSL with a wide range of international collaborators.

(2) Engagement of Chagossians in the UK, Mauritius and Seychelles through training workshops and outreach activities. Activities will be aimed at Chagossians of different generations to raise their awareness of the value of biodiversity and importance of conservation. Individuals will be identified and selected for further externally funded initiatives, such as dive training and practical island restoration and conservation work.

Workshops will be organised jointly with Chagossian leaders, through ZSL and local societies in UK, Mauritius and Seychelles.

(3) Highlight the significance of the Chagos Ocean Legacy MPA in the UK and internationally as a major step forward in conserving marine ecosystems and biodiversity; achieved through high profile media workshops and supporting events in the UK and Mauritius, lead by ZSL with local organisations.

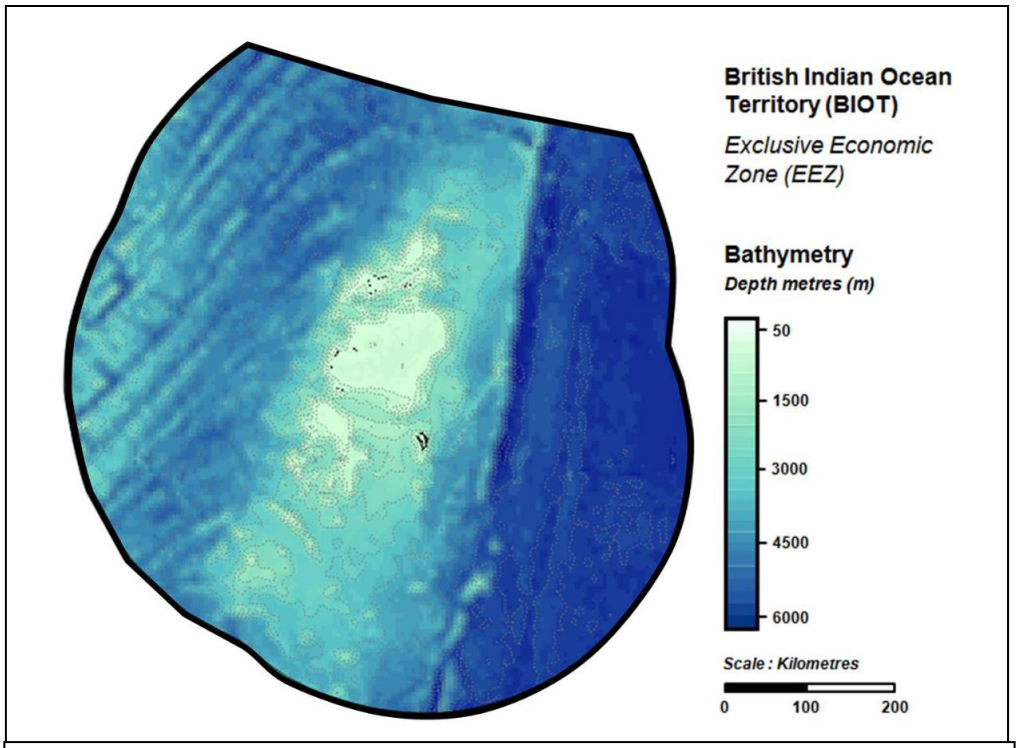

Figure 2: The British Indian Ocean Territory EEZ and bathymetry (Source Tetley & Turner)

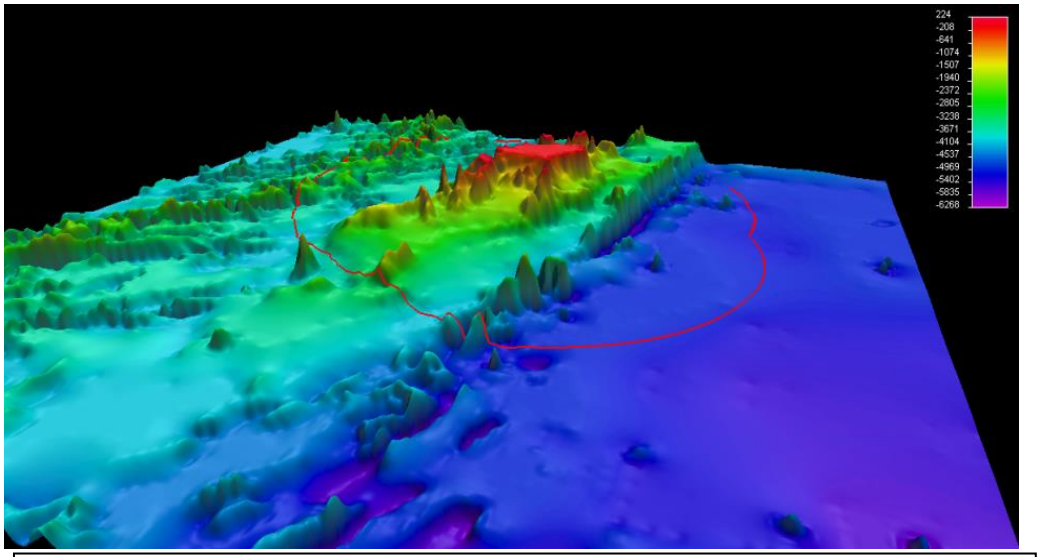

Figure 3: 3D image of Chagos Archipelago (Source Riegl & Purkis)

2. Project Partnerships

Bangor University is working closely with the University of Warwick, Zoological Society of London (ZSL) and The British Indian Ocean Territory (BIOT) Section at the Foreign and Commonwealth Office (FCO) to deliver this project. Bangor has project partnership agreements in place with Warwick and ZSL. BIOT Section FCO permit scientific expeditions to access BIOT, and they provide the MV *Pacific Marlin* patrol vessel as a platform to support the expeditions. The Project Investigators (PIs): Dr John Turner (Bangor), Professor Charles Sheppard (Warwick) and Dr Heather Koldewey (ZSL) have shared project responsibilities: Dr Turner manages the overall project and will lead expedition 3, Prof Sheppard led expedition 1 last year, and Dr Koldewey led expedition 2 this year, and her team at ZSL run the Chagos Connect Outreach Programme. This Project part supports a Chagos Project Support Officer (Outreach) in ZSL (Rebecca Short) supported by 2 Outreach Officers (Audrey Blancart, who replaced Xaviour Hamon, and Rudy Pothin), and a Researcher at Warwick (Anne Sheppard). The BIOT Section is in the Falklands and Southern Oceans Department of the Overseas Territories Directorate of the Foreign and Commonwealth Office, and underwent a complete staff change during this year. Tom Moody took over as Administrator and Head of Section from John MacManus on 22nd July, 2013, and Richard Seedhouse replaced Michelle Moat as BIOT Assistant Administrator in August 2013. Richard Compton most recently took over from Jo Bowyer as Deputy Administrator and Desk Officer in April 2014, and from June 2014 will become the major contact for scientific matters. The British Representative on Diego Garcia remains Cmdr Lee Hardy.

Due to extensive travel amongst the PIs (and illness of two at different times), Skype was used extensively for meetings this year, (steering group meeting held 3rd March 2014) interspersed by e mail and telephone calls, and meeting up at scientific conferences and Chagos Conservation Trust meetings. The PIs have all visited Chagos a number of times, and are now well versed in planning scientific operations there, although changes in the BIOT Administration meant that greater communication was necessary so that the BIOT staff could understand our requirements and objectives. We held a very constructive post expedition briefing meeting at the FCO on 7th May 2014 with the new staff, in which we have identified planning timelines and longer term needs and outputs. This year, BIOT continued to part fund the Connect Chagos Outreach Project, together with the Chagos Conservation Trust and Darwin Initiative, and one of the Administrator's early duties was to attend the Outreach Award ceremony in Manchester in September 2013. BIOT Section granted permission for our expeditionary work in Chagos, and facilitated access to military flights and received and stored shipped equipment, and provided 3 weeks shiptime aboard the MV *Pacific Marlin.*

3. Project Progress

3.1 Progress in carrying out project activities

Output 1: ***To continue established baselines and develop a more comprehensive approach to long term marine and island ecosystem monitoring against which change can be assessed, and develop an understanding to assess the magnitude and significance of potential impacts from several scenarios, including climate change, island ecosystem restoration and possible human resettlement. The Chagos/BIOT Management Plan will include BAPs and identify how CBD/CMS/CITES strategic goals and AICHI targets will be addressed.***

Output 1 is covered by **Activities 1.1 – 1.9** (1.3-1.5 being completed last year). Output 1 is mostly addressed by scientific work during 3 expeditions to Chagos. The first of these took place last year between 19th February and 15th March, 2013, and the second took place this year between 23rd March and 15th April (**Activity 1.7; Annex 4: Chagos 2014 Scientific Expedition Report**). Expedition participants and their roles were as follows:

Dr Heather Koldewey: Zoological Society of London: Expedition leader, Project Co-PI, Reef fish abundance and biodiversity), and Coconut crab population assessment.
Dr Melita Samoilys: CORDIO Kenya: Reef fish abundance and biodiversity (specifically large bodied species).
Dr John Turner: Bangor University: Project PI: video monitoring of coral community structure.
Dr Ronan Roche: Bangor University: Reef rugosity, parrotfish fish bioerosion.
Prof Charles Sheppard Co-PI and Anne Sheppard: University of Warwick, Coral recruit and cover monitoring, maintenance of temperature loggers. Professor Sheppard had to withdraw at the beginning of the expedition due to a medical condition which became evident while in the field, and was replaced by **David Curnick**, Zoological Society of London who assisted Anne Sheppard in completing the sub project).
Dr Doug Fenner: American Samoa, Chagos Conservation Trust USA scholar; coral diversity.
Dr Courtney Couch: Hawai'i Institute of Marine Biology, USA: coral disease.
Dr Elizabeth Widman: University of Warwick, Sea cucumber assessment and coral reef functional redundancy. (Dr Widman replaced Dr Andrew Price).
Peter Carr: University of Warwick, International Bird Area population assessments, breeding habitat requirements of the Sooty tern; feeding and foraging behaviour of Red footed booby; monitoring the spread of invasive species; population dynamics of the Coconut Crab.
Sophie Morgan, BBC Natural History Unit: scoping material for potential documentary series 'Oceans'.
Dr Jon Bailey, Academic Clinical Fellow in Emergency Medicine John Radcliffe Hospital, Oxford; Medical Officer, Diving Officer, and logistics support, assistance with terrestrial work
Jon Slayer (former Royal Marine Officer previously based on Diego Garcia: Logistics and antipiracy, logistics support, assistance with terrestrial work
Louis Elyse: Manchester Chagos community: Chagos Environment Ambassador, Connect Chagos.

Neil Sands: Swire Pacific Offshore: Captain MV *Pacific Marlin* with officers and crew.

Over 240 person hours were spent underwater at 29 sites to survey species, habitats and communities on the coral reefs, and 15 islands of ecological importance were surveyed. The team undertook long term monitoring of corals, assessing the benthic community structure and recovery from coral bleaching events, coral disease prevalence and Crown of thorns starfish (COTs) outbreaks, and examined the abundance and diversity of reef fish communities, especially of large bodied species such as groupers. On land, the long-term monitoring of internationally important breeding seabirds focussed on ten designated and two proposed Important Bird Area (IBA) islands that hold > 98% of the breeding populations. Expedition activities also involved: measuring the breeding habitat requirements of the Sooty tern *Onychoprion fuscatus*; tracking Red-footed booby *Sula sula* to study their feeding and foraging behaviour; monitoring the spread of invasive species; studies to determine the population dynamics of the Coconut crab *Birgus latro* (an IUCN Red-Listed Data Deficient species) in the northern atolls; and surveys of sea cucumbers in shallow waters surrounding the islands (a previously poached animal).

The PIs and Jon Slayer (Logistics) held a Steering Committee meeting (**Activity 1.1**) in October 2013 as scheduled, while attending another meeting on Chagos in Geneva, and followed this with a subsequent meeting in November 2013 in London, and preparation tasks were undertaken by the PIs with regular coordination via Skype (**Activity 1.6**). Briefing meetings were held with the BIOT Section in May 2014 to discuss the scientific expeditions and Outreach Programme (**Activity 1.2**). Members of the Darwin project team contributed to an Interim Chagos Conservation and Management Plan at a meeting on 5th March in London, and an official draft has since been circulated by BIOT (**Activity 1.9**). This draft provides a more focused immediate plan relative to the long term plan drafted last year which will continue to be developed by this project.

Output 2: ***Output 2 Activity 2.1: Provision of scientific survey equipment and a permanent facility for safe and secure storage between scientific visits, thereby reducing transportation logistics and associated cost.***

Following the 2013 scientific expedition, our diving, boats and scientific survey equipment was stored in high quality but temporary accommodation courtesy of Mr. Jason Davies Communications Officer at the USA Communications buildings. However, due to changes in the contracted company providing support to the USA Naval Facility, alternative accommodation was required on Diego Garcia. BIOT had agreed to provide storage at the Royal Marines Buildings at Moody Brook in the long term, once the ex-workshop area is renovated. During the summer, The British Representative and his staff arranged for the transfer of the equipment to a further temporary store belonging to BIOT at the Customs House at Moody Brook, which belongs to BIOT. The storage is dry, air conditioned and secure and suitable for the majority of the equipment, but not for the 5 boats (see later). Because the success of our expeditions and our safety in this remote location heavily relies on equipment, we sent one of our team (Jon Slayer, Logistics) out to Diego Garcia in November 2013 to check the condition of all kit. Worn or damaged equipment was replaced from our recurrent/consumables budget. Post expedition, most kit is stored in the BIOT Customs House except for 5 outboard engines, pyrotechnics (safety flares), chemicals and some medical kit which is stored on board the *MV Pacific Marlin* patrol ship (**Annex 5: Science Expedition Expedition Equipment Inventory**). The container deck laboratory purchased last year was mobilized onto the ship prior to the expedition, and once again provided an excellent space for scientists to work during the expedition. The container was immediately returned to the Moody Brook compound after the expedition, and a temporary door has now been fitted until the requisitioned steel door arrives, so that the laboratory is protected from pests and environmental conditions. It has been agreed with BIOT that a member of the British staff on Diego Garcia will inspect the kit and container on a weekly basis to ensure security, because a water leak or rats/ants/crabs could cause significant damage.

Output 3: Engagement of Chagossians in the UK, Mauritius and Seychelles in importance of biodiversity and conservation through training workshops and outreach activities.

In UK:
Output 3 has been achieved in the UK through the **Chagos Connect** project run by the Zoological Society of London supported by the Chagos Conservation Trust and BIOT in collaboration with the project partners (**Activity 3.2**). The Darwin Project co-funds a Project Support Officer (Rebecca Short) at the Zoological Society of London, supported by 2 Outreach Officers (Rudy Pothin and Audrey Blancart, who took over from Xavier Harmon this year, and speak creole and French respectively). The objectives of **Connect Chagos** are to:

1. Increase general awareness within the Chagossian communities of the tropical marine environment and issues affecting the environment of the Chagos Islands.
2. Identify individual Chagossians with the interest in, and potential for, environmental training (**Activity 3.3**).
3. Provide in depth mentoring, support and training to build scientific and technical conservation capacity for a small group of individual Chagossians with demonstrated potential **(Activity 3.4**).
4. Develop priority conservation projects in Chagos that are implemented with the help of Chagossians as part of an integrated training programme.
5. Evaluate the programme on an on-going basis to ensure training is effective.

Activities this year have ranged from environmental events to supporting advanced training, and are described in **Annex 6: Connect Chagos Half Year Report 2013** and updated further here for the period October 2013 to April 2014.

Environmental days were held for the Crawley and Manchester Chagossian communities attracting 120 and 130 Chagossians to Tulley's Farm in Sussex, and Blackpool Zoo respectively. These events enabled the Outreach Team to meet Chagossian families, and to engage some in further activities, for example, in June 2013, 5 Chagossians from Manchester visited the Horniman Museum in London to tour the aquarium and participate in coral propagation. A talk given by Yannick Mandarin, Chagos Environmental Ambassador June 2013 during the Environmental days can be found here: www.youtube.com/watch?v=I52REooq7V0

11 trainees from Manchester and Crawley attended the **Chagos Environment Training Course** which ran between 6th July and 19th September, 2013 culminating in an awards ceremony at the Manchester Museum on 26th September. As last year, the training addressed three themes: Marine Conservation, Terrestrial Ecology and Communication for Conservation. Activities involved:

- Team building at Sayers Croft with the Outreach Team
- Habitat Management (at Hampstead Heath with City of London for Crawley community, and at Risley Moss with Natural England for the Manchester group)
- Careers and communication with staff at either London Zoo or Manchester Museum, depending on community affiliation
- Coral reefs at London Zoo or The Deep Aquarium, Hull
- Sea Birds at South Stack RSPB reserve, Anglesey Wales with Naturebites
- Marine conservation and marine life survey at Bangor University, Wales
- Try SCUBA dive session in Bangor, Wales
- Botany at Ness Botanic Garden, Neston, Liverpool

40 people attended the **Awards Ceremony** at the Manchester Museum on 26th September, in the presence of project partners (ZSL, Bangor University, Pew and BIOT Section) to celebrate the graduation of **11 new Chagos Environment Ambassadors**.

Some of last year's Ambassadors benefited from **advanced skills training** this year through the Darwin and CCT bursaries:

- Claudia Naraina, Yannick Mandarin and Cyndie Residu completed their LANTRA CS30 basics of chain saw use training with RSPB.
- Claudia Naraina and Cyndie Residu are currently pursuing their PADI Open Water diving qualifications with Yu diving.
- Yannick Mandarin took part in an 8-week expedition to Madagascar (Andavadoaka Marine Park) with Blue Ventures where he completed his PADI Open Water diving, coral reef survey training and became involved in community projects.
- Pascaline Cotte successfully secured a place with Blue Ventures but was unfortunately unable to make the trip at the last minute for personal reasons. We were able to roll over some of the costs towards the expedition for a future applicant, but were unable to recoup the costs of her flights.

Following 2 rounds of interviews of 8 and then 3 shortlisted candidates, Louis Elyse was selected to join the **Scientific Expedition to Chagos 2014.**

A further round of **Darwin and CCT Bursaries** will be awarded this year, with the Outreach Team providing greater support in developing the applications to encourage more Chagossians to apply.

The Outreach team continued activities in the second half of the year by running drop-in sessions in Crawley library, where trainees and others interested can discuss the course or further training, and a CV workshop was run with a youth group (A level age) in Manchester.
In addition, monthly taster days which focus on a particular environmental topic or skill, open to all ages have served as both outreach exercises and introductory training, covering to date: Try dives with London School of Diving and Yu Diving Manchester; Tree climbing at Alexandra Park with the Great Big Tree Climbing Company; Bird ID and pond dipping at Tilgate Park, and a Minibeast workshop with youth group at Tilgate park.

All activities have been evaluated, following guidance from Cassandra Murray, the ZSL Evaluation Coordinator, and the results of evaluation can be seen on p.10-11 of the Chagos Connect Report.

Overseas – Mauritius
Following discussions with stakeholder groups in the UK to identify contacts (**Activity 3.1**), a scoping visit was made to Mauritius by the Outreach Team between 14th and 23rd March 2014. The objectives of the visit were:

- To consult with the Chagossian community on opportunities, receptiveness and appropriate modes of delivery of an environmental training course in Mauritius.
- Meet with the main social groups and understand their interest and engagement in a potential training course being delivered in Mauritius
- Identify and develop partnerships with key local environmental experts and environmental organisations who could support the training course delivery.
- Understand current levels of knowledge and understanding about Connect Chagos

The Team used standard social science methodologies employing questionnaires to guide discussions and collect qualitative data (**Annex 7: Mauritius Scoping Study Report April 2014**). They spent 40 hours engaging with the Chagos community in Mauritius, conducted 11 interviews, held 10 meetings with potential environmental partners and 3 social focus groups. The outcomes of the visit were positive. The team located and connected with key Chagossian community groups and individuals in Mauritius, and found a high level of interest amongst different age groups in learning about their environmental heritage. There was strong support for a Chagos environment training course from potential partners who were also willing to help facilitate a training course to our quality standard.

In Seychelles

It has been agreed with the FCO that the outreach work will commence in Mauritius before assessing the feasibility of working in the Seychelles. Initial research suggests that Chagossians in the Seychelles are better integrated into Seychellois society and it may be very difficult to identify a Chagossian community there.
BIOT section have agreed to contribute funding towards the Connect Chagos programme for 2014/15. A further Chagos Environment Training course is planned for the UK this summer, and plans are being made for training in Mauritius.

Output 4: Increased general public awareness in UK, Diego Garcia, Mauritius and internationally of the high value of the Chagos Marine Protected Area in protecting a wide range of oceanic ecosystems for benefit of people around Indian Ocean, and as a control site against which to assess impacts of climate change.

This Darwin Initiative Project is working closely with the Chagos Conservation Trust, Pew Environment Group (UK) and ZSL on increasing public awareness of the Chagos Archipelago and Marine Protected Area. Outputs are delivered through an annual conference on Chagos, presentations at national and international conferences and workshops, dissemination of films, scientific blogs and contributions to Darwin Initiative Newsletters (**Activity 4.1- 4.2**).

Conferences:

A conference titled **Chagos 20/20** was hosted by the Chagos Conservation Trust with the support of the Pew Charitable Trusts, The Zoological Society of London and the Darwin Initiative on 18th November 2013, and attracted a wide audience of about 100 people, 30 of whom were new to these meetings. The presentations examined 20 years of research, with reports from the 2013 Scientific Expedition and a forward look. The programme covered (where **bold** = outputs from Darwin scientific expedition 2013) (http://chagos-trust.org/sites/default/files/images/ProgrammeV2.pdf):

- **Prof Charles Sheppard (University of Warwick Co-PI Darwin & 2013 scientific expedition):** Twenty years on – Science progress and why Chagos is the world's largest no take marine reserve. https://www.youtube.com/watch?v=VnLl3YMDodk
- **Peter Carr (University of Warwick & 2013 scientific expedition):** Factors affecting the increase of Red-footed booby in Chagos
- Dr Jeanne Mortimer: (Seychelles & Darwin Turtle project): The turtle tracking programme in Chagos
- **Films by Jon Slayer from 2013 scientific expedition: (1)** Protecting a unique environment in the Indian Ocean (https://vimeo.com/77250118); (2) British Indian Ocean Territory Marine Protected Area BIOT science Part 1 (http://vimeo.com/71374932); (3) British Indian Ocean Territory Marine Protected Area BIOT science Part 2 (http://vimeo.com/72064338).
- Alistair Gammell (Pew Charitable Trusts): The campaign for the Chagos marine reserve. https://www.youtube.com/watch?v=-XnbLviPQlo.
- **Dr Daniel Wagner (NOAA, Papahanaumokuakea Marine National Monument, USA & 2013 expedition):** Black corals (Cnidaria, Antipatharia) from the Chagos Archipelago.
- Matt Gollock (ZSL & November 2012 non-Darwin scientific expedition): Pelagic fish monitoring.
- Nigel Wenban Smith & Dr Marina Carter: Environmental history of BIOT in plantation days.
- **Audrey Blancart and Rudy Pothin (ZSL): The continuing outreach programme.**
- **Dr John Turner (Bangor University, PI Darwin project, and 2013 scientific expedition):** The Darwin Initiative Project; Long term monitoring of coral reefs in Chagos; and a forward look. https://www.youtube.com/watch?v=uiVnlWSETrE,
- Film by Blue Marine Foundation and the Bertarelli Foundation: Chagos, Fragments of Paradise.

Other conferences and talks:

Professor Charles Sheppard and Anne Sheppard attended the fifth business meeting and third Learning Exchange of the **Big Ocean Network meeting** of the 7 largest marine reserves, in conjunction with the Third International Marine Protected Areas Congress (IMPAC3) hosted by l'Agence des Aires Marines Protégées (AAMP) in Marseilles, France 21-27 October, 2013. The Network organised two half-day sessions on (1) the historical challenges and progress of large-scale MPAs, and (2) developing practical guidance for managing large-scale MPAs. Big Ocean participated in a plenary debate at IMPAC3 that discussed whether size matters in marine conservation. All seven of the current Big Ocean member sites (Great Barrier Reef Marine Park, Papahānaumokuākea Marine National Monument, Phoenix Islands Protected Area, Mariana Trench Marine National Monument, British Indian Ocean Territory Marine Protected Area, Motu Motiro Hiva Marine Park and Cook Islands Marine Park) provided updates on their most significant achievements in the last year, and discussed future collaborative projects for the network.

John Turner presented a lecture on the Darwin Initiative Project to Strengthen the World's Largest Marine Protected Area and Long term monitoring of coral reefs in Chagos, at Reef Conservation UK on 7th December 2013 at the Zoological Society of London.

Dr Heather Koldewey and Charles Sheppard talked at CCTs 20th Anniversary 7th October 2013. https://www.youtube.com/watch?v=obPYgP0QyVA and http://chagos-trust.org/media-gallery/detail/2/804.
See also:
http://chagos-trust.org/sites/default/files/images/Chagos%20science%20and%20CCT%20plans.pdf

Prof Charles Sheppard and Dr Heather Koldewey made presentations on the biodiversity of Chagos and the 2014 expedition respectively at a Chagos Conservation Trust event to mark the opening of a **Chagos marine life exhibit at the London Zoo aquarium** on 4th June 2014. http://chagos-trust.org/media-gallery/detail/2/41

The project will feature in both a plenary presentation by Dr Heather Koldewey and a symposium talk by Dr John Turner at the **Society for Conservation Biology International Marine Conservation Congress** to be held in Glasgow 14-18 August 2014.

Drs Turner, Koldewey, Professor Charles Sheppard, David Curnick and Jon Slayer attended a **Workshop on Monitoring Megafauna in the Chagos Reserve** hosted by the Bertarelli Foundation and Zoological Society of London at the Bertarelli Campus in Geneva between 11th and 13th of October 2013. Charles Sheppard and John Turner gave presentations on the Darwin work.

The data from the current research projects from the expeditions is currently being analysed, but papers are beginning to emerge, Including (**Bold** = on staff on expeditions):

New scientific publications:

Published:

Ateweberhan, M; Feary, D A; Keshavmurthy, S; Chen, A; Schleyer, M. H; and **Sheppard, CRC**. (2013) Climate change impacts *on* coral reefs*:* synergies *with* local effects*,* possibilities *for* acclimation*, and* management implications. *Marine Pollution Bulletin*, Volume *74* (Number 2). pp. *526-539*.

Pratchett MS; Pisapia C; **Sheppard CRC** (2013) Background mortality rates for recovering populations of *Acropora cytherea* in the Chagos Archipelago, central Indian Ocean. *Marine Environmental Research.* 86: 29-34.

In submission:

Roche, R.C., Prachett, M.S., Carr, P Turner, J.R. D. Wagner, D., Head, C., and Sheppard, C.R.C. (submission). The occurrence and impact of *Acanthaster planci* outbreaks on the reefs of the Chagos Archipelago.

Bayley, D.T.I & **Turner, J.R**. (submission) Spatial variability of marine communities across the Chagos archipelago, 8 years following major disturbance.

DPhil Theses:

Head, C. (in preparation). Human Impacts on Coral Reef Biodiversity (NERC Case funded)**.** Department of Zoology, University of Oxford, & Zoological Society of London.

MSc Theses:

Carr, P. (2013) Red footed booby and factors impacting their selection of islands in the Chagos for breeding and the implications for future island management plans. *MSc Thesis by research, University of Warwick.*

Gracia Saiz, A. (2013). Video data analysis of coral community structure on the reef slopes of the atolls of the Chagos Archipelago, British Indian Ocean Territory. *MSc Thesis, Bangor University* 102p.

Video clips:

Besides the films highlighted above, a series of **150 video clips of scientific activities and biodiversity** were posted during the year, and these can be viewed at:

Darwin Chagos Underwater: 50 video clips:
https://www.youtube.com/playlist?list=PLgYJmUc38e11ab4qjcUaFX-W6EK6WNpNk
Darwin Chagos Islands: 47 video clips
https://www.youtube.com/playlist?list=PLgYJmUc38e12Xn-2vFBtagfxqJCoX2AfA
Darwin Chagos Science in Action: 25 video clips
https://www.youtube.com/playlist?list=PLgYJmUc38e10jsi64HO90PM4FVVlaahJb
Darwin Chagos Birds: 28 video clips
https://www.youtube.com/playlist?list=PLgYJmUc38e119L5AHN9q7li8HB4uYUAcZ

Other films have followed on from the 2013 expedition: Gary Fletcher on technological developments to monitor megafauna:
http://garygfletcher.wordpress.com/category/chagos-expedition/
http://garygfletcher.wordpress.com/2013/05/22/zsl-chagos-report/

Expedition Blogs:

Produced by expedition members from aboard the MV Pacific Marlin in March April 2014:

The official Darwin Expedition blog:
http://chagos-trust.org/2014-biot-expedition
Extended blog combining David Curnicks pre expedition work and the expedition: and
http://www.zsl.org/blogs
The CCT USA Scholars blog by Dr Doug Fenner:
http://cctus.org/conservation-science/2014-expedition-scholar/2014-expedition-scholar-douglas-fenner-ph-d/2014-expedition-scholar-blog/
Blog by Courtney Couch, University off Hawai
http://www.donahuelab.com/2014/03/chagos-here-i-come/
https://www.facebook.com/protectchagos?fref=photo

Newsletters:

The project has continued to contribute articles to the **Darwin Newsletter** this year::
http://www.darwininitiative.org.uk/assets/uploads/2014/05/Darwin-Initiative-Newsletter-June-2014-Final1.pdf.
http://www.darwininitiative.org.uk/assets/uploads/2014/05/Darwin-Newsletter-Issue-24-Oct-2013.pdf.
http://www.darwininitiative.org.uk/assets/uploads/2014/05/Darwin-Newsletter-Issue-23-July-2013.pdf.

Aspects of the project are also covered in various **Chagos News**:
http://chagos-trust.org/sites/default/files/images/Chagos_News_43.pdf.
http://chagos-trust.org/sites/default/files/images/Chagos_News_42.pdf
http://chagos-trust.org/sites/default/files/images/Chagos%20News%2041%20-%20Jan%202013.pdf

Awards:
Professor Charles Sheppard, CO-PI on this project has been **awarded an OBE** in the Queen's Birthday Honours List 2014 for services to environmental conservation in the British Indian Ocean Territory.

Mauritius/Seychelles/Diego Garcia
The FCO has advised against specific activities in Mauritius and Seychelles during the UNCLOS tribunal brought by Mauritius. Although a presentation to British and USA military at the Naval Facility in Diego Garcia was planned, this was not possible this year because other activities on island meant that we arrived on island just in time to sail and departed shortly after docking. The value of a presentation is now thought to be low because most personnel are on line for a relatively short period (<1 year) and have little interaction with the marine environment off base.

3.2 Progress towards project outputs

As documented above, the project outputs have all been addressed, with most very well advanced. Undeveloped objectives are mainly being stalled due to FCO advice while the Arbitral Tribunal under Annex VII of UNCLOS is on-going in Istanbul over the creation by UK of the MPA up to the outer limit of the Economic Exclusive Zone of Chagos,

Output 1: To continue established baselines and develop a more comprehensive approach to long term monitoring against which change can be assessed.

Output 1 is now well progressed and on schedule with 2 out 3 scientific expeditions complete, and planning begun for Chagos scientific expedition 2015. Initial results from Chagos 2013 were presented at the Chagos 20/20 conference, and research findings are beginning to influence the Interim Management Plan and plans for future science (discussed at Bertarelli Foundation workshop in Geneva). Marine sites have been revisited and surveys conducted to assess change in coral and fish communities at the major atolls (Salomon, Peros Banhos, Great Chagos Bank, Egmont and Diego Garcia). 17 underwater sites were surveyed in 2006, 21 in 2013 and 29 underwater sites were surveyed this year, of which11 were also surveyed last year, and 11 sites surveyed in 2013 or 2014 were originally surveyed in 2006. A further 11 sites were new this year, which include new sites on regularly visited atolls, and our first visit to Blenheim (a completely submerged atoll). There are 15 temperature loggers at 5, 10 and 25m depths (though not always at all 3 depths at each site) and a proportion of these are recovered and changed each year. Eleven of the twelve designated and proposed IBA islands were fully surveyed plus four other islands of ecological importance. Therefore the expeditions continue, and in some cases newly establish, long term monitoring and impact assessment sites on seaward and lagoon reefs, and on important islands within each atoll **(Annex 4: Chagos Scientific Expedition Report 2014).**

Output 2: Provision of scientific, diving and safety equipment and a deck laboratory was completed last year and the equipment is being maintained to a high standard **(Annex 4: Chagos Science and Conservation Equipment Inventory)**. High quality storage was provided this year, although further accommodation is still required to store the 5 boats in semi inflated state to prevent degradation. We await refurbishment of the Moody Brook Royal; Marines workshop for this purpose. The application to the Natural Environment Research Council National Facility for Scientific Diving for long term loan of a hyperbaric chamber, with establishment and training, was successful, but subsequently declined by BIOT Section FCO due to concerns over liability and long term sustainability. Therefore, any decompression incident must be managed by oxygen therapy and consequently diving operations are very conservative, remaining depth and frequency restricted. This imposes limits on the number of sites worked, but these are within the range expected and hence do not affect our outputs.

Output 3: Engagement of Chagossians in UK, Mauritius and Seychelles in importance of biodiversity and conservation through training workshops and outreach activities.

The Connect Chagos programme has been a highlight of the project, successfully delivering outreach to the Chagossian communities in the UK through environmental days for 250 people and 11 graduates from the Chagos Environment training course. The Bursary Scheme has provided advanced training opportunities for 3 persons, and 1 Chagossian joined the 14 person scientific expedition. Plans for delivering a similar programme aimed at Chagossians in Mauritius is now underway with a scoping visit completed, although plans to work in Seychelles are being revised. Collaborative partners, especially BIOT and the Zoological Society have committed further support for next year. **(Annex 6: Connect Chagos Half Year Report 2013; Annex 7: Mauritius Scoping Study Report April 2014)**.

Output 4: Increased general public awareness in UK, Diego Garcia, Mauritius and internationally of the high value of the Chagos Marine Protected Area.

Contributions continue to be made towards this output, which is now very well addressed, especially through the scientific expedition blogs (x3), films (X3) and videos (x150), ZSL Chagos exhibit at London Zoo, Darwin Newsletters (x3) , Chagos News (x3), annual Chagos conference, and presentations by project scientists at national and international conferences (x 19) such as the International Marine Conservation Congress and scientific publications and theses (x7) as documented in section 3.1. Scientists who participated in the expeditions are being encouraged to collaborate during the analysis phase of their work to prepare joint publications on large themes where essentially the sum of the parts is greater than the whole, and thereby have greater impact. In addition, material from the project is incorporated in university degree programmes (eg. At Bangor University in Marine Biology degree programmes Year 2 OSX2009 Marine Ecology (140 students); Year 3 OSX3001 Marine Conservation and Exploitation (116 students), and OSX3011 Extreme Marine Environments (30 students), and MSc course in Marine Environmental Protection OSX4006 Marine Conservation and Coastal Zone Management (25 students), and at University of Cambridge, Department of Geography Part II Biosedimentary Coastal Systems: Coral Reef Ecosystems. October 2013 (12 students) Material is also presented at courses at University of Warwick (Climate Change and Marine systems) and University of College London (through ZSL).

3.3 Progress towards the project Purpose/Outcome

The Project Purpose is to strengthen the Chagos Marine Protected Area by providing scientific knowledge for effective management and to develop a strategy that engages the support of potential stakeholders through outreach, education and engagement. The legacy will be sound management and increased value of what is currently the world's largest Marine Protected Area and a unique and globally important reference site.

As detailed above, it is evident that by the end of year 2, we have made excellent progress towards achieving the **Project Purpose/Outcome** and the project is on schedule, with 2 out of 3 successfully completed scientific expeditions and Connect Chagos gaining impetus in Mauritius as well as being successfully delivered in the UK where it is engaging Chagossians stkeholders. The logistical and scientific approaches developed are providing a sound basis for new scientific initiatives in Chagos (eg. Bertarelli Foundation Geneva discussions on wider science opportunities with the scientific stakeholders) and scientific findings are beginning to inform BIOT Section on the status of the environment which will be required for MPA management. The Chagos 20/20 conference was a successful format for disseminating information, and now attracts a wide audience, ranging from FCO through media to new scientists interested in working in Chagos, as well as Chagos Conservation Trust members and general public. It of course takes time after the expeditions for scientific data to be thoroughly analysed and for papers in international journals to be published, but these are beginning to formalise the preliminary observations presented at our conference, and will be presented at international scientific symposia in due course. The involvement of our team in the Big Ocean Network shared research agenda ensures common understanding and good practice across

the world's largest MPAs. The scientific blogs, expedition reports and films are proving excellent material to engage wider public interest, and the potential for incorporation of Chagos material in a major BBC series 'Oceans' will advance this. The raised awareness helps highlight the unique and global importance of the Chagos.

There are of course some limitations. We are awaiting better long term storage for our boats on Diego Garcia, and this is expected to be made available during this year. The only areas where project progress has stalled have revolved around sensitivities over Mauritian engagement, largely because of the recent Court of Appea,l Bancoult vs Secretary of State for Foreign and Commonwealth Affairs which challenged the decision to create a 'no-take' MPA of 250,000 square miles in BIOT, and the Arbitral Tribunal under Annex VII of UNCLOS over the creation by UK of the MPA up to the outer limit of the Economic Exclusive Zone of Chagos. The two University of Mauritius scientists (Drs Ranjeet Baghooli and Vincent Florens) were again invited to join the scientific expeditions, and letters (30th August 2013) were provided for them to submit to the University of Mauritius and Prime Minister's Office to help them in this endavour. However, the University of Mauritius is still required to respect Mauritius' position on sovereignty of the Chagos and non-recognition of the MPA. The Mauritius scoping study for Connect Chagos was promising, and the Mauritian scientists, amongst other stakeholders, have agreed to at least to facilitate in providing materials for training Chagossians in Mauritius, and hence some progress has been made. Due to the high level of integration of Chagossians into Seychellois communities, it seems unlikely that outreach will be effective there, but further research will confirm this. Due to other on-island activities and the necessity for us to board the *MV Pacific Marlin* immediately on arrival in Diego Garcia, we were unable to make any presentations to military personnel on Diego Garcia this year, although we will endeavour to do this next year. We have enjoyed good attendance by British and USA forces personnel on previous occasions. With the exception of involvement of Mauritian scientists, the indicators hold true and the project will achieve its purpose by the end of the funding.

3.4 Goal/ Impact: achievement of positive impact on biodiversity and poverty alleviation

Chagos harbours 76 threatened species (IUCN Red List) including Hawksbill turtle, Red footed booby, silky shark, Coconut crab, and Bigeye tuna, providing an internationally important refuge and reference site. Studies in 2014 focussed specifically on the feeding and foraging behaviour of Red footed booby and Coconut crab population dynamics in Chagos. The Ocean Legacy MPA is protecting entire ecosystems rather than species in isolation, including deepsea, pelagic, reef and small island systems including migratory species (cetaceans, sharks, turtles, birds) and those vulnerable to poaching and trade (sharks, turtles, sea cucumbers). The project is addressing the target of reduced pressures on coral reefs, contributing to restoring at least 15% of degraded areas through conservation and restoration activities, and an effective MPA exceeds the target of protecting 10% of marine/coastal areas, and address Goals 1-3 of the strategic vision of CITES (especially Goal 1 implementation and enforcement). Most importantly, it addresses the Strategic Goals and AICHI Biodiversity targets 2011-2020, specifically A (1,4) (B(5-6-9-10), C(11-12) D (15) E (17,19)for CMS and CBD

The sub goal of the project is to ensure that the Chagos MPA justifies its full no-take status, particularly considering ever increasing fishing pressure in the region and that it fulfils its role as a unique scientific reference site for marine biodiversity. The measurable indicators are: acceptance of the Ocean Legacy Large Marine Protected Area by stakeholders on the basis of scientific knowledge, underpinning the need for strict conservation, and assessment of effects of climate change in the absence of local anthropogenic impacts. The means of verification are: agreement on marine protected area management initiatives which will include no marine resource extraction or habitat modification in the MPA, and establishment of monitoring protocols that are sustainable long term, and centralised accessible data basing.

The Project has completed two of three major expeditions in which monitoring biodiversity is the major objective, and these expeditions link directly with previous expeditions to build upon existing survey data, thereby establishing Chagos as a reference site (This was the theme of the annual Chagos conference: Chagos 20/20 this year). The various sub-projects (eg. those,

on coral community structure, functional redundancy and cover, bioerosion by parrotfish, fish diversity fish and biomass), already use Chagos as a control site against studies at impacted and degraded locations elsewhere in the Indian Ocean or further afield.

Acceptance of the Ocean Legacy Large Marine Protected Area by stakeholders is most important, and we have made good progress towards this goal. The involvement of Mauritian scientists remains a challenge while Mauritius argues sovereignty of Chagos and refuses to recognise the MPA. However, Connect Chagos has had a positive impact on increasing the understanding of conservation and biodiversity in Chagos amongst the Crawley and Manchester Chagossian communities, and the interest and support of these communities is building. This understanding of the importance of the environment is important, because due to external pressure by *The Chagos Islands (BIOT) All-Party Parliamentary Group*, and some Chagossian societies, the BIOT Section have progressed with an externally contracted Feasibility Study for resettlement of the islands which will conclude prior to the end of the current Government. Most Chagossian groups remain supportive of the MPA provided it does not prejudice their right of return, and the Government has declared that MPA research and monitoring is without prejudice to claims to return. The project partners of this Darwin Initiative project are not taking sides on whether or not Chagossians should be given the right to settle in the British Indian Ocean Territory (BIOT), since this is a political issue for government. Our task remains to provide the best scientific information to ensure effective environmental conservation and MPA management in the Territory, and our concerns are over whether potential environmental impacts can be adequately mitigated to ensure that resources are not extracted and habitats remain unmodified

Means of verification involve agreement on Marine Protected Area management initiatives which will include no marine resource extraction or habitat modification in the MPA. The PIs have been involved in discussions, and preparing proposals for the future enforcement of the MPA. In addition, the establishment of monitoring protocols that are sustainable long term, and centralised accessible data basing (through the Chagos Science Portal) have been a focus.

Each expedition is returning to sites previously surveyed to ensure continuity in data sets over time to assess change. Methodologies remain consistent where appropriate, and new methodologies are being introduced on each scientific expedition for new initiatives. For example, this year, Turner and Roche returned to sites first visited in 2006 and 2013 to record video transects at 5-10m, 10-15m, 15-20m and 20-25m to assess changes in reef cover and community structure over time. The video of sites will be archived for future comparisons. Carr continued ornithological monitoring of all the atolls concentrating on internationally important seabird colonies previously surveyed in 1996, 2006, 2010, 2012 and 2013 to assess the highly variable nesting successes of important species, especially the Red footed Booby. Sheppard continued seawater temperature monitoring (initiated in 2006) at 5, 15 and 25 m depth at sites in lagoons and seaward reefs on each atoll, and assessed coral cover. Species vulnerable to poaching such as sea cucumbers were reassessed by Widman to compare with data collected in 2006. New initiatives by Koldewey and Samoilys focussed on assessing the abundance and diversity of large bodied reef and lagoon fish, since these are particularly vulnerable to exploitation and yet are key species in reef food chains. Similarly on land, investigations have begun to assess the populations of Coconut crabs on different islands in an attempt to understand why these are so variable. Coral disease is low in frequency, but seemingly widespread across the archipelago, and new studies by Couch have been directed at identifying disease and assessing its prevalence. This has required an updated assessment of coral taxonomy by Fenner, and a detailed examination by Widman of coral functional diversity by examining the traits (eg. Fast growth, heterotrophic feeding, fecundity, sediment rejection) which exist amongst corals, rather than simply which species are present, since it is the traits that will confer resilience. Every opportunity has been taken to maintain monitoring sites and also to explore some new sites, such as Blenheim reef, or when weather is calm, to survey often inaccessible exposed reef fronts (for example on North West of Peros Banhos).
An important approach of the scientists is to combine observations to ensure that the sum of the parts is greater than the whole; for example an understanding of changes in community structure of coral on the reef may relate to habitat structure available for large bodied fish. Similarly, changes in the coral community structure may be caused by a combination of factors ranging from mortality caused by elevated sea temperature to outbreaks of predatory Crown of

thorns starfish (COTs). The latter may have increased in numbers around some islands because of environmental events which are very complex to understand, possibly relating to high rainfall and nutrient runoff from islands with high bird populations. Bird populations do not appear stable on the islands, but vary considerably possibly due to tick infestations or poor breeding years, and the quality of island vegetation which may be affected by invasive species. Environmental perturbations may be the cause of coral mortality, for corals that grew rapidly after bleaching events in the late 1990s and early 2000s may be reaching a size and age where they are unstable or senescent, and they may now be more susceptible to disease. Alternatively, it may be that disease is causing their mortality. The scientists working in Chagos also work in comparable locations elsewhere in the Indian and Pacific Oceans (including the Big Ocean Network MPAs), and can therefore compare their observations with data recorded by the same methodological approaches elsewhere. Attendance at international meetings such as the International Marine Protected Areas Congress, International Marine Conservation Congress and International Coral Reef Symposium ensure that data from Chagos is disseminated and discussed in a wider scientific context, and that we are updated on developments elsewhere. For further details of the science projects undertaken in Chagos on the 2014 expedition, please **see Annex 4: Chagos 2014 Scientific Expedition Report.**

All data collected this year and last is being centralised in appropriate databases, and to this end, the PIs are collaborating to develop the Chagos GIS initiated in 2008, into the Chagos Scientific Portal managed by Prof Charles Sheppard and Dr Elizabeth Widman. In addition, processed data will be entered into global network databases such as the Big Ocean Network, NOAA, Fishbase, Reefbase, and the UKOTs biodiversity database.

The project is generating the best scientific data to provide information for BIOT Section to manage the BIOT/Chagos MPA for the foreseeable future to ensure the protection of biodiversity and resilience of reefs and associated ecosystems in response to global changes and possible human resettlement. Long-term benefits will be the protection of biodiversity in a wide range of ecosystems, including pelagic, reef and island ecosystems, and protection of functional links between ecosystems, and of migratory species.

4. Project support to the Conventions (CBD, CMS and/or CITES)

Under the 2001 BIOT Environmental Charter, the UK Government facilitates the extension of the UK's ratification of multilateral environment agreements of benefit to the BIOT and which the BIOT has the capacity to implement. CITES and CMS have been extended to the Territory, but CBD has not, due to the current inability to fulfil all of the Convention requirements in Chagos, for practical reasons. But, as per the World Heritage Convention, the area is treated by the UK Government with no less strict regard, subject only to defence requirements, and in the case of CBD, the capacity to implement. This project will increase the capability of BIOT in these regards.

CMS: This project will address many agreements and MOUs under the CMS, specifically:

1. MOU on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia. We have already liaised with the Secretariat who recognises the significant value of the Chagos MPA to marine turtle conservation, particularly as they are considered as flagship species on which to base interventions aimed at protecting habitats of importance for a myriad of other marine species. Turtle nesting and tagging have been specifically addressed by another Darwin Project in Chagos, but habitat protection remains a key aspect of this project, and both reef and sea grass habitats are being assessed.

2. MOU on Migratory Sharks. This is particularly important as several migratory shark species (particularly blue sharks) were the primary bycatch of the tuna fisheries that operated in Chagos prior to the establishment of the no-take MPA. We have already established a strong working relationship with the IUCN Shark Specialist Group. Reef sharks are being monitored during this project by direct observation, and novel automated methods have been developed to assess migratory species.

The CMS MOU for dugongs may also apply. One of the islands in the Chagos archipelago is named after dugongs and this species may exist within the archipelago. Only 3% of Chagos has been explored and an undefined large rea of seagrass on the perimeter of the Great Chagos Bank near Danger Island has been investigated on each expedition.

Bycatch is a CMS Initiative that will be addressed to an extent by this project. As the fisheries (inshore and pelagic) in Chagos are now closed, yet had significant documented bycatch, establishing monitoring systems that document changes over time for management purposes will be valuable information for this CMS Initiative.

While there is no international trade in CITES-listed species from Chagos, this emphasises its' value as a reference site for comparison with exploited sites, particularly for corals, giant clams, cetaceans, marine turtles and sea cucumbers. This Convention is also relevant in Chagos for several bird species, notably boobies, and potentially for several CITES listed sharks and seahorses (the latter have not yet been documented in Chagos).

The focal point is DEFRA for BIOT

5. Project support to poverty alleviation

The project is DEFRA funded and does not y contribute directly to poverty alleviation, largely because, with the exception of the military facility on Diego Garcia, the islands have been unoccupied for 50 years. However, the scale of the MPA suggests that benefits will be significant at an ocean scale, and communities in some of the poorest countries around the Indian Ocean may benefit from the preservation of a genetically-balanced stock of species which may overspill propagules, juveniles and adults to unprotected regions. There are no local communities in the Territory, although the feasibility of resettlement by Chagossians is under investigation. However, as explained in earlier sections, the project consults, involves, and educates Chagossian communities in the rich natural environment and conservation of the islands and surrounding marine environment. Elements of the Connect Chagos may benefit Chagossians trainees, not only by making them more environmentally aware and better able to communicate, but also by allowing selected individuals to learn new skills which should benefit them in future employment. This will be measured by the type of employment they gain. For example, 5 individuals received training in SCUBA diving qualifications and chainsaw qualifications, providing a practical means and potential for income generation. Awareness of the rich biodiversity of the UK Overseas Territories, is continually being raised both nationally and internationally by our outputs, demonstrating how Ocean Legacy MPAs can protect ecosystems and serve as important global reference sites to help understand environmental change in the absence of human impacts. This allows us to quantify what an intact and functioning ecosystem is, and provides a target for the management of more degraded systems to return them to levels of high productivity and sustainable income generation. Measurement of the ecosystem service value to communities is beyond the scope of this project, but the scientific assessment of an intact system is a major part of our work.

6. Monitoring, evaluation and lessons

The Project Investigators along with the Logistical Officer (Jon Slayer) have met and regularly skyped to evaluate progress, and briefing sessions have been held with BIOT Section before and after each expedition. Briefing sessions have taken place separately with the British Representative on Diego Garcia (14th April 2014), as well as with the BIOT Section in London (7th May 2014). The preliminary report of the 2014 scientific expedition will be distributed electronically to members of the Scientific Advisory Group (SAG), since this group is being reconvened by the new BIOT Administration with a new remit.

The success of the project outcomes has been demonstrated above, and some lessons have been learned and will be employed in the forthcoming year. The major change to M&E has been the lack of Mauritian involvement for reasons already explained.

Output 1: Scientific Expeditions and Output 2: Provision of scientific facility and equipment

1. The new BIOT Section staff required specific information about the expedition schedule earlier than envisaged and in a more formalised structure in order to provide permits and make to make arrangements over support, which ranged from personnel to vehicles. Some activities on islands planned for in the immediate run up to the expedition were not approved, and multi-party communications became complex and confused in an attempt to keep all parties informed at a detailed level. Long standing informal arrangements and expectations of provision were no longer acceptable, and therefore more detailed information about plans were found to be required by the new administration. The situation was exacerbated by resources on Diego Garcia being stretched by other coinciding activities. It has therefore been agreed with BIOT that an agreed timeline will be developed for future expeditions, and that communications will be directed from the PIs through the Darwin Expedition Leader and Rupert Compton, Deputy Administrator and Desk Officer who will take up the scientific portfolio.
2. The decision to reschedule the 2014 expedition from November 2013 to March - April 2014 on the basis of greater knowledge of weather, and consequently delay the final expedition to March April 2015, was found to be appropriate. Although conditions remained variable, they were tolerable, and only one dive was cancelled due to poor weather.
3. However, field expeditions in March- April do compromise prompt reporting at the end of the financial year, because major expenditure is at this time, and claims and sub project reports have to be prepared, submitted and collated and reviewed. This inevitably resulted in late reporting this year.
4. The 2014 Expedition involved connecting commercial flights with Air Mobility Command flights in Bahrain rather than Singapore. While generally more convenient and cost effective, the route was new to us, and complications arose due to lack of agents in Bahrain, which exposed us to difficulties in clearing equipment through customs and transferring it between international and military airports.
5. Other on island activities on Diego Garcia meant that we joined the ship on the evening of arrival and departed immediately. This did not allow for shake down dives, training in procedures for first time members, nor preparing and setting up equipment and supplies in appropriate areas of the ship, and it is evident that 2 days are required on Diego Garcia prior to leaving harbour for the outer islands, to establish ourselves and equipment appropriately.
6. Rough seas were encountered, causing significant wear and tear on equipment moving within boats, and especially the boats themselves, which had to be craned out of the water onto the deck between dives. Lifting caused stresses to seams already weakened by high temperatures, and abrasion of floor boards against the outer skin of the hull, causing air leaks. Supporting slings are required such that the boats are supported underneath rather than being lifted from eyes rigged on top.
7. Due to illness, two team members were replaced immediately prior to the expedition. Fortunately well trained replacements were found from within the existing teams and permits granted, but it is advisable that future expeditions plan for standby personnel and ensure sufficient paperwork is ready for permitting their involvement at late notice.
8. Dive planning is simplified and operations made more efficient if personnel are paired on each sub project. Dive teams of more than two persons with multiple objectives are inefficient and can compromise safety.
9. Equipment wear and tear, in field servicing and subsequent replacement of parts has proven considerably more expensive than expected, largely due to transporting items to Diego Garcia, and additional charges incurred by agents in handling, especially where

hazardous materials are concerned (chemicals, oils, glues, oxygen, lifejacket gas inflators etc.). The equipment is for the most part stored under good conditions, although storage of the 5 boats remains of concern since they cannot be stored semi inflated and flat. The deck laboratory container now has a new, but temporary, door until the steel one arrives. Security and environmental protection under extreme conditions will be assessed by the level of degradation of equipment in store. Previously, boats have delaminated due to extreme temperatures, equipment has been 'borrowed' and not been returned, and dive cylinders and tools have corroded due to high humidity. Arrangements are being put in place for the equipment to be checked on a weekly or monthly basis by BIOT personnel on Diego Garcia.

10. With the above in mind, the priority for all expedition equipment is for use by the Darwin scientific expeditions. Requests have been made by others to use the equipment, and therefore agreement is necessary over how we ensure that the equipment remains adequately maintained and is fit for service so as not to compromise our own expeditions; and that equipment is insured and can be replaced in time on site; that there is no liability for failure of equipment causing injury for the project and institutions that own the equipment; and that others using the equipment are competent to do so, and work to risk assessments within the Approved Code of Practice for Scientific Diving. It is not uncommon for scientists working at non UK institutions, or UK institutions without an established knowledge of Diving at Work Operations to be unaware of ACoPS and Duty of Care requirements.
11. Diving in Chagos remains necessarily conservative due to the lack of hyperbaric and hospital facilities to treat a decompression or related incident. The diving operations risk assessments address the Approved Code of Practice for Scientific Diving in this context. The bid to the NERC Facility for Scientific Diving for a hyperbaric chamber was successful but turned down by BIOT section due to concerns over liability.

Output 3: Connect Chagos

The Outreach programme has been thoroughly evaluated (see **Annex 6: Connect Chagos Half Year Report, 2013**), and some lessons are:

1. Greater flexibility in timing is necessary because trainees have different commitments. It may be necessary to tailor the courses further to specific groups, although the communities in Manchester and Crawley would like to work together when possible.
2. Language remains a barrier, and many Chagossins struggled to express themselves on environmental and conservation topics, and further support may be needed.
3. The fact finding visit to Mauritius by the Chagos Outreach Team was highly informative (**Annex 7: Mauritius Scoping Study Report April 2014**).

Output 4: Public Outreach

Raising awareness of the Chagos Marine Protected Area is a longer term output, and is being achieved in collaboration with the Chagos Conservation Trust and Zoological Society of London and the Pew Environment Group. These organisations have professional personnel skilled in delivering public events and disseminating information in the media. A key activity for involvement and delivery are the collaborative annual conferences which largely focus on the results of the scientific expeditions and attract a wide audience of about 100 people. Expedition participants contribute to these, and the effectiveness of the meetings is assessed by public attendance and feedback questionnaires. In addition, scientists are preparing data for presentation at international conferences and publishing in academically peer reviewed international journals and write popular articles and make contributions to books and other

works. The usual measures of invitation, peer review, and publication are used to demonstrate this output. The Chagos Science Portal is being established to archive the varying formats of data and increase accessibility. It will be a challenge to monitor whether awareness increases as a result of this Darwin Project alone, and monitoring will almost certainly have to assess the outputs from collaboration with CCT and ZSL. A measure of the success of Co PI Professor Charles Sheppard (also Chair of the Chagos Conservation Trust) has been the award of the OBE in the Queens Birthday Honours list 2014 for services to environmental conservation in the British Indian Ocean Territory.

7. Actions taken in response to previous reviews (if applicable)

Not applicable

8. Other comments on progress not covered elsewhere

All covered above

9. Sustainability

There is knowledge of the project amongst scientists in the UK, and internationally amongst coral reef scientists and those involved in Marine Protected Areas. This is being further established by the Chagos annual conference, international conference presentations, scientific publications, expedition reports and blogs, video material and films, and submissions to a Chagos Science Portal. The Chagos MPA has participated in producing the Shared Research Agenda of the Big Ocean Network and much of the research undertaken on the scientific expeditions has addressed this Agenda:
http://www.bigoceanmanagers.org/sites/default/files/docs/feb2013/bigocean_research_agenda_narrative_020113_FINAL.pdf.

The first stable and sustainable end-point was the establishment of the scientific infrastructure and protocols for a comprehensive approach to long-term monitoring against which change can be assessed. The scientific infrastructure has been maintained, and expedition planning, risk assessments, and monitoring protocols have been further developed this year, to encompass more island work and exploration of new sites. Data is being centrally archived and made accessible through the Chagos Science Portal which will also feed into global biodiversity systems. Scientific evidence/recommendations will improve the Management Plan, enabling BIOT managers to implement conservation strategies, environmental impact assessment and enforcement. Monitoring will continue beyond the three years of the project, by externally funded scientists participating in future expeditions based on experience gained here. Further, scientific study needs to be expanded to underwater banks and shoals. These sites are numerous and cover some 60,000 km^2, but accessing and diving such features in open water is challenging and requires greater facilities and support than we currently have. In addition, future opportunities exist in pelagic and deep water research and these ideas were explored at the Geneva Conference hosted by the Bertarelli Foundation. The second stable end point will be the active participation and support of all Chagossian societies in events and in the case of bursary recipients, training in relevant practical conservation techniques. A further 250 Chagossians participated this year in environmental events, and a further 11 graduated from the Chagos Environmental Training course, 5 benefited from advanced training, and another Chagossian participated in the Chagos scientific expedition. Further, Chagossin societies and stakeholders in Mauritius were engaged in plans for future aoutreach activities there. Once on board and engaged, all stakeholders will hopefully remain involved through established, ongoing events and activities. The latter is the means to stable end point 3 whereby the importance and significance of the BIOT/Chagos MPA is widely recognised and supported in the UK and internationally. It is hoped that if Mauritian colleagues can eventually be involved, that they will help raise awareness in Mauritius.

10. Darwin Identity

The Project is called the ***'Darwin Initiative project to strengthen the world's largest Marine Protected Area, Chagos Archipelago'***. The Darwin finch logo has been used along with the ZSL,CCT and Pew Environmental Trust logos on the annual Chagos conference materials.

The Connect Chagos programme continues to feature the Darwin logo along with the BIOT, ZSL and CCT logos. Documents advertising the Bursary scheme also feature the logo and project. 4 sizes of waterproof and UV proof stickers have been placed on all Darwin Initiative project equipment, and feature the Darwin logo along with the words ***'Chagos Science and Conservation'***. These appear on packing cases, the container laboratory, diving cylinders, compressors, tools and all major items of equipment. All 2014 scientific expedition personnel and the Pacific Marlin crew were provided with bright turquoise T shirts featuring the Darwin logo and the partner organisation logos **(See cover of Chagos Scientific Expedition Report 2014, Annex 4)**.

National and international scientists, BIOT Section (In FCO and represented by Royal Marine personnel in Diego Garcia) and many Chagossians who have engaged with the programme understand the role of Darwin Initiative funding. It is unlikely that the American personnel based on Diego Garcia are aware of the Darwin Initiative, (but then most have orders for only one year) although they do understand that scientific research and conservation is now on going. There are plans to make presentations to military personnel in the coming year.

11. Project Expenditure

Table 1 project expenditure <u>during the reporting period</u> (1 April 2013 – 31 March 2014)

Project spend since last annual report	2013/14 Grant (£)	2013/14 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)			0	-
Consultancy costs	0	0	0	-
Overhead Costs			0	-
Travel and subsistence			5	+£1,584.50 (cheaper travel due to change in transfer base for military flights from Singapore to Bahrain)
Operating Costs			10	+897.74 due to cross-over between consumable costs and fieldwork costs
Capital items (see below)	0	0	0	-
Others (see below)			28	-£2,482.24 due to cross-over between consumable costs and fieldwork costs, and high costs of consumables and spare parts
TOTAL			**0**	

12. OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes

I agree for the Darwin Secretariat to publish the content of this section (please leave this line in to indicate your agreement to use any material you provide here)

The 2014 Chagos Science and Conservation expedition involved 14 scientists and support team members from four countries and seven organisations, including a graduate of the 'Connect Chagos' environmental training programme as a research trainee. From March 24th to April 15th 2014, the following series of research projects were conducted on the reefs and islands of the Chagos archipelago:

- Video archive for long-term monitoring of coral reef benthic communities
- Understanding coral reef structure
- Assessment of coral cover
- Coral species diversity and abundance
- Assessing coral disease prevalence, severity and susceptibility
- Scleractinian coral functional diversity surveys
- Documenting sea temperature
- Diversity and population abundance of reef fishes
- Assessing the contribution of parrot fish in reef erosion
- Long-term monitoring of sea cucumber populations
- Population assessment of the Coconut Crab, *Birgus latro*
- Long-term monitoring of Important Breeding Areas for seabirds
- Chagos Science Resource Portal

The main findings are as follows, although as data are still being analysed all figures should be considered provisional:

1. **Over 240 dives (some 1,380 minutes underwater) were conducted to depths of 25m at 29 sites on six atolls to survey species, habitats and communities on the coral reefs, and 15 islands of ecological importance were surveyed**.

2. **Twenty four sites were surveyed using videography**, accounting for over **55 hours underwater and 24 hrs of video records**, 2200 Go Pro habitat images and about 2000 truthing images. 15 of these sites were also visited in 2006, 12 in 2013 and 8 sites were new to the archive. It is anticipated that the sites surveyed during the 2013- 2015 expeditions will duplicate all survey sites recorded in 2006.

3. A preliminary review of the video archive shows **that *Acropora* coral colonies are now less abundant on most reef terraces throughout the atolls**, and many of those remaining display signs of disease or have died. At present, we do not know whether these corals have perished due to old age, bleaching, disease or storms, or a combination of these factors.

4. Initial examination of the data collected of rugosity at 24 sites during the 2014 expedition indicates that **many sites are being impacted by large dead *Acropora* colonies** with 'table' morphology moving down reef slopes during storm events.

5. Coral cover data were collected at long-term monitoring sites, building on data from 1978 and then again in 1996. After the Indian Ocean warming event in 1998, these have been regularly monitored the coral cover in the same locations in Chagos (2006, 2010, 2012 and 2014) to determine how well Chagos' reefs have recovered from the 1998 trauma, especially in comparison to other Indian Ocean sites.

6. 143 species of coral were documented during the 2014 expedition, **32 of which have not previously been reported from Chagos, and 16 of which are outside their known ranges**. An average of about 40 coral species was recorded per dive site (compared to previous studies

that found an average of 35 species per site in Rodrigues, 65 species per site in the Andaman Islands, and 49 per site in SW Madagascar).

7. One coral species which was first described in 2003, ***Plerogyra diabolotus***, was found which is the **first record known other than the type location** which was in Borneo. Also, ***Parasimplastrea sheppardi* was found for the first time in Chagos**. This species was first found in Oman by Professor Charles Sheppard and is known from the Arabian Peninsula and Rodrigues in 2004. This is the farthest east it has been recorded so far.

8. Overall **most study sites appeared quite healthy with low disease prevalence**. Five disease types including white syndrome, sub-acute tissue loss, multifocal tissue loss, growth anomalies and skeletal eroding band.

9. **Corals were minimally affected** by partial bleaching, *Drupella cornus* predation, algae and sponge overgrowth, physical damage (mostly on exposed seaward sites) and smothering from sedimentation (lagoon sites). Coral bleaching was highly patchy across the reefs and manifested as partial bleaching of the colonies rather than mass bleaching observed during thermal stress events.

10. ***Acropora* white syndrome was documented throughout the archipelago**, with low overall prevalence, but was locally severe at several sites suggesting that not all sites are affected equally. This disease also appeared to target large/older (>40cm) tabular Acroporids, which is not only concerning given this group's important reef-building status, but may help to explain the recent die-off of large tabular Acroporids in Chagos.

11. Temperature logger data were retrieved and new loggers installed. **15 temperature loggers are currently recording temperature at 2 hourly intervals**.

12. **Fish species diversity was found to be lower in Chagos compared with the northern Mozambique Channel** (NMC) of high diversity in the WIO, with total species counts in the order of 102 per site, compared with 135-150 in Cabo Delgado, Mozambique and Mafia island, Tanzania. Around 214 species known from the WIO were not observed in Chagos, with a total species richness of around 226 recorded across all sites, compared with 335 in the NMC. **2-3 species ranges have been extended**.

13. Provisional observations suggest **that fish abundance was generally higher than observed elsewhere in the Western Indian Ocean (WIO)**, particularly for scarids and acanthurids, but with certain key taxa absent or rarely observed, overall biomass was not as high as expected.

14. The **large size of Plectropomid groupers was notable**, with 100cm total length (TL) frequently observed in *Plectropomus laevis*, which is the maximum size this grouper attains. This suggests little to no fishing pressure on this species. These grouper were also abundant, being present at almost every site.

15. Grouper densities were patchy and require analysis to try and determine the reasons for this. **Notable was the camouflage grouper, *Epinephelus polyphekadion,* which was very common** and may reflect natural population abundance of this species in the absence of fishing. This fish is extremely unwary of divers and therefore very vulnerable to spearfishing. It is rarely or never seen in mainland east Africa.

16. **Reef sharks were relatively common – seen on every dive - when compared to other locations in the WIO**, where they are very rarely observed. This shows the generally dire situation for reef sharks in the WIO, as these fish are known to be depleted in Chagos and poaching continues to be a problem.

17. A total of **63 sites were surveyed for sea cucumbers** resampling were those that had been surveyed in both 2006 and 2010 (68 sites in total).

18. **For the first time, coconut crabs, *Birgus latro*, were surveyed on three islands** on the northern atolls. Initial observations suggest a possible correlation between island size, vegetation composition and rats.

19. **Sooty Tern, *Onychoprion fuscata,* has had a catastrophic breeding episode**. This should be the most numerous breeding seabird and over 100,000 breeding pairs is the annual expected norm on four to ten islands. This year (at least to date) 400 pairs bred on two islands.

20. On Parasol in Peros Banhos **26% of chicks examined held avian parasitic ticks** and the main colony of approximately 32,000 pairs deserted at the egg-laying stage. It is unlikely that tick-infestation was responsible for lack of breeding on all islands.

21. Breeding colonies of **Red-footed Booby, *Sula sula,* and Lesser Noddy, *Anous tenuirostris,* appear to be sustained**.

22. The **Common Noddy, *Anous stolidus*, continues to be of grave concern in Chagos**. In the 1970's, Nelson's and Danger Island and Sea Cow each held terrestrial breeding populations of 10,000+. In 1996 there were c. 42,000 breeding pairs recorded. These numbers had declined to the low thousands by 2006 and terrestrial breeding had all but ceased by then. This situation has not changed and the annual breeding population has remained at under 2,000 pairs.

23. **Terrestrial invasive species require management now** before their negative impact is irreversible; this is especially relevant on the rat-free Important Bird Area (and potentially Important Plant Area) islands.

24. **A database of monitoring sites was established** by carefully recording site positions using a high specification Garmin Montana GPS with built in camera to record the nearest land feature where appropriate.

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2013-2014

Project summary	Measurable Indicators	Progress and Achievements April 2013 - March 2014	Actions required/planned for next period
Goal/Impact To ensure that the Chagos MPA justifies its full no-take status, particularly considering ever increasing fishing pressure in the region and that it fulfils its role as a unique scientific reference site for marine biodiversity.		Project activities have contributed scientific information to: underpin the need for strict conservation, and to assess change in the absence of local anthropogenic impacts. The second scientific expedition has obtained results that contribute to understanding the status of biodiversity within the MPA; the need to reduce pressure on coral reefs; restore degraded areas; and contribute to addressing Goal 1 of CITES and AICHI Biodiversity targets..	
Purpose/Outcome To strengthen the Chagos Marine Protected Area by providing scientific knowledge for effective management and to develop a strategy that engages the support of potential stakeholders through outreach, education and engagement. The legacy will be sound management and increased value of what is currently the world's largest Marine Protected Area and a unique and globally important reference site	Engagement of Mauritian scientists in scientific data acquisition for monitoring, island ecosystem restoration and impact mitigation. Active involvement of all Chagossian groups in workshops and training initiatives in UK, Mauritius and Seychelles The Connect Chagos Outreach Project increases the understanding of and need for the MPA amongst different community groups	Mauritian scientists were invited to join the 2014 expedition, but have been unable to engage while Mauritius challenges the legality of the Chagos MPA. 120 Chagossians from Crawley and 130 from Manchester attended Chagos environment open days.11 trainees graduated as Chagossian Ambassadors from Environment Training course. One Chagossian joined the 2014 scientific expedition. 2 Chagos Bursaries were awarded and 5 advanced skills training courses were completed. A scoping visit by the Outreach team was undertaken in Mauritius in March 2014to reach Chagossian communities in Mauritius	Mauritian scientists are constrained in joining scientific expeditions, but have promised to provide marine environmental information for Connect Chagos outreach in Mauritius Engagement in UK will continue with an Open day in June and summer environment course in July 2014. Further bursaries will be awarded for 2014/15, but greater support will be provided to help with submissions. Outreach activities are planned for Mauritius, and if successful, scoping will be undertaken in Seychelles.

Project summary	Measurable Indicators	Progress and Achievements April 2013 - March 2014	Actions required/planned for next period
	Increased public awareness of the importance of the Chagos MPA, in the UK, Mauritius and Seychelles	Chagos 20/20 conference at ZSL on 18th April 201attracted >100 people. 3 films shown. 3 Scientific Expedition blogs, 6 Newsletter reports, 1 workshop attended, I exhibit, 4 papers and 3 theses produced; 150 video clips published; 19 talks and conference presentations, I major award to CoPI	Chagos workshop and conference planned in 2015 Activities in Diego Garcia and Mauritius/Seychelles are still dependent on political situation regarding sovereignty and recognition of MPA
Output 1. To continue established baselines and develop a more comprehensive approach to long term marine and island ecosystem monitoring against which change can be assessed, and develop an understanding to assess the magnitude and significance of potential impacts from several scenarios, including climate change, island ecosystem restoration and possible human resettlement. The Chagos/BIOT Management Plan will include BAPs and identify how CBD/CMS/CITES strategic goals and AICHI targets will be addressed.	Measures of flora and fauna mapping; reef resiliency, functional diversity and response diversity; and assessments of island erosion and accretion. Development of impact matrices and mitigation measures for potential impacts. Development of restoration initiatives for island flora and fauna.	Output 1 was addressed by the 2nd scientific expedition; 23rd March -15th April 2014, comprising 14 scientists and support members from UK and USA. Over 240 person hours spent underwater at 29 sites to survey species, habitats and communities on the coral reefs, and 15 islands of ecological importance surveyed. Marine tasks: Long term monitoring of corals, assessing the benthic community structure and recovery from coral bleaching events, coral disease prevalence and Crown of thorns starfish outbreaks, and examined the abundance and diversity of reef fish communities, especially large bodied species such as groupers. Terrestrial tasks: long-term monitoring of internationally important breeding seabirds focussed on ten designated and two proposed Important Bird Area (IBA) islands that hold > 98% of the breeding populations. Expedition activities also involved: measuring the breeding habitat requirements of the Sooty tern *Onychoprion fuscatus*; tracking Red-footed Booby *Sula sula* to study their feeding and foraging behaviour; monitoring the spread of invasive species; studies to determine the population dynamics of the Coconut crab *Birgus latro* (IUCN Red-Listed Data Deficient species) in the northern atolls; surveys of sea cucumbers in shallow waters surrounding the islands (a previously poached animal**). Annex 4: Chagos Scientific Expedition Report 2014**	
Activity 1.1 Steering group meeting to monitor progress and deliver		PIs held a progress review meeting on 12th June 2014	
Activity 1.2 Meeting with BIOT section FCO		Post expedition briefing meeting with BIOT Section held on 7th May 2014	
Activity 1.3 Develop protocols for environmental survey baseline and monitoring sites, including resiliency and functional diversity/response diversity ,measures, establishment of GIS and data archiving.		Scientific expedition participants developed and undertook methodologies this year: Dr Heather Koldewey: Zoological Society of London: Expedition leader, Project	

Project summary	Measurable Indicators	Progress and Achievements April 2013 - March 2014	Actions required/planned for next period
		Co-PI, Reef fish abundance and biodiversity), and Coconut crab population assessment; Dr Melita Samoilys: CORDIO Kenya: Reef fish abundance and biodiversity (specifically large bodied species); Dr John Turner: Bangor University: Project PI: video monitoring of coral community structure; Dr Ronan Roche: Bangor University: Reef rugosity, parrotfish fish bioerosion; Prof Charles Sheppard Co-PI and Anne Sheppard: University of Warwick, Coral recruit and cover monitoring, maintenance of temperature loggers. Professor Sheppard withdrew at the beginning of the expedition due to medical condition and replaced by David Curnick, Zoological Society of London who assisted Anne Sheppard in completing the sub project) ;Dr Doug Fenner: American Samoa, Chagos Conservation Trust USA Scholar; coral diversity; Dr Courtney Couch: Hawai'i Institute of Marine Biology, USA: coral disease; Dr Elizabeth Widman: University of Warwick, Sea cucumber assessment and coral reef functional redundancy; Chagos Science Portal development. (Dr Widman replaced Dr Andrew Price); Peter Carr: University of Warwick, International Bird Area population assessments, breeding habitat requirements of the Sooty tern; feeding and foraging behaviour of Red-footed Booby; monitoring the spread of invasive species; population dynamics of the Coconut Crab.	
Activity 1.4 Develop restoration initiatives for island flora and fauna, erosion and accretion assessment.		This activity now mainly undertaken by Darwin Plus project: Carr & Clubbe, Ile Vache rat extermination and restoration project. Erosion and accretion (carbonate budget study) to be undertaken by Perry & Murphy during Expedition 3, 2015.	
Activity 1.5 Develop impact matrices and mitigation measures for potential impacts		Leopold Matrix for development activities and environmental and socioeconomic consequences and mitigations is being compiled from data from the expeditions as they are completed.	
Activity 1.6 Scientific planning meetings for field research expeditions (including preparation) to cover expedition logistics.		Planning for Expeditions 1 and 2 completed. Planning for Expedition 3, 16th March – 13th April underway with establishment of new planning timeline package.	
Activity 1.7 Scientific research expeditions during calmest weather periods, establishment of permanent monitoring sites and biodiversity assessment		Expeditions 1 and 2 completed. Marine sites revisited and surveys conducted to assess change in coral and fish communities at major atolls (Salomon, Peros Banhos, Great Chagos Bank, Egmont and Diego Garcia). 17 underwater sites surveyed in 2006, 21 in 2013 and 29 underwater sites this year, of which11 also surveyed last year, and 11 surveyed in 2013 or 2014 originally surveyed in 2006. Further 11 sites new this year, included new sites on regularly visited atolls, and first visit to Blenheim (a completely submerged atoll). 15 temperature loggers at 5, 10 and 25m depths (though not always at all 3 depths at each site) and proportion of these recovered and changed each year. 11 of 12 designated/proposed IBA islands fully surveyed plus 4 other islands of ecological importance. Long term monitoring and impact	

Project summary	Measurable Indicators	Progress and Achievements April 2013 - March 2014	Actions required/planned for next period
		assessment sites /established continued on seaward and lagoon reefs, and on important islands within each atoll. **Annex 4: Chagos Scientific Expedition Report 2014.**	
Activity 1.8 Data collation, analysis, archiving and input into relevant global biodiversity monitoring systems		Data collation and analysis underway. Chagos Science Portal under development by Widman and Sheppard.	
Activity 1.9 Development of Chagos Management Plan and BAPs		First draft completed of Management Plan submitted to BIOTSection in year 1. Darwin team members contributed to BIOTs new Interim Management Plan spring this year. Full Management Plan is being developed within this Darwin project, and BAP to be incorporated later in project after all expeditions complete	
Output 2. Provision of scientific survey equipment and a permanent facility for safe and secure storage between scientific visits, thereby reducing transportation logistics and associated costs.	Purchase and installation of diving compressor, boat and engine, diving equipment, survey equipment and safety equipment accessible to visiting scientists.	Scientific, diving and safety equipment employed on expeditions. Stored in secure location in Customs House at Moody Brook on Diego Garcia, where equipment is checked against pest and environment damage on regular basis. Awaiting renovation of Moody Brook workshop for storage of 5 boats in semi-inflated state to prevent degradation. 5 boat engines, pyrotechnics (flares), chemicals and part of medical kit stored on *MV Pacific Marlin*. Deck container laboratory stored at Moody Brook between expeditions. Temporary door replacement while await new metal door.	
Activity 2.1. Organise & arrange preparation of safe scientific storage facility for/in Diego Garcia, including purchase and installation of diving air compressor, safe storage of boats and engines, and scientific monitoring equipment.	As above. Consumable items, new lifejackets and spare parts added to inventory. **Annex 5: Chagos Scientific Expeditions Equipment Inventory 2014.** Application made last year to NERC NFSD for loan of hyperbaric chamber for installation on Diego Garcia for emergency support was successful, but declined by BIOT Section over liability concerns.		
Output 3. Engagement of Chagossians in the UK, Mauritius and Seychelles in importance of biodiversity and conservation through training workshops and outreach activities.	Chagossians from all representative groups attending and taking active part in events in UK, Mauritius, Seychelles. Chagossian societies centrally involved in the organisation of the workshops and design of the activities.	Second year of Connect Chagos, more focussed more on Manchester community with activities ranging from environmental events to supporting advanced training **Annex 6 Connect Chagos Half Year Report 2013.** Scoping visit to Mauritius engaged stakeholders over developing similar activities In Mauritius **Annex 7: Mauritius Scoping Study Report April 2014.** Standard social science methodologies used, employing questionnaires to guide discussions and collect qualitative data. 40 hours spent engaging with Chagos community in Mauritius, 11 interviews conducted, 10 meetings held with potential environmental partners and 3 social focus groups. Outcomes positive. Located	

Project summary	Measurable Indicators	Progress and Achievements April 2013 - March 2014	Actions required/planned for next period
		and connected with key Chagossian community groups and individuals in Mauritius; high level of interest amongst different age groups in learning about environmental heritage; strong support for a Chagos environment training course from potential partners who were also willing to help facilitate a training course to expected quality standard. Initial research suggests that Chagossians in the Seychelles are better integrated into Seychellois society and it may be very difficult to identify a Chagossian community there. BIOT section have agreed to contribute funding towards the Chagos Connect programme for 2014/15. A further Chagos Environment Training course is planned for the UK this summer, and plans are being made for training in Mauritius.	
Activity 3.1: Planning meetings with Chagossian Societies and Associations to organise workshops and activities to maximise engagement in outreach activities, including meetings with representatives in Mauritius and Seychelles		Meetings were held with the UK Chagossian communities to evaluate the Chagos Environmental Training Course, and to plan a further year of activities in the UK. In addition, meetings were held with Chagossian societies in the UK and other organisations in order to establish connections in Mauritius and Seychelles.	
Activity 3.2: Events, activities and workshops for Chagossian communities in UK, Mauritius and Seychelles		Environmental days held for Crawley and Manchester Chagossian communities attracting 120 and 130 Chagossians to day-events respectively. Enabled Outreach Team to meet Chagossian families; engage some in further activities eg.June 2013: 5 Chagossians from Manchester visited the Horniman Museum in London to tour the aquarium and participate in coral propagation activity. Outreach Team ran drop-in sessions in Crawley library, where trainees and others interested can discuss course or further training, and CV workshop was run with youth group in Manchester. Monthly taster days focussing on particular environmental topics/skills served as both outreach exercises and introductory training (try dives; tree climbing; bird ID and pond dipping; minibeast workshop with youth group). 11 trainees from Manchester & Crawley attended **Chagos Environment Training Course** (6th July - 19th September); training addressed three themes: Marine Conservation, Terrestrial Ecology and Communication for Conservation. Awards ceremony at Manchester Museum (26th September) with project partners (ZSL, Bangor University, Pew and BIOT Section) to celebrate the graduation of **11 new Chagos Environment Ambassadors**. Following discussions with stakeholder groups in the UK to identify contacts	

Project summary	Measurable Indicators	Progress and Achievements April 2013 - March 2014	Actions required/planned for next period
		(Activity 3.1), a scoping visit was made to Mauritius by the Outreach team between 14th and 23rd March 2014.:	
Activity 3.3: Identification of Chagossian Darwin Fellows for specific training in conservation and participation in Darwin project bursary and externally funded approved training in diving, survey and practical conservation techniques		See 3.4 Following 2 rounds of interviews of 8 and then 3 shortlisted candidates, Louis Elyse from Manchester Chagossian community was selected to join the **Scientific Expedition to Chagos 2014.**	
Activity 3.4: Conservation skill training on approved courses for Darwin Fellows (x6) (3 per year 2 and 3)		Claudia Naraina, Yannick Mandarin and Cyndie Residu completed their LANTRA CS30 basics of chain saw use training with RSPB. Claudia Naraina and Cyndie Residu pursuing PADI Open Water diving qualifications. Yannick Mandarin took part in an 8-week expedition to Madagascar (Andavadoaka Marine Park) with Blue Ventures where he completed PADI Open Water diving, coral reef survey training and became involved in community projects. Pascaline Cotte successfully secured a place with Blue Ventures to join an expedition to Madagascar.	
Output 4 Increased general public awareness in UK, Diego Garcia, Mauritius and internationally of the high value of the Chagos Marine Protected Area in protecting a wide range of oceanic ecosystems for benefit of people around Indian Ocean, and as a control site against which to assess impacts of climate change.	Outreach workshop and high profile media events at Zoological Society of London, Diego Garcia (for US military) and Mauritius, to highlight our scientific understanding of the importance of the Chagos, and objectives of conservation. Activities aimed at different age groups. Development of online educational materials and exhibits and use of social media.	This Darwin Initiative Project continues to work closely with Chagos Conservation Trust, Pew Environment Group (UK) and ZSL on increasing public awareness of Chagos Archipelago and Marine Protected Area. Outputs delivered through annual conference on Chagos, talks at national and international conferences and workshops, zoo exhibit, dissemination of films, scientific blogs and contributions to DI and CCT Newsletters. A conference in December 2014 is planned and end of project workshop in 2015.An expedition place was given to BBC this year for research of Chagos material for new Series' Oceans'.	
Activity 4.1: Planning meetings to organise a variety of public outreach and media events and materials in UK, Diego Garcia and in Mauritius (inc .preparation)		Topics discussed by PIs during regular meetings, skype conversations and e mails. ZSL had meeting with BIOT Section 7th May to plan further Outreach programme.	
Activity 4.2: Events in UK (inc preparation)		A conference titled **Chagos 20/20** was hosted by the Chagos Conservation Trust with the support of the Pew Charitable Trusts, The Zoological Society of London and the Darwin Initiative on 18th November 2013. The presentations examined 20 years of research, with reports from the 2013 Scientific Expedition and a forward look. The programme covered outputs from Darwin scientific expedition	

Project summary	Measurable Indicators	Progress and Achievements April 2013 - March 2014	Actions required/planned for next period
		2013) (http://chagos-trust.org/sites/default/files/images/ProgrammeV2.pdf):**Prof Charles Sheppard** (University of Warwick Co-PI Darwin & 2013 scientific expedition): Twenty years on – Science progress and why Chagos is the world's largest no take marine reserve: https://www.youtube.com/watch?v=VnLl3YMDodk ; **Peter Carr** (University of Warwick & 2013 scientific expedition): Factors affecting the increase of Red-footed booby in Chagos; Dr Jeanne Mortimer: (Seychelles & Darwin Turtle project): The turtle tracking programme in Chagos; Films by **Jon Slayer** from 2013 scientific expedition: (1) Protecting a unique environment in the Indian Ocean (https://vimeo.com/77250118); (2) British Indian Ocean Territory Marine Protected Area BIOT science Part 1 (http://vimeo.com/71374932); (3) British Indian Ocean Territory Marine Protected Area BIOT science Part 2 (http://vimeo.com/72064338); Alistair Gammell (Pew Charitable Trusts): The campaign for the Chagos marine reserve. https://www.youtube.com/watch?v=-XnbLviPQlo; **Dr Daniel Wagner** (NOAA, Papahanaumokuakea Marine National Monument, USA & 2013 expedition): Black corals (Cnidaria, Antipatharia) from the Chagos Archipelago; Matt Gollock (ZSL & November 2012 non-Darwin scientific expedition): Pelagic fish monitoring; Nigel Wenban Smith & Dr Marina Carter: Environmental history of BIOT in plantation days; **Audrey Blancart and Rudy Pothin** (ZSL): The continuing outreach programme; **Dr John Turner** (Bangor University, PI Darwin project, and 2013 scientific expedition): The Darwin Initiative Project; Long term monitoring of coral reefs in Chagos; and a forward look. https://www.youtube.com/watch?v=uiVnlWSETrE; Film by Blue Marine Foundation and the Bertarelli Foundation: Chagos, Fragments of Paradise.	
Activity 4.3: Diego Garcia Event (including preparation)		Planned for pre or post 2015 Scientific Expedition while on Diego Garcia	
Activity 4.4: Event in Mauritius (including .preparation)		The FCO has advised against specific activities in Mauritius and Seychelles during the UNCLOS tribunal brought by Mauritius.	
Activity 4.5: Presentation of results at scientific conferences (RCUK, ESRS,ICCM, ISRS)/papers		Professor Charles Sheppard and Anne Sheppard attended Big Ocean Network meeting of the 7 largest marine reserves, in conjunction with the Third International Marine Protected Areas Congress (IMPAC3) Marseilles, France 21-27 October, 2013 to consider historical challenges and progress of large-scale MPAs, and developing practical guidance for managing large-scale MPAs. Big Ocean participated in a plenary debate at IMPAC3 that discussed whether size matters in marine conservation. Dr John Turner presented a lecture on the Darwin Initiative Project to Strengthen the World's Largest Marine Protected Area and Long term monitoring of coral	

Project summary	Measurable Indicators	Progress and Achievements April 2013 - March 2014	Actions required/planned for next period
		reefs in Chagos, at Reef Conservation UK on 7th December 2013 at the Zoological Society of London. Dr Heather Koldewey and Charles Sheppard talked at CCTs 20th Anniversary 7th October 2013: https://www.youtube.com/watch?v=obPYgP0QyVA http://chagos-trust.org/media-gallery/detail/2/804. http://chagos-trust.org/sites/default/files/images/Chagos%20science%20and%20CCT%20plans.pdf Prof Charles Sheppard and Dr Heather Koldewey made presentations on the biodiversity of Chagos and the 2014 expedition respectively at a Chagos Conservation Trust event to mark the opening of a Chagos marine life exhibit at the London Zoo aquarium on 4th June 2014. http://chagos-trust.org/media-gallery/detail/2/41 The project will feature in both a plenary presentation by Dr Heather Koldewey and a symposium talk by Dr John Turner at the Society for Conservation Biology International Marine Conservation Congress to be held in Glasgow 14-18 August 2014. Drs Turner, Koldewey, Professor Charles Sheppard, David Curnick and Jon Slayer attended a workshop on Monitoring Megafuana in the Chagos Reserve hosted by the Bertarelli Foundation and Zoological Society of London at the Bertarelli Campus in Geneva between 11th and 13th of October 2013. Charles Sheppard and John Turner gave presentations on the Darwin work.	
Activity 4.6Project final Chagos MPA workshop UK (inc .preparation)		This is scheduled for end of project in 2015.	
Activity XX: Darwin half yearly interim and annual reports		This report submitted being submitted late as forewarned due to return from Chagos Scientific Expedition in mid April and necessity to submit and collate expenditure and scientific reports arising from expedition	

Annex 2 Project's full current logframe

LOGICAL FRAMEWORK

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Goal: Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources.			
Sub-Goal: To ensure that the Chagos MPA justifies its full no-take status, particularly considering ever increasing fishing pressure in the region and that it fulfils its role as a unique scientific reference site for marine biodiversity.	Acceptance of the Ocean Legacy Large Marine Protected Area by stakeholders on the basis of scientific knowledge, underpinning the need for strict conservation. Assessment of effects of climate change in the absence of local anthropogenic impacts.	Agreement on marine protected area management initiatives which will include no marine resource extraction or habitat modification in the MPA. Establishment of monitoring protocols that are sustainable long term, and centralised accessible data basing.	
Purpose To strengthen the Chagos Marine Protected Area by providing scientific knowledge for effective management and to develop a strategy that engages the support of potential stakeholders through outreach, education and engagement. The legacy will be sound management and increased value of what is currently the world's largest Marine Protected Area and a unique and globally important	Engagement of Mauritian scientists in scientific data acquisition for monitoring, island ecosystem restoration and impact mitigation. Active involvement of all Chagossian groups in workshops and training initiatives in UK, Mauritius and Seychelles.	Extend exploration of ecosystems, including awash atolls, Great Chagos Bank lagoon, and islands. Incorporation of scientific knowledge into management plans & global data bases (flora & fauna mapping, ecosystem restoration, anchoring zones, environmental impact assessment).	Mauritian scientists will collaborate with UK scientists (we have worked together on previous projects) to provide scientific knowledge to underpin conservation. BIOT Administration will support development of ecosystem approach and integrated management of MPA based on scientific evidence and resulting recommendations, and implement the management plans.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
reference site.	Increased public awareness of the importance of the Chagos MPA, in the UK, Mauritius and Seychelles	Publication of collaborative scientific reports, and papers in international conservation journals. Lists of Chagossian participants in workshops on the conservation of marine resources and documentation of relevant skills attained eg. PADI dive certification. Lists of individuals and organisations attending workshop events. Numbers of news items and articles in various local, national & international media.	BIOT Administration to resource active enforcement of the MPA long term. Chagossians to be united in their further support for the MPA, primarily by recognising that it does not affect their right to return.
Outputs 1. To continue established baselines and develop a more comprehensive approach to long term marine and island ecosystem monitoring against which change can be assessed, and develop an understanding to assess the magnitude and significance of potential impacts from several scenarios, including climate change, island ecosystem restoration and possible human resettlement. The Chagos/BIOT Management Plan will include BAPs and identify how CBD/CMS/CITES strategic goals and AICHI	Measures of flora and fauna mapping; reef resiliency, functional diversity and response diversity; and assessments of island erosion and accretion. Development of impact matrices and mitigation measures for potential impacts. Development of restoration initiatives for island flora and fauna.	Permanent transects and monitoring sites established on representative islands, reefs, and atolls. Archived biodiversity data, including underwater video image records, and enhancement of current GIS database as a central resource. Incorporation of data sets into relevant global biodiversity monitoring systems. A management plan incorporating BAPs, and where potential impacts identified and understood,	BIOT will permit regular scientific survey expeditions over the next 3 years. US Air Force flights from Singapore to Diego Garcia will continue to carry visiting scientists. No change in patrol needs that would compromise the agreed in-kind access to the BIOT patrol vessel. Destabilisation in Middle East or Central Asian regions involving activation of Diego Garcia military facility could delay

Project summary	Measurable Indicators	Means of verification	Important Assumptions
targets will be addressed.		their significance and magnitude assessed, and methods for their mitigation verified through feedback monitoring & adaptive management.	scientific visits.
2. Provision of scientific survey equipment and a permanent facility for safe and secure storage between scientific visits, thereby reducing transportation logistics and associated costs.	Purchase and installation of diving compressor, boat and engine, diving equipment, survey equipment and safety equipment accessible to visiting scientists.	Scientific equipment available to scientists for series of visits over the next 3 years and beyond.	Space will be allocated in a dry building adjacent to harbour/marina by US Naval support facility/BIOT Administration.
3. Engagement of Chagossians in the UK, Mauritius and Seychelles in importance of biodiversity and conservation through training workshops and outreach activities.	Chagossians from all representative groups attending and taking active part in events in UK, Mauritius, Seychelles. Chagossian societies centrally involved in the organisation of the workshops and design of the activities.	Interest and engagement of Chagossians – list of participants and workshop evaluation forms. Individuals identified and selected for further externally funded initiatives (eg diving and underwater survey training, practical conservation techniques).	Assumes the continued and genuine involvement of Chagossians. Assumes external interest and sponsorship for Chagossian training initiatives, such as that previously provided by RSPB and Coral Cay Conservation.
4. Increased general public awareness in UK, Diego Garcia, Mauritius and internationally of the high value of the Chagos Marine Protected Area in protecting a wide range of oceanic ecosystems for benefit of people around Indian Ocean, and as a control site against which to assess impacts of climate change	Outreach workshop and high profile media events at Zoological Society of London, Diego Garcia (for US military) and Mauritius, to highlight our scientific understanding of the importance of the Chagos, and objectives of conservation. Activities aimed at different age groups. Development of online educational materials and exhibits and use of social media.	Interest and engagement of general public at local, national and international levels; Workshop participant lists; positive media output – number of articles, types of media; number of visitors to exhibit and results of formal evaluation. Number of Facebook 'likes', number of followers on Twitter, number of visitors to web-pages, number of downloads of web-resource materials.	Media in UK accomplish the planned documentary programmes, encouraging a rational approach to conservation in Chagos.

Activities (details in workplan)

1.1	Steering Group Meetings to establish Darwin Project and to monitor progress and delivery (inc. preparation)
1.2	Meetings with BIOT section FCO and BIOT Science Advisory Group (inc. Preparation) for monitoring and evaluation.
1.3	Develop protocols for environmental survey baseline and monitoring sites, including resiliency and functional diversity/response diversity measures, Establishment of GIS and data archiving
1.4	Develop restoration initiatives for island flora and fauna, erosion and accretion assessment.
1.5	Develop impact matrices and mitigation measures for potential impacts
1.6	Scientific planning meetings for field research expeditions (inc. preparation) to cover expedition logistics.
1.7	Scientific research expeditions (3 x 1 month) during calmest weather periods, establishment of permanent monitoring sites and biodiversity assessment
1.8	Data collation, analysis, archiving and input into relevant global biodiversity monitoring systems
1.9	Development of Chagos/BIOT Management Plan incorporating BAPs and Impact mitigation recommendations
2.1	Organise & arrange preparation of safe scientific storage facility for/in Diego Garcia, including purchase and installation of diving air compressor, safe storage of boats and engines, and scientific monitoring equipment.
3.1	Planning meetings with Chagossian Societies and Associations to organise workshops and activities to maximise engagement in outreach activities, including meetings with representatives in Mauritius and Seychelles
3.2	Events, activities and workshops for Chagossian communities in UK, Mauritius and Seychelles
3.3	Identification of Chagossian Darwin Fellows for specific training in conservation , and participation in Darwin project bursary and externally funded approved training in diving, survey and practical conservation techniques
3.4	Conservation skill training on approved courses for Darwin Fellows (x 6)
4.1	Planning meetings to organise a variety of public outreach and media events with supporting materials in UK, Diego Garcia and in Mauritius (inc .preparation)
4.2	Events in UK (inc preparation)
4.3	Diego Garcia Event (inc .preparation)
4.4	Event in Mauritius (inc .preparation)
4.5	Presentation of results at national and international scientific conferences (RCUK, ESRS, ICCM, ISRS) and publication in peer reviewed journals
4.6	Project final Chagos MPA workshop UK (inc .preparation)
X.X	Darwin half yearly interim and annual/final report (s)

	Activity	No of	Year 1 2012/13				Year 2 2013/14				Year 3 2014/15			
		Months	Q1 A-J	Q2 J-S	Q3 O-D	Q4 J-M	Q1 A-J	Q2 J-S	Q3 O-D	Q4 J-M	Q1 A-J	Q2 J-S	Q3 O-D	Q4 J-M
1.1	Steering Group Meeting s to establish Darwin Project and to monitor progress and delivery (inc. preparation)	1	▪		▪		▪		▪		▪			▪
1.2	Meetings with BIOT section FCO and BIOT Science Advisory Group (inc. Preparation)	0.5	▪			▪				▪				
1.3	Develop protocols for environmental survey baseline and monitoring sites, including resiliency and functional diversity/response diversity measures, Establishment of GIS and data archiving	6	▪	▪	▪									
1.4	Develop restoration initiatives for island flora and fauna, erosion and accretion assessment.	4	▪	▪	▪									
1.5	Develop impact matrices and mitigation measures for potential impacts	1		▪	▪									
1.6	Scientific planning meetings for field research expeditions (inc preparation) to cover expedition logistics.	3		▪				▪		▪				
1.7	Scientific research expeditions during calmest weather periods, establishment of permanent monitoring sites and biodiversity assessment	3				▪				▪				▪
1.8	Data collation, analysis, archiving and input into relevant global biodiversity monitoring systems	15					▪	▪			▪	▪		▪
1.9	Development of Chagos Management Plan and BAPs	18							▪	▪	▪	▪	▪	▪
2.1	Organise & arrange preparation of safe scientific storage facility for/in Diego Garcia, including purchase and installation of diving air compressor, safe storage of boats and engines, and scientific monitoring equipment.	6	▪	▪	▪						▪			▪
3.1	Planning meetings with Chagossian Societies and Associations to organise workshops and activities to maximise engagement in outreach activities, including meeting s with representatives in Mauritius and Seychelles	1	▪	▪										
3.2	Events, activities and workshops for Chagossian communities in UK, Mauritius and Seychelles	3			▪		▪		▪		▪		▪	
3.3	Identification of Chagossian Darwin Fellows for specific training in conservation , and participation in Darwin project bursary and externally funded approved training in diving, survey and practical conservation techniques	0.5			▪									
3.4	Conservation skill training on approved courses for Darwin Fellows (x6)	6					▪	▪			▪	▪		
4.1	Planning meetings to organise a variety of public outreach and media events and materials in UK, Diego Garcia and in Mauritius (inc .preparation)	1			▪									
4.2	Events in UK (inc preparation)	3				▪	▪		▪				▪	
4.3	Diego Garcia Event (inc .preparation)	0.5								▪				▪
4.4	Event in Mauritius (inc .preparation)	1					▪							
4.5	Presentation of results at scientific conferences (RCUK, ESRS,ICCM, ISRS)/papers	6		▪	▪		▪	▪	▪		▪		▪	
4.6	Project final Chagos MPA workshop UK (inc .preparation)	3												▪ ->

X.X	Darwin half yearly interim and annual reports	2			▪		▪		▪		▪		▪	▪

Annex 3 Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for reporting period	Total planned during the project
1A,B	PhD		1			1	1	2
2	MSc project work	1	2			3	2	4
3	Darwin Bursary	0	3			3	3	6
4A	Input into Undergraduate courses	240	250			490	250	790
4B	UG Training weeks	2	2			4	2	6
4C	Input into Postgraduate courses	18	25			43	25	60
4D	PG training weeks	2	2			4	2	6
5	Chagossian Environment Training Course	12	11			23	11	30
6A	Chagossian public events	600	250			850	?	?
6B	Training weeks	6	6			12	6	18
7	Training materials (for modules)	3	3			6	3	9
8	Person weeks in host country	46	48			94	48	150
9	Management Plans	1	1			2	1	2
11A	Papers published	1	2			3	2	5
11B	Papers submitted		2			2	2	6
12b	GIS/Video/Photo archive	3	3			6	3	9
13A	Species ref collections established (sponges, black corals, macroalgae, cryptofuana cruistacea	4	3			7	3	8
13B	Species ref collections enhanced (fish)	1	1			2	1	2
14A	Conferences/Workshops organised	1	1			2	1	4
14B	Conferences attended	3	3			6	3	9
15A	Press releases Mauritius	0	0			0		3
15B	Local press Mauritius	1	0			1		3
15 C	National Press release UK	0				0	0	20
15D	Local Press release UK	3	0			3	0	5
16A	Newsletters	4	6			10	6	15
16B	Circulation							300-500

17A	Dissemination networks established	2	0			2	0	2
17B	Dissemination networks extended	2	2			2	2	2
18B	Local TV programmes	0	0				0	2
18D	TV features	0	0				0	2
19B	National Radio UK	0	1			1	1	4
19D	Local Radio UK	0	0				0	3
20	Physical assets	£25k	£5k			£30k	£5k	£30k
21	No. Facilities – scientific storage/container lab	2	1			2	1	2
22	No. Permanent field plots	26	40			40	14	50
23	Value of resources raised from additional sources	556,605						554,553
Other Measures Awards			1			1		1

Table 2 Publications

Type (eg journals, manual, CDs)	**Detail** (title, author, year)	**Publishers** (name, city)	**Available from** (eg contact address, website)	**Cost £**
Journal paper	Ateweberhan et al 2013. Climate change impacts on coral reefs:synergies with local effects, possibilities for acclimation and management implications	*Marine Pollution Bulletin* 74 (2) 526-539.	http://www.stateoftheocean.org/pdfs/Ateweberhan-et-al-2013.pdf	free
Journal paper	Pratchett et al. 2013. Background mortality rates for recovering populations of *Acropora cytherea* in the Chagos Archipelag	*Marine Environmental Research* 86: 29-34.	http://www.coralcoe.org.au/tag/pratchett	free

	o, central Indian Ocean.			
Film	Slayer, J 2013 Protecting a unique environment in the Indian Ocean	BIOT	https://vimeo.com/77250118	free
Film	Slayer, J. 2013 British Indian Ocean Territory Marine Protected Area BIOT science Part 1	BIOT	http://vimeo.com/71374932	free
Film	Slayer, J. British Indian Ocean Territory Marine Protected Area BIOT science Part 2	BIOT	http://vimeo.com/72064338	free
150 Video clips of Chagos marine life	Slayer, J 2013	Darwin	Darwin Chagos Underwater: 50 video clips: https://www.youtube.com/playlist?list=PLgYJmUc38e11ab4qjcUaFX-W6EK6WNpNk Darwin Chagos Islands: 47 video clips https://www.youtube.com/playlist?list=PLgYJmUc38e12Xn-2vFBtagfxqJCoX2AfA Darwin Chagos Science in Action: 25 video clips https://www.youtube.com/playlist?list=PLgYJmUc38e10jsi64HO90PM4FVVlaahJb Darwin Chagos Birds: 28 video clips https://www.youtube.com/playlist?list=PLgYJmUc38e119L5AHN9q7li8HB4uYUAcZ	free
2014 Scientific Expedition blog	Slayer,J (ed). 2014	CCT	http://chagos-trust.org/2014-biot-expedition	free
The CCT USA Scholars blog 2014 Scientific Expedition	Fenner, D. 2014	CCT USA	http://cctus.org/conservation-science/2014-expedition-scholar/2014-expedition-scholar-douglas-fenner-ph-d/2014-expedition-scholar-blog/	free
Chagos Scientific Expedition Report 2014	Koldewey, H (ed) 2014	CCT	Will appear here in due course: http://chagos-trust.org/resources/documents	free
Lecture	Sheppard CRC 2013	CCT	https://www.youtube.com/watch?v=VnLl3YMDodk	free

	Twenty years on – Science progress and why Chagos is the world's largest no take marine reserve			
Lecture	Turner JR 2013 The Darwin Initiative Project; Long term monitoring of coral reefs in Chagos; and a forward look	CCT	https://www.youtube.com/watch?v=uiVnlWSETrE,	free
Talk	Sheppard 2013	CCT	https://www.youtube.com/watch?v=UYB7WQ7vE8E	free
Talk	Koldewey 2013	CCT	https://www.youtube.com/watch?v=obPYgP0QyVA	free
News	Various	Darwin Newsletter	http://www.darwininitiative.org.uk/assets/uploads/2014/05/Darwin-Initiative-Newsletter-June-2014-Final1.pdf. http://www.darwininitiative.org.uk/assets/uploads/2014/05/Darwin-Newsletter-Issue-24-Oct-2013.pdf. http://www.darwininitiative.org.uk/assets/uploads/2014/05/Darwin-Newsletter-Issue-23-July-2013.pdf.	free
News	Various	Chagos News	http://chagos-trust.org/sites/default/files/images/Chagos_News_43.pdf. http://chagos-trust.org/sites/default/files/images/Chagos_News_42.pdf http://chagos-trust.org/sites/default/files/images/Chagos%20News%2041%20-%20Jan%202013.pdf	free

Annex 4 Onwards – supplementary material (optional but encouraged as evidence of project achievement)

Relevant material has been linked to this report where first introduced.

Separate files attached to this report are::

Annex 4: Chagos Scientific Expedition Report 2014

Annex 5: Scientific Expedition Equipment Inventory 2014

Annex 6: Connect Chagos Half Year Report 2013

Annex 7: Mauritius Scoping Study Report April 2014

Checklist for submission

	Check
Is the report less than 10MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	Yes
Is your report more than 10MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	No
Have you included means of verification? You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Yes
Do you have hard copies of material you want to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number.	No
Have you involved your partners in preparation of the report and named the main contributors	Yes
Have you completed the Project Expenditure table fully?	Yes
Do not include claim forms or other communications with this report.	