# *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 2012**

## 1. Darwin Project Information

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| Project Reference | 18-016 |
| Project Title | Darwin Initiative to Enhance an Established Marine Protected Area System |
| Host Country/ies | Cayman Islands |
| UK contract holder institution | Bangor University, Wales (School of Ocean Sciences) SOS |
| Host country partner institutions | Cayman Islands Government (Department of Environment) (DOE) |
| Other partner institutions | The Nature Conservancy, USA (TNC) |
| Darwin Grant Value | £273,914 |
| Start/end dates of project | April 2010 – March 2013 |
| Reporting period (eg Apr 2010 – Mar 2011) and number (eg Annual Report 1, 2, 3) | 1ST April 2011 to 31st March 2012<br>Annual report No. 2 |
| Project Leader name | Dr. John Turner, Bangor University |
| Project website | http://www.doe.ky/marine/25-years-of-marine-parks/ |
| Report authors, main contributors and date | John Turner and Laura Richardson 30th April 2012 |

## 2. Project Background

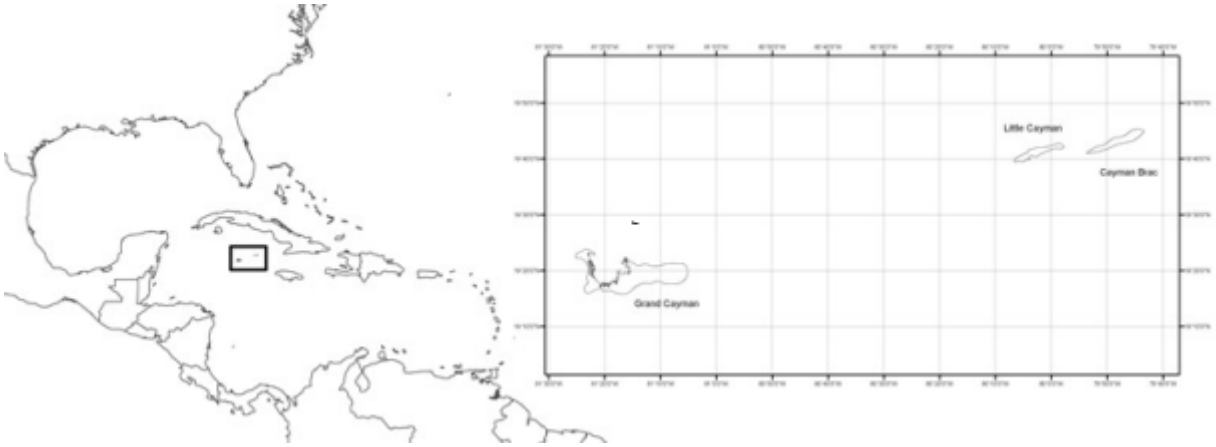


**Figure 1 The Cayman Islands of Grand Cayman, Little Cayman and Cayman Brac and their position in the Caribbean.**

### The Cayman Islands

The Cayman Islands are a UK Overseas Territory located centrally in the Caribbean (Grand Cayman 19° 20′ 0″ N, 81° 13′ 0″ W; Little Cayman 19° 41′ 0″ N, 80° 02′ 0″ W; Cayman Brac 19° 43′ 0″ N, 79° 48′ 0″ W; Fig. 1), with strong financial and tourism sectors, and negligible industry, run off or agricultural impact. The islands present a rich marine environment, seemingly benefiting from 25 years of world-class *in situ* conservation through the active enforcement of zoned Marine Protected Areas (MPAs).

## Key issues addressed

The islands are subject to hurricanes, and coastal protection is paramount to island security, for 90% of the population live within one mile of the coast. Climate change impacts including increased storm frequency, coral bleaching, sea level rise and ocean acidification, combined with increased tourism, coastal developments, and a growing artisanal/recreational fishery are impacting coral reefs and associated ecosystems. There is an urgent need to review the MPAs, to ensure that the system maintains the capacity of the reefs to recover from major damage, and to protect reef associated ecosystems such as pelagic ecosystems, seagrass and mangroves, seabirds, reptiles and mammals, and thereby to address Cayman's obligations under CBD.

## Background

Strict Marine Reserves were established in 1986 under the Cayman Islands Marine Conservation Laws of 1978, with Marine Park Zones primarily to control recreational diving, anchoring and fishing close to the major resorts. These zones were complemented by No Diving Zones, and Grouper Spawning Areas, and additional zones have been added in response to specific issues; Wildlife Interaction Zones (swimming with stingrays) and Replenishment Zones (for lobster and conch). Closed seasons and catch limits operate for lobster, conch and whelks, and fishing and other activities require permits. MPAs currently cover 16.7% of the shelf of the Cayman Islands.

The resident human population and visitors have increased significantly since MPA establishment (by 150% and 425% respectively) and half of visitors dive on the reefs. Recent changes in building legislation are resulting in redevelopment with taller buildings and larger footprints fronting the Marine Park. Further, in the wider Caribbean, disease induced mortality of the keystone grazing urchin *Diadema*, and the near complete die-off of Elkhorn and Staghorn coral have also affected Caymanian reefs. Widespread overfishing, especially of herbivores; reduction in water quality from land based pollution; and coral bleaching, have accelerated degradation, resulting in reefs phase shifting from coral to an algal dominated state.

In the context of these local development and regional changes, and increasing risk from climate change impact, the Cayman Islands Government acknowledges that a review of the MPA system is urgently necessary, to assess whether MPAs are optimal in area, appropriately located, and provide maximum resilience. To date, the Government Department of Environment (DOE) has diligently maintained and monitored the MPAs, and, despite identifying the urgent need to review the system to address development and climate change, has insufficient resources to scientifically assess their effectiveness to make an informed case for their expansion. The project seeks to create an enhanced MPA system that would demonstrate globally what far-sighted *in situ* conservation can achieve in building resilience back into ecosystems.

This current project builds on the results of Darwin Project 14-051: *In Ivan's Wake - Darwin Initiative BAP for the Cayman Islands*, Government of Cayman Islands and University of Exeter in Cornwall. Species specific plans are documented in the Darwin Initiative National Biodiversity Action Plan developed under this previous Darwin Project (Ref. 14-051).

## Project aims

1. **To assess the current level of reef resilience within and outside all marine protected areas of Grand Cayman, Little Cayman and Cayman Brac;**
2. **To examine representativeness and variation by utilising mapped reef and associated ecosystem habitats;**
3. **To assess overspill of fish biomass from all No-Take zones;**
4. **To quantify the impact of the artisanal/recreational fishery;**
5. **To use the data from 1-4 to plan and promote an extension to the MPA system with full public consultation and involvement from stakeholders (represented by the Marine Conservation Board/Watersports Association/District Communities).**

Objectives 1, 3 and 4 are being/have been completed by the DOE in partnership with Bangor University (School of Ocean Sciences; SOS). The methodology involves coral reef (Annex, abstract 1) and fish surveys (Annex 3, abstract 2) developed by McCoy & Turner between 2007-2009, and socioeconomic survey methodologies first tested by an SOS team in 2009 (annex 3, abstract 3). Objective 2 has used habitat maps from Darwin 14051, & TNC's Ecological Gap Analysis and Protected Area GIS Tools (Annex 3, Abstract 4). Objective 5 is being led by DOE senior staff (supported by SOS/TNC) since local leadership and government representation are required.

## 3. Project Partnerships

*The Partners*

This project builds on collaborative pilot studies undertaken the Cayman Islands Government Department of Environment (DOE) and Bangor University (SOS) and a PhD study (McCoy, DOE) on monitoring Caymanian coral reefs in MPAs. It also builds on a developing relationship between DOE and The Nature Conservancy (TNC) *Caribbean Challenge*.

The core project team is comprised of John Turner (Project Leader, Bangor University), Gina Ebanks-Petrie (Director of main Project Partner and Host-country Co-ordinator, DOE, Cayman Islands Government), Croy McCoy (Darwin Fellow, DOE), and James Byrne (Regional Partner, TNC, USA). The roles and responsibilities of each collaborating partner are:

- School of Ocean Sciences, Bangor University, UK (Lead UK institution)

  This is a research led university school providing academic input in survey design and analysis, marine field research, project co-leadership, financial management, monitoring and evaluation and research publication in high impact international scientific journals. The School has developed a working relationship with the Cayman Island Government Department of the Environment (DOE), and this Darwin project has arisen out of active research collaboration on monitoring coral reefs in the Marine Protected Area system. The Project is co-led from Bangor (Turner). Laura Richardson has been employed by Bangor University as a full-time Darwin Research Fellow in the Department of the Environment, Cayman Islands for 2011-2013. Additionally, Turner provides PhD supervision for a member of DOE (McCoy) and leads an international postgraduate Masters course in Marine Environmental Protection providing training and UK M.Sc. project students to collaborate with DOE and assist in field research.

- Cayman Islands Government Department of Environment (Lead Host-country Partner)
  The Department of the Environment (DOE) is under the Cayman Islands Ministry for Tourism, Environment, Investment and Commerce (TEIC). The DOE is the main Government agency responsible for the management and conservation of the environment and natural resources and plays a key role in liaising with government and major stakeholder groups represented by the Marine Conservation Board, Watersports Association and district communities. DOE works to facilitate responsible management and sustainable use of the natural environment and resources of the Cayman Islands through various environmental protection and conservation programmes and strategies. DOE manages the marine protected area system across all three islands and provides field operational capacity for research and enforcement: 13 staff in research and assessment staff (10 marine); 15 staff in enforcement and operations (10 Conservation/Marine Enforcement Officers); 3 administrative staff; and operates 14 boats and 1 enforcement jet ski, with 1 of these a dedicated research boat and 6 enforcement boats and the rest with multiple use. DOE has the institutional and legal structure to implement the project in the field, but does not have the financial resources and research focus to undertake a scientific assessment of the current MPA system and enhancement planning initiative, while maintaining existing programmes of necessary monitoring and enforcement. However, it is important that DOE lead the stakeholder consultation and district community consultation. The project involves 10 DOE staff on 10-100% time, of which 3 staff (Darwin Research Officer Fellows) > 50% time: McCoy 100%, Chin 75% and Gibb 50%). The Director (Ebanks-Petrie) co-leads the project.

- The Nature Conservancy, USA (Project Partner)

  The Nature Conservancy is the leading US conservation organization working around the world to protect ecologically important lands and waters for nature and people. Its *Caribbean Challenge* Program will result in a wholesale transformation of countries' national park systems and will nearly triple the amount of marine and coastal habitat currently under protection, setting aside almost 21 million acres of coral reefs, mangroves, sea grass beds and other important habitat for sea turtles, whales, sharks and other wildlife. Cayman is shortly to join other countries and territories in the *Caribbean Challenge*. TNC will continue to have a major role post Darwin project. The three core components of the Challenge include:

  1. creating networks of marine protected areas expanding across 21 million acres of territorial coasts and waters;
  2. establishing protected area trust funds to generate permanent, dedicated and sustainable funding sources for the effective management, expansion and scientific monitoring of all parks and protected areas;
  3. developing national level demonstrations projects for climate change adaptation.

  Through collaboration with the UK Darwin Initiative, TNC has this year developed a Cayman specific *Ecological Gap Analysis* (http://www.cbd.int/protected/gap.shtml), and has developed habitat mapping data to examine the goals and constraints of an extended marine protected area using *Marxan* conservation planning software (University of Queensland http://www.uq.edu.au/marxan/) and specifically, the *Marzone* tool (http://gg.usm.edu/pat/). TNC first began working with DOE in July 2008 with an initial visit by James Byrne (TNC Marine Science Program Manager), followed up with a weeklong *Marxan* training in February 2009 by Steve Schill (TNC Principal Mapping Scientist and Senior Scientist) focusing on mapping risks and potential protected areas for terrestrial systems. Since the start of the project, Schill's involvement with the Darwin project has developed and he is now principally responsible for DOE *Marxan* training and the application of the software for *Ecological Gap Analysis* and conservation planning, working closely with Jeremy Olynik.

*Partnership interactions*

There have been no major changes to the management structure of the project during this second year reporting period.

The core team are in regular contact via email or Skype and also work closely on the ground. Communications between John Turner in the UK and those based in the Cayman Islands (most regularly McCoy and Richardson) are largely by bi-weekly and sometimes daily email or Skype instant messenger. Communications between project staff in the Cayman Islands are generally by regular emails or face-to-face meetings. Research project progress meetings are held monthly at DOE, which do not include John Turner but do include all research management personnel from DOE, including Phil Bush, Secretary of the Cayman Islands Marine Conservation Board (major stakeholder representation). These meetings discuss progress of all current projects (in addition to this Darwin project). John Turner visited DOE, Cayman Islands in June and September 2011 to attend management meetings and to discuss project progress. He has a further 3 visits scheduled for the next year/reporting period (July, September 2012 and January 2013).

Support provided to the project by the partnership between DOE and regional partner TNC has been strong and well developed throughout the project. James Byrne visited the Cayman Islands for management meetings in November/December 2011, and remains in contact with key project staff. Steve Schill's enhanced role in the project since October 2010 (Q2) has facilitated 2 visits to DOE to conduct training sessions with DOE staff (Jeremy Olynik GIS Officer DOE) and builds on an existing working relationship with DOE. DOE project staff Tim Austin and Croy McCoy attended and participated in the TNC International Reef Resilience Practitioners Workshop (Reef Resilience Workshop 2), part of the REEF RESILIENCE

CONFERENCE 2011 (Florida Reef Resilience Program) on the 18th and 19th of October 2011 where they gave a 10 minute presentation with Q+A on the Darwin project.

Two Bangor students successfully completed Distinction grade M.Sc. research project studies within the project structure:

(1) Katie Hillyer: Influence of Marine Protected Areas on Resilience to Bleaching, Disease and Compromised Health in Scleractinian and Milleporid Corals, the Cayman Islands, Caribbean. *M.Sc. thesis, University of Bangor*. 91p. (Annex 3, Abstract 7).

(2) Elayne Looker: Assessing the Effect of Marine Protected Areas on Coral Recruitment, a Measure of Reef Resiliency, in the Cayman Islands, Caribbean. *M.Sc. Thesis, University of Bangor.* 143p. (Annex 3, Abstract 8).

This year, Dr. Neal Haddaway (Bangor University, UK) visited DOE for 10 days in January 2012 to provide an introductory training workshop for DOE scientists in the statistical programme, ***R***, and its application to marine environmental survey and monitoring. Gary Murphy (ex. Bangor University M.Sc., now working at Manchester Metropolitan and Exeter Universities) provided field support for the fish biomass surveys between January and April 2012; and Elayne Looker (ex. Bangor University M.Sc.), assisted with training Paul Chin of DOE in video transect analysis using the Coral Point image analysis program in December 2011, and February-April 2012.

In the first year of the project OTEP (Overseas Territories Environment Programme) and JNCC (Joint Nature Conservation Committee) funded a lionfish density estimation initiative, managed by DOE to begin an investigation into the new and serious threat of the invasive lionfish to the resilience of marine systems in the Cayman Islands. Fieldwork efforts (Laura Richardson field support) were facilitated by concurrent Darwin project field work for assessing fish biomass for project year 1 and this work has been built upon this year with additional collaborative studies funded by a small grant from HM Governor's Office, Cayman Islands. Dr. Allison Candelmo (The SFS Center for Marine Resource Studies, *Turks and Caicos* Islands) assisted with assessing lionfish diets by means of stomach contents analysis as a DOE intern during January and February 2012. Similarly, Elayne Looker assisted with follow-up density estimations in 2012, again, both facilitated by concurrent Darwin fieldwork.

Three further Bangor University M.Sc. students are due to undertake projects on reef resilience aspects during the forthcoming project year 3 in June-July 2012. These will be specifically on the extent and distribution of *Aspergillus* virus on gorgonians (Joseph Marlow), and further investigation into the threat of the invasive lionfish will consider their abundance and distribution in relation to local culling efforts and changes in habitats (Ciara McCarten and Louisa Higby).

A new collaborative research component is currently being discussed (at the end of this reporting year) with Dr Nicola Foster of Plymouth University (previously a Bangor BSc and MSc), to investigate hard coral connectivity between islands, deep and shallow reefs & protected and unprotected sites. The activity considers collecting 630 biopsies of coral tissue from 1, 2 or 3 species of coral from the shallow reef terrace (approx. 30-40ft) from 3 sites on Grand Cayman and 2 each on Cayman Brac and Little Cayman.

Therefore, at the end of the second year, the partnerships continue to be demonstrably strong. The partnership builds on an existing collaboration between SOS Bangor and DOE (since 2004) monitoring Caymanian coral reefs in MPAs, and has been strengthened further in this second year of the project, facilitated by weekly (sometimes daily) communications (email, Skype) between Turner, McCoy and Richardson, and 16 person months of UK personnel time in the Cayman Islands during this reporting period.

*The DOE is the CBD/CMS/CITES focal point for the Cayman Islands.*

DOE has to date maintained and monitored the MPAs most effectively, but this Darwin partnership is providing the opportunity and capacity to review the MPA system to address development and climate change. By attempting to enhance and increase the current MPA system coverage from 16.7% to at least 30%, the project partnership is helping the host country institution to address the following priorities of the CBD:

1. Promote conservation of the biological diversity of marine ecosystems, habitats and biomes
2. Promote conservation of species diversity in the marine environment.
4. Promote sustainable use and consumption
5.1. Decrease the rate of loss and degradation of natural marine habitats
7.1. Maintain and enhance resilience of components of marine biodiversity to adapt to climate change
8. Maintain capacity of ecosystems to deliver goods and services and support livelihoods
11. Improving financial, human, scientific, technical and technological capacity to implement CBD.

*Project year 1 (previously reported, in blue text):*
In the first year, four people were employed by SOS Bangor to build its own capacity and to undertake specific tasks in the field, prior to the appointment of the Darwin Project Support Officer. These were:

*Natasha Pisani* M.Sc. (SOS Bangor) – Fish Biomass assessment and Reef resilience assessment, Grand Cayman

*Rhiannon Meier* M.Sc. (SOS Bangor) – Recreational/artisanal fishing pressure assessment (Annex 3, abstract 19).

*Laura Richardson* M.Sc. (SOS Bangor) – Reef resilience assessment: algal biomass (Annex 3, abstract 5).

*Monique Grol* (Netherlands Intern / SOS Bangor) - Fish Biomass assessment, Grand Cayman and Sister Islands.

In addition, *Charlotte Dromard* assisted in fish biomass surveys as a DOE intern from the University of Gaudaloupe, and two students completed M.Sc. research project studies within the project structure:

Jess Campbell: Recovery of Caymanian reefs after a coral bleaching event. *M.Sc. thesis, University of Bangor*. 89p. (Annex 3, abstract 13).

Adam Barton: An assessment of Caymanian coral reefs: are the long established marine no take zones enough. *M.Res. Thesis, University of St Andrews.* 102p. (Annex 3, abstract 14).

Sarah Gall and Beth Henshall from Bangor undertook M.Sc. studies in 2009 (Annex 3, abstracts 15 & 16) within the DOE-Bangor collaboration prior to the Darwin Initiative project, but their work formed the basis of underwater video surveys (Gall) and fishery questionnaire surveys (Henshall) for the Darwin Project.

*Links to Other Projects*
A project management meeting was held in September 2010 at DOE (including DOE, SOS and TNC) to review the Biodiversity Action Plan and Coral Reef and Lagoon Habitat Mapping produced by Darwin Project 14-051: *In Ivan's Wake - Darwin Initiative BAP for the Cayman Islands*, Government of Cayman Islands and University of Exeter in Cornwall. This meeting was valuable, providing a link between the two projects.

Since 2008, REEF (*Reef Environmental Education Foundation* www.reef.org), DOE and Oregon State University (OSU) have been working to develop a collaborative conservation programme on Nassau groupers (*Epinephelus striatus*) as part of the Grouper Moon Project in the Cayman Islands. The funded research, broadly titled as "The reproductive biology of remnant Nassau grouper stocks: implications for Cayman Islands Marine Protected Area (MPA)

management" aims to evaluate the potential for spawning site MPAs to recover Nassau grouper stocks. This research was funded by a grant from the Lenfest Ocean Program at the Pew Charitable Trusts and expanded on the initial findings of an Acoustic Research Project that was started in 2003. The results of this research pertaining to MPAs evaluation and enhancement have already fed into the Darwin project, especially as the Grouper spawning aggregation sites are a key management issue and will likely feature as protected zones in a new marine protected area network in the Cayman Islands put forth in this project.

## 4. Project Progress

Project progress has been excellent and is on or ahead of schedule towards achieving the planned outcomes (see next section). The purpose level assumptions still hold true and the indicators remain adequate for measuring proposed outcomes (Annex 1 log frame).

### 4.1 Progress in carrying out project activities

Information brought forward from the original application is shown in italics, with comments and progress by activity following. All planned activities for Year 2 have been successfully completed. Activities 2.5-2.7, 4.1 -4.5 and 5.1-5.5 and 6.5 have all been addressed as follows:

***Output 2 a)*: *Assessment of the current level of reef resilience within and outside the Marine Protected Areas of Grand Cayman, Little Cayman and Cayman Brac; b)*: *An assessment of the extent of overspill of fish biomass from the No Take Zones into surrounding zones***

***Indicators for Output 2 a):*** *Measures of: Coral cover, coral species abundance, calcareous and fleshy macroalgae, coral recruits, frequency of coral diseases and bleaching, frequency of herbivorous fish, quantification of other impacts e.g. anchoring damage;* ***b):*** *Diving surveys of fish species abundance and size, to assess biomass at sites within and at increasing distances outside of No Take Marine Protected Zones.*

***Means of Verification of Output 2 a):*** *Reef survey at 55 established permanent sites around islands using visual census and video techniques. Comparisons with old data and photographs for some sites from 1970s and 1980s (source Ogden). Comparisons with permanent photo quadrats from early 2000s by McCoy. Statistical comparisons with video and visual census by Gall, McCoy & Turner, 2009. Use of experienced team with species specific knowledge, and training for junior members;* ***b):*** *Regular tests of visual assessments of fish size and accuracy of species recognition, enforcement of No Take Zone by MPA patrols.*

**Important Assumptions for Output 2 a):** *Sites and techniques already established and old data and photographs archived so no expected problems. New video data archived;* ***b):*** *As above, and assumes enforcement ensures No Take Zones are not transgressed. Bleaching event October 2009 means early comparison with pre bleaching survey of July 2009 essential. Will require additional training of junior staff in DOE to provide appropriate dive team size to satisfy health and safety requirements and ensure future monitoring capability. Assisted by MPA Darwin Fellow and Bangor MSc project students.*

**Comment:** The impact of the bleaching event of September 2009 was assessed by Jess Campbell in June-July 2010, and no mass mortality resulted, although bleaching had different effects around each island: Campbell, J. (2010). Recovery of Caymanian reefs after a coral bleaching event. *MSc thesis, University of Bangor*. 89p. (Annex 3, abstract 13). Though a mass bleaching event had not been recorded for 2010, a second assessment of coral bleaching was carried out by Katie Hillyer in June-July 2011 to assess progressive mortality and disease arising from the earlier bleaching event: Hillyer, K. (2011). Influence of Marine Protected Areas on Resilience to Bleaching, Disease and Compromised Health in Scleractinian and Milleporid Corals, the Cayman Islands, Caribbean. *MSc thesis, University of Bangor*. 91p. (Annex 3, abstract 7).

**Progress in carrying out Specific Activities in Output 2:**

- **2.5 Reef resilience re-survey at 55 permanent sites, specifically to compare with previous surveys of July 2009, July 2010, and to assess medium term recovery from bleaching. Involvement of Bangor MSc students (July – Aug 2011)**

Surveys were completed with the addition of 8 new survey sites, increasing the total number of permanent sites from 55 to 63 to enable more robust analysis of MPA effects (McCoy, Gibb – DOE & Richardson- SOS Bangor, +Hillyer & Looker, NERC M.Sc. Bangor). M.Sc. theses submitted by Hillyer, K. (2011) Influence of marine protected areas on resilience to bleaching, disease and compromised health in Scleractinian and Milleporid corals, the Cayman Islands); Looker, E. (2011) Investigating coral reef resilience by analysing Scleractinian and Millepora Recruitment within Marine Protected Areas of the Cayman Islands, Caribbean).

- **2.6 Fish biomass survey within and outside MPA at selected sites – all islands. Involvement of Bangor MSc students (scheduled Aug – Sept 2011)**

Activity was rescheduled from Aug. /Sept. 2011 to Feb-March 2012. (Original plan was to sample at different times of year, but statistical variation in first 2 surveys suggested more robust analysis would require further surveys at the same time of year). Re-scheduling did not affect the budget or timetable of project activities significantly since the activity was undertaken within year 2 of the project. Surveys were completed within and outside MPAs at selected sites on Grand Cayman, Little Cayman and Cayman Brac between January and March 2012. The surveys were led by McCoy, with training for Gary Murphy (intern, Manchester Metropolitan University and University of Exeter) and DOE staff Gibb and Chin.

- **2.7 ½ year report to Darwin Initiative (scheduled Oct - Nov 2011)**

Submitted on time, October 2011.

## *Outputs 4-7: Plan and promote an extension to the MPA system with full public consultation and involvement.*

***Indicators for outputs 4-7:*** *Using data from objectives 1-4, plan extended MPA zones to cover all representative habitats, covering at least 30% shallow marine environment; Initial consultation to ensure public participation on all 3 islands, show benefits in terms of results of MPA effects on reef resilience; Ecological gap Analysis, and Protected Area Tools in GIS such as Environmental Risk Surface, Relative Biodiversity Index, and Marxan and Marzone protect area planning software; GIS data system to show revised boundaries and purpose of zones; Stakeholder workshops and public presentations on all 3 islands; Acceptance and implementation of extended MPA system.*

***Means of verification of outputs 4-7:*** *MPA plans led by DOE to ensure local ownership, with overseas scientists maintaining behind the scenes advisory scientific role; Changes in legislation required, facilitated by Director, DOE through Government; Modified Management plan accepted; Modified Monitoring plans accepted; Modified enforcement plans accepted.*

***Important Assumptions for Outputs 4-7:*** *Unusually, there are few assumptions or risks here. Caymanians have been highly supportive of MPA system since benefits have been so obvious, especially in comparison with other Caribbean islands where reefs are substantially more degraded. Threats from climate change are widely recognised (especially increased intensity and frequency of hurricanes, sea level rise and mass coral mortality from bleaching and disease) because most have suffered effects. Coastal protection and income from tourism are recognised as being widely important and need to update MPA system is generally understood. Sensitization is already high due to existing MPA system, and education elements are already exceptionally strong.*

**Progress in carrying out Activities in Output 4-7:**

- **4.1 Ecological Gap Analysis (EGA) update and review:**

The EGA has been completed on schedule for all 3 islands by TNC (Byrne and Schill) with Olynik and Austin (DOE), between April 2010 and March 2011.

- **4.2 Steering Group Meeting 3: Identification of concerns and threats (scheduled April 2011)**

This meeting was held at DOE offices in Grand Cayman on 20th June 2011, deferred to coincide with Turner's visit (Gina Ebanks-Petrie, Tim Austin, Croy McCoy, Laura Richardson, Jeremy Olynik, John Turner present). General project progress and Cayman's Environment Risk Surface for MARXAN was discussed and threats/concerns identified. (Minutes available on request.)

- **4.3 District community stakeholder meetings on Grand Cayman, Little Cayman and Cayman Brac to engage comments on perceived risks and benefits and to set conservation vision and goals (scheduled May – June 2011).**

Meetings were successfully completed on Grand Cayman, Cayman Brac and Little Cayman. Twenty-three public district community and focussed group meetings were held, together with a press briefing and appearance of key project members on two popular, local radio call-in discussion shows. Detailed feedback was gained on perceived risks and conservation visions, and public awareness of the importance of the marine parks, of threats to reef resilience and the goals of the Darwin project were heightened greatly. There was significant media interest throughout the year (16 mini documentaries, 18 press items, 3 television news items, 2 radio phone ins, 1 radio interview; for full details see section 9 'Dissemination' below). (Extensive photos, meeting minutes, feedback log and meeting invitations are available on request).

- **4.4 Environmental Risk Assessment (ERA) and mapping:**

ERA has been completed for all 3 islands by TNC (Byrne and Schill) with Olynik and Austin (DOE) between April and March 2011, and is therefore ahead of schedule (planned for July and August 2011. (Annex 3, 22)

- **4.5 Field survey to verify specific habitats (scheduled July-Aug 2011)**

The original habitat classification and habitat maps have proven robust according to monitoring surveys at the 63 sites around the islands, and therefore there has been no further requirement to verify habitats prior to new MPA zone boundary designation (Annex 3, 23)

- **5.1 Steering Group Meeting 4: Marine Protected Area Planning (scheduled Jan 2012)**
  **5.2 Marine Conservation workshop 2 and training: Site Conservation Index and Relative Biodiversity Index Assessment calculation Workshop (scheduled Jan 2012)**
  **5.3 Marine Conservation Workshop 3 and training: Use of Marxan protected area modelling software (scheduled Jan – Feb 2012)**

Activities 5.1 to 5.3 were completed in Grand Cayman in January 2012, coinciding with Byrne's visit (Ebanks-Petrie, Austin, McCoy, Olynik, Richardson, Bothwell, Byrne, Schill, and with Turner Via Skype). General project progress was discussed with particular attention given to feedback and lessons learnt from the first stage of public consultation in September and October. Plans were considered for the second stakeholder round in which options for new MPAs will be presented. Workshops were conducted to select methodologies to include biological reef health data into the protected area planning models. Schill, Olynik McCoy and Richardson collated ecological survey data for use as a decision support tool for MPA planning (to guide application and use of Marxan output) (Annex 3, 24). Marxan targets and goals were agreed and consideration was given to presentation of MPA options for the next stage of public consultation at a subsequent series of meeting held in April 2012. (Minutes available on request.)

- **5.4 Review various conservation scenarios, Determine optimal configuration of protected areas that meet user defined conservation goals. (Scheduled Feb –March 2012)**

  Marxan output for best solutions for MPAs, with different goals set (eg 50% of all important marine habitats, and existing MPAs included) were presented and discussed by DOE scientific staff and Enforcement Officers during a series of meetings in April 2012. Examples of output can be seen in Annex 3, 25-26.

- **5.5 Field verification of possible configurations (scheduled March –April 2012)**

This activity will be undertaken in next few weeks, following preliminary designation and Cayman Island Government Cabinet and Caucus feedback (27 and 30th April) regarding new MPA zone boundaries.

***The remaining activities are scheduled from April 2012 (with exception of 6.5, which has been partly met):***

- **6.1 Marine Conservation Board and Community Stakeholder consultation (3) on MPA protected area optimal configuration**

*Scheduled for project year 3 (1st April 2012 – 30th March 2013).*

- **6.2 Steering Group Meeting 5: Consideration of feedback and implementation planning**

*Scheduled for project year 3 (1st April 2012 – 30th March 2013).*

- **6.3 Marine Conservation Law modifications**

*Scheduled for project year 3 (1st April 2012 – 30th March 2013).*

- **6.4 Development of MPA management plan, monitoring plans, enforcement plans and education plans**

*Scheduled for project year 3 (1st April 2012 – 30th March 2013).*

- **6.5 Presentations at international conferences & research paper submissions**

*Accepted abstracts for oral presentation by Turner, J., McCoy, C. and Austin, T. at the 12th International Coral Reef Symposium (ICRS), 9th-13th July 2012, Cairns, Australia:*

Impacts of recreational and artisanal fisheries, Cayman Islands, Caribbean. Turner, J.R.; McCoy, C.; Meier, R.; Austin, T.; Ebanks-Petrie; G., Richardson, L.. *International Coral Reef Symposium* (ICRS), 9th-13th July 2012, Cairns, Australia. (Annex 3, abstract 1).

Cayman Islands Marine Protected Areas, a 25 year legacy. Austin, T.; McCoy, C; Ebanks-Petrie, G.; Turner, J.; Richardson, L.; Hillyer, K; Looker, E. *International Coral Reef Symposium* (ICRS), 9th-13th July 2012, Cairns, Australia. (Annex 3, abstract 2).

Marine Protected Areas effectiveness on reef fish assemblages; Cayman Islands. Austin, T.; McCoy, C; Ebanks-Petrie, G.; Turner, J.; Richardson, L,; Grol, M. *International Coral Reef Symposium* (ICRS), 9th-13th July 2012, Cairns, Australia. (Annex 3, abstract 3).

*Presentations have been made to date at the following regional and international conferences:*

McCoy, C; Austin, T.; Ebanks-Petrie, G.; Turner, J.; Richardson, L.; Hillyer, K; Looker, E. (2012). Cayman Islands Marine Protected Areas, a 25 Year Legacy. *Benthic Ecology Meeting (41st annual meeting)*, 21st-24th March, Norfolk, Virginia, USA). (Annex 3, abstract 6).

McCoy, C, Richardson, L, Turner, J.R. (2011). Estimating marine reserve effects through quantification of macroalgal biomass on a central Caribbean coral reef. *Association of Marine Laboratories of the Caribbean* 35th Meeting, 23rd-28th May 2011, San Jose, Costa Rica. (Annex 3, abstract 5). Also presented at the *GCFI Gulf and Caribbean Fisheries Institute* 64th Meeting, 31st October-4th November 2011, Puerto Morelos, Mexico.

McCoy, C, Meier, R, Turner, J.R. (2011). Quantifying the Impacts of Recreational and Artisanal Fisheries in the Cayman Islands through the use of Socioeconomic Questionnaires. *Association of Marine Laboratories of the Caribbean* 35th Meeting, 23rd-28th May 2011, San Jose, Costa Rica. (Annex 3, abstract 4). Also presented at the *GCFI Gulf and Caribbean Fisheries Institute* 64th Meeting, 31st October-4th November 2011, Puerto Morelos, Mexico.

Turner, J.R.; McCoy, C; Barton, A; Campbell, J., Dromard, C., Gall, S., Henshall, B., Pisani, N. (2010). Established Marine Protected Areas enhance the resilience of Caymanian coral reefs. *Euro. ISRS symposium, Reefs in a Changing Environment*. 13-17th December, Hof van Wageningen, Netherlands. (Annex 3, abstract 20)

Turner, J.R., McCoy, C., Byrne, J, Barton, A; Campbell, J., Dromard, C., Gall, S., Henshall, B., Pisani, N. (2010). Towards enhancing an established marine protected area system, Cayman Islands. *Reef Conservation UK. 13th Annual Meeting*. London Zoo. 4th December. (Annex 3, abstract 21)

Dromard, C.R., McCoy, C., Turner, J. R. (2010) *Evaluation of marine protected area's performances: the case of Little Cayman and Cayman Brac, Cayman Islands*. GCFI San Juan, Puerto Rico 1st -6th November 2010. (Annex 3, Abstract 18)

McCoy, M., Dromard, C., Turner, J.R. (2009). An evaluation of Grand Cayman Marine Protected Area Performance: a comparative study of coral reef fish communities. *Proceedings of the 62nd GCFI Gulf and Caribbean Fisheries Institute*, Cumana Venezuela. (Annex 3, abstract 10)

- **6.6*½ year report to Darwin Initiative on implementation***

*Scheduled for project year 3 (1st April 2012 – 30th March 2013).*

- **6.7 *Finalisation of maps, signage and brochures***

*Scheduled for project year 3 (1st April 2012 – 30th March 2013).*

- **6.8 *Acceptance and implementation of extended MPA system***

*Scheduled for project year 3 (1st April 2012 – 30th March 2013).*

- **7.0 *Final Steering Group Meeting and Final Report to Darwin Initiative***

*Scheduled for project year 3 (1st April 2012 – 30th March 2013).*

1st year annual report progress (previously reported) ***(Text in blue italics refer to activities completed in year 1)***

*Activities 1.1 - 4.1 set for year 1 (quarter, Q1-4) were addressed as follows:*

***Output 1: Map the reef and associated subtidal ecosystem habitats around the islands to assess habitat variation and examine representativeness***

***Progress in carrying out Activities in Output 1:***

***1.1 Steering Group Meeting 1*** *to Establish Darwin project was held on 30th August 2010 at DOE (Gina Ebanks-Petrie, Tim Austin, Dr John Turner, Croy McCoy, James Byrne present) during which the following were discussed: steering committee composition and role; links and lessons from previous Darwin project; Darwin Initiative requirements reported by John Turner from the Darwin initiative Project Leader's workshop of 30th March London; review of overall objectives, log frame, activities, work plan and metrics; training and involvement by DOE staff and postgraduate students; post of Project Support Officer, the budget; publicity; and plans for the first Marine Conservation Board Stakeholder meeting.*

***1.2 Stakeholder meeting 1: Marine Conservation Board*** *was held on 3rd September 2010 at DOE (Phil Bush (Chair), Richard Flowers, Capt. Chuckie Ebanks, Kenny Ryan, Bernard Watson, Bruce Eldemire, Capt. Andrew Pierson, Tim Austin, Dr John Turner, Croy McCoy) during which Turner and McCoy presented the Darwin Initiative, the objectives of this project, preliminary and underpinning results from pilot studies, and engaged the Board through consultation and ideas for participation.*

***1.3 The Marine Habitat Classification and GIS*** *were reviewed on 6 September 2010 in DOE by DOE staff, current project and previous project (14-051) personnel in Grand Cayman (Ebanks-Petrie, Austin, McCoy, M. Cottam, J. Olynik, and Turner and with Byrne –TNC). The habitat mapping, based on ortho-corrected aerial mapping from 2004 and 2008 provided a robust classification for lagoons and shelf areas for each of the three islands, supported by an independent accuracy assessment. The Biodiversity Action Plans (BAP) for 18 marine habitats (e.g. sea grass areas, coral reef) and species were reviewed. It was agreed to aim to extend 'No Take Zones (including Wildlife Interaction Zones) from 16.7% to 50% of the shelf of Cayman, and to ensure that the extended zones protect fish on reef walls and incorporate grouper spawning aggregation sites, which will require new bathymetric limits to the zones. It was agreed that the timing of the project is appropriate to inform the National Conservation Bill in these respects, and the Bill will strengthen Marine Conservation Laws.*

***1.4 Assess existing long term data sets*** *(Photo image data sets from Ogden (1976) and permanent photo quadrats by McCoy for 1997 and 2004 were identified as suitable raw data sets for analysis. Some early qualitative analysis was undertaken by Gall (Bangor) (Annex 3, abstract 15).*

***1.5 Initial Ecological Gap Analysis assessment (EGA)*** *was conducted during the Marine Conservation Workshop 1 between 6-16th April 2010, lead by Steve Schill (TNC) collaborating with Jeremy Olynik (DOE GIS Officer). (Annex 3, Report Abstract). The focus was Grand Cayman. The objectives included: Finalizing the project extent, marine strata, and planning units; creating a marine environmental risk surface; compiling a list of biodiversity conservation features (targets) and associated conservation goals; training personnel in the use of the latest Marxan support software; and drafting and reviewing preliminary conservation portfolios. In addition Olynik attended the ESRI Users conference in July 2010 in San Diego for additional training in GIS tools, and Austin and McCoy attended the TNC Reef resilience workshop in June 2010 at TNC, Key Largo, Florida.*

***1.6 Steering Group Meeting 2:*** *held 6th September 2010 at DOE (Ebanks-Petrie, Austin, McCoy, Olynik, Cottam, Byrne, Turner) finalised the research objectives and methodologies.*

***In addition****, the project was presented to a DOE staff meeting on 8th September 2010, to all scientists, enforcement officers, and support staff, and with Ministerial representatives present. Turner and McCoy explained the objectives of the Darwin Initiative, described the project and activities, and presented preliminary results. The main objective was to be inclusive and encourage involvement and participation in the project at all levels.*

***Further****, the Governor of Cayman Islands Mr Duncan Taylor hosted a reception at the Governors Residence on 26th October 2010. Presentations by Mr Duncan Taylor, Governor, Ebanks Petrie (DOE), Turner (PL -SOS Bangor), and James Byrne (TNC) (Annex 3, 30) were followed by a media day, during which press and television interviews were given (see Dissemination section for web sites for further verification ).*

***Progress towards project outputs***

*All activities planned for Q1 were successfully completed and Output 1 has been completed in full. The main output is a Geographical Information System at DOE, based on accuracy assessed habitat maps, and linked via GIS tools to Marxan Marine Protected Area planning tools. Although initially based on Grand Cayman, Gap Analysis and Marine Environmental Risk Surface are now complete for the Sister islands. In addition, the project was launched In Grand Cayman by the Governor, Mr Duncan Taylor, with local press and television coverage, and press coverage in the UK.*

***Progress in carrying out Activities in Output 2:***

***2.1 Reef resilience field training and surveys:*** *Reef resilience video & photo surveys were conducted at 55 permanent sites within and outside of Marine protected areas on Grand Cayman, Little Cayman and Cayman Brac during June to August, 2010, lead by McCoy, assisted by Natasha Pisani (Darwin Field support Officer from Bangor) and training was provided for DOE staff (Gibb and Chin), MSc research project students Jess Campbell (Bangor) and Adam Barton (St Andrews). 2 MSc dissertations produced: Campbell, J. (2010) Recovery of Caymanian reefs after a coral bleaching event. MSc thesis, University of Bangor. 89p; and Barton, A. (2010) An assessment of Caymanian coral reefs: are the long established marine no take zones enough? MRes Thesis, University of St Andrews. 102p. (annex 3, abstracts 13 & 14). The Campbell thesis was also presented as a poster at Reef Conservation UK, December 2010. (Annex 3, abstract 17).*

*Algal biomass surveys were conducted at selected sites on Grand Cayman between November and December 2010 by McCoy and Laura Richardson (Bangor Field Support Officer). Results are under analysis, and an abstract has been accepted for a poster at the Association of Marine Laboratories of the Caribbean Meeting, 23-28 May, 2011 in Costa Rica (Annex 3, abstract 5)*

***2.2 Fish biomass field training and surveys:*** *Fish biomass surveys within and outside MPA at selected sites on Little Cayman and Cayman Brac were completed between March and May 2010, (to complete earlier pilot survey which was conducted on Grand Cayman only). The surveys were lead by McCoy, with training for Charlotte Dromard (Intern, University of Gaudaloupe) and Natasha Pisani (Field Support Officer Bangor).*

*The fish biomass surveys were repeated at sites on Grand Cayman, Little Cayman and Cayman Brac between January and March 2011, lead by McCoy, with training for Monique Grol (University of Netherlands intern and Bangor Field Support Officer) and DOE staff Gibb and Chin.*

*To date, the fish biomass surveys have been presented at the Gulf of Caribbean Fisheries Institutes Annual Meetings:*
*McCoy, M., Dromard, C., Turner, J.R. (2009). An evaluation of Grand Cayman Marine Protected Area Performance: a comparative study of coral reef fish communities. Proceedings of the 62nd GCFI Gulf and Caribbean Fisheries Institute, Cumana Venezuela.(Annex 3, abstract 10)*
*Dromard, C.R., McCoy, C., Turner, J. R. (2010) Evaluation of marine protected area's performances: the case of Little Cayman and Cayman Brac, Cayman Islands. GCFI San Juan, Puerto Rico 1st -6th November 2010. (Annex 3, abstract 18)*

***2.3½ year reports Darwin Initiative** (submitted October 2010).*

***2.4 Stakeholder meeting 2: Marine Conservation Board:** to promote results illustrating the benefits of the MPA system, and to identify threats was combined with the meeting held on 3rd September 2010, (since it involved flying stakeholders in from sister islands, and preliminary results were already available from pilot studies). Major Stakeholder concerns on Marine Conservation Board identified were: Grouper fishing on Little Cayman and need to further protect Grouper spawning aggregation sites; illegal fishing from shores at night and in MPA at night; need for increased enforcement and prosecution; protection of channels at East end, where reef has eroded.*

***Progress towards project outputs***
*Output 2 is on schedule with all tasks in year 1 completed as proposed, and preliminary results disseminated at regional and UK scientific meetings (verification via abstracts provided).*

***Output 3: An assessment of the artisanal/recreational fishery***

***Progress in carrying out Activities in Output 3:***

***3.1 Socioeconomic assessment of artisanal and migrant worker fishers and***
***3.2 Socioeconomic assessment of recreational fishers***

*Activities 3.1 and 3.2 were completed by Rhiannon Meier (Bangor Field Support Officer) with support from Laura Richardson (Darwin Project Support Officer), and DOE Enforcement staff during February and March 2011 on Grand Cayman, Little Cayman and Cayman Brac.*

*A total of 275 resident questionnaires were conducted on Grand Cayman from 29th February – 30th March 2011, 264 of which were used for analysis for fisheries quantification. The 11 questionnaires that were excluded from further analysis were those not deemed reliable after the face-to-face survey using a pre-determined criterion. All completed questionnaires were used for analysis of fishers' opinions on the marine environment and the current management system. A total of 63 resident questionnaires were conducted on Cayman Brac between the 6th–11th February 2011, 62 of which were used for further analysis. The two questionnaires not incorporated into analysis were conducted with fishers who were either not happy to engage in the survey, or from a source that was not deemed reliable by the analyst. A total of 16 fully completed resident questionnaires were conducted on Little Cayman between the 24th–28th February 2011.*

*In addition, an analysis of DOE Enforcement report data of illegal fishing between 1993 and 2011 has been undertaken by Rhiannon Meier, showing frequency of warnings, arrests and intended prosecutions, and numbers of conch, lobster, fish and turtle caught illegally.*

***3.3 Interim report of fisher surveys***
*An interim report has been produced: Meier, R., McCoy, C., Richardson, L., Turner, J.R. (2011). Quantifying Recreational and Artisanal Fisheries of the Cayman Islands. Darwin Initiative Interim Report. (Annex 3, Abstract 19).*

***3.4 Annual Reporting to Darwin Initiative*** *(Submitted April 2011)*

***Progress towards project outputs***
*Output 3 is now complete, although further analysis will be undertaken to link the total fish biomass caught to total available fish biomass on the shelf of the Cayman, to estimate the proportion of fish caught.*

***Outputs 4-7: Plan and promote an extension to the MPA system with full public consultation and involvement.***

***Progress in carrying out Activities in Output 4-7:***

***4.1 Ecological Gap Analysis update and review:*** *The EGA has been completed on schedule for all 3 islands by TNC (Byrne and Schill) with Olynik and Austin (DOE), between April 2010 and March 2011.*

***4.4 Environmental Risk Assessment and mapping:***
*ERA has been completed for all 3 islands by TNC (Byrne and Schill) with Olynik and Austin (DOE) between April and March 2011, and is therefore ahead of schedule (planned for July and August 2011.*

## 4.2 Progress towards project outputs

The project is therefore on or ahead of schedule in relation to outputs 1-5 and 6.5, with the bulk of remaining project activities (6.1-6.4 and 6.6-6.8 and 7.0) beginning in May 2012 and extending through to project end in 2013.

Output 1: To map the reef and associated subtidal ecosystem habitats around the islands to assess habitat variation and examine representativeness is complete. (example Annex 3, 23)

Output 2: To assess the current level of reef resilience within and outside the Marine Protected Areas of Grand Cayman, Little Cayman and Cayman Brac, and to assess the extent of overspill of fish biomass from the No Take Zones into surrounding zones has been repeated each year, and further data will be collected this year (example Annex 3, 24). Emphasis will be placed on assessing numbers of the invasive lionfish (a new threat) and assessing disease in gorgonian corals this year.

Output 3: To assess the artisanal/recreational fishery is complete. Interim report produced (Annex 3, 19)

Output 4-7. Plan and promote an extension to the MPA system with full public consultation and involvement has begun, with a first round of public consultation completed, and options for new and extended MPAs under preparation (example Annex 3, 26). A second round of public consultation on the options is planned for 2012, with subsequent legislation development to follow in 2012/2013.

## 4.3 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 project |
|---|---|---|---|---|---|---|---|---|
| 1A | Number of people to submit thesis for PhD qualification (in host country) | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 1B | Number of people to attain PhD qualification (in host country) | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 2 | Number of people to attain Masters qualification (M.Sc., MPhil etc) | 3 | 2 | 3 | | 5 | 2 | 8 |
| 4A | Number of undergraduate students to receive training (case study in Bangor modules) | 90 | 220 | 220 | | 310 | 220 | 530 |
| 4B | Number of training weeks to be provided | 2 | 4 | 4 | | 6 | 4 | 10 |
| 4C | Number of postgraduate students to receive training (case study, Bangor modules + project students in field | 30 | 26 | 30 | | 56 | 26 | 86 |
| 4D | Number of training weeks to be provided | 10 | 10 | 10 | | 20 | 10 | 30 |
| 5 | Number of people to receive at least one year of training (which does not fall into categories 1-4 above) | 3 | 4 | 0 | | 7 | 4 | 7 |
| 6A | Number of people to receive other forms of education/training (which does not fall into categories 1-5 above) | 3 | 38 | 40 | | 41 | 38 | 81 |
| 6B | Number of training weeks to be provided | 1 | 1 | 1 | | 2 | 1 | 3 |
| 7 | Number of (ie different types - not volume - of material produced) training materials to be produced for use by host country | 2 | 3 | 3 | | 5 | 3 | 8 |
| 8 | Number of weeks spent by UK project staff on project work in the host country | 52 | 64 | 50 | | 116 | 64 | 166 |

| 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 project |
|---|---|---|---|---|---|---|---|---|
| 9 | Number of species/habitat management plans (or action plans) to be produced for Governments, public authorities, or other implementing agencies in the host country | 2 | 0 | 1 | | 2 | 2 | 3 |
| 10 | Number of individual field guides/manuals to be produced to assist work related to species identification, classification and recording | 0 | 1 | 1 | | 2 | 1 | 2 |
| 11A | Number of papers published in peer reviewed journals | 1 | 1 | 4 | | 2 | 1 | 6 |
| 11B | Number of papers to be submitted to peer reviewed journals | 1 | 1 | 4 | | 2 | 1 | 6 |
| 12B | Number of computer based databases to be enhanced and handed over to host country | 2 | 2 | 1 | | 4 | 2 | 5 |
| 14A | Number of conferences/seminars/ workshops to be organised to present/disseminate findings | 2 | 23 | 6 | | 25 | 23 | 31 |
| 14B | Number of conferences/seminars/ workshops attended at which findings from Darwin project work have been presented/ disseminated. | 4 | 5 | 5 | | 9 | 5 | 14 |
| 15A | Number of national press releases in host country(ies) | 3 | 18 | | | 21 | | |
| 15C | Number of national press releases in UK | 2 | 0 | 2 | | 2 | 0 | 4 |
| 15D | Number of local press releases in UK | 3 | 2 | 2 | | 5 | 2 | 7 |
| 16A | Number of newsletters produced | 2 | 1 | | | | | |
| 17B | Number of dissemination networks to be enhanced/ extended | 2 | | | | | | |
| 18A | Number of national TV programmes/features in host country(ies) | 2 | 20 | | | 22 | | |

| 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 project |
|---|---|---|---|---|---|---|---|---|
| 19A | Number of national radio interviews/features in host county(ies) | 1 | 4 | | | 5 | | |
| 19B | Number of national radio interviews/features in UK | 0 | 1 | | | 1 | | |
| 22 | Number of permanent field plots to be established during the project and continued after Darwin funding has ceased | 55 | +8 | | | 63 | +8 | 63 |
| 23 | Value of resources raised from other sources (ie in addition to Darwin funding) for project work | 227, 158 | 227, 999+ +17, 886 | 224, 424 | | 473, 043 | 245,885 | 697,467 |
| | MPA Review online survey responses | | 463 | | | 463 | 463 | 463 |

**Table 2: Publications**

McCoy, C; Austin, T.; Ebanks-Petrie, G.; Turner, J.; Richardson, L.; Hillyer, K; Looker, E. (2012) Cayman Islands Marine Protected Areas, a 25 Year Legacy. Oral presentation at Benthic Ecology Meeting (41st annual meeting), Norfolk, Virginia, USA).

McCoy, C, Richardson, L., Turner, J.R. (2011). Estimating marine reserve effects through quantification of macroalgal biomass on a central Caribbean coral reef. Poster presentation at Association of Marine Laboratories of the Caribbean Meeting, Costa Rica, and GCFI, Mexico.

McCoy, C., Meier, R., Turner, J.R. (2011). Quantifying the Impacts of Recreational and Artisanal Fisheries in the Cayman Islands through the use of Socioeconomic Questionnaires. Poster presentation at Association of Marine Laboratories of the Caribbean Meeting, Costa Rica, GCFI, Mexico.

Hillyer, K. (2011). Influence of Marine Protected Areas on Resilience to Bleaching, Disease and Compromised Health in Scleractinian and Milleporid Corals, the Cayman Islands, Caribbean. *M.Sc. thesis, University of Bangor*. 91p.

Looker, E. (2011). Assessing the Effect of Marine Protected Areas on Coral Recruitment, a Measure of Reef Resiliency, in the Cayman Islands, Caribbean. *M.Sc. Thesis, University of Bangor.* 143p.

Meier, R., McCoy, C., Richardson, L., and Turner, J.R (2011). Quantifying the impact of recreational and artisanal fisheries, in the Cayman Islands, through the use of socio-economic questionnaires. *Darwin Project Interim Report.*

McCoy, C, Richardson, L, Turner, J.R. (2011). Estimating marine reserve effects through quantification of macroalgal biomass on a central Caribbean coral reef. Poster presentation. *Association of Marine Laboratories of the Caribbean Meeting*, Costa Rica June, 2011.

Turner, J.R.; McCoy, C; Barton, A; Campbell, J., Dromard, C., Gall, S., Henshall, B., Pisani, N. (2010). Established Marine Protected Areas enhance the resilience of Caymanian coral reefs. Oral presentation. *Euro. ISRS symposium, Reefs in a Changing Environment*. 13-17th December, Hof van Wageningen, Netherlands.

Turner, J.R., McCoy, C., Byrne, J, Barton, A; Campbell, J., Dromard, C., Gall, S., Henshall, B., Pisani, N. (2010). Towards enhancing an established marine protected area system, Cayman Islands. Oral presentation. *Reef Conservation UK. 13th Annual Meeting*. London Zoo. 4th December.

Conference Poster Presentation: Campbell, J.L. (2010). Recovery of Caymanian reefs after a coral bleaching event; can marine parks help? Poster Presentation *Reef Conservation UK. 13th Annual Meeting*. London Zoo. 4th December.

McCoy, M., Dromard, C., Turner, J.R. ( 2010). An evaluation of Grand Cayman Marine Protected Area Performance: a comparative study of coral reef fish communities. (paper & oral presentation) in Proceedings of the 62nd GCFI Gulf and Caribbean Fisheries Institute, Cumana Venezuela. (submitted)

Dromard, C.R., McCoy, C., Turner, J. R. (2010) *Evaluation of marine protected area's performances: the case of Little Cayman and Cayman Brac, Cayman Islands*. Oral presentation and paper. GCFI San Juan, Puerto Rico 1st -6th November 2010.

Henshall, B., McCoy, C. Turner, J.R.,(in prep). Maintaining reef resilience: the characteristics and spatial distribution of fishing pressure from the recreational and artisanal fisheries of the Cayman islands Reef Conservation UK. *PLoSOne*

Gall, S., McCoy, C. Turner, J.R., (in prep). The effect of long established marine protected area on Caymanian coral reefs. *Biological Conservation*

Henshall, B., Turner, J.R., McCoy, C. (2009). Maintaining reef resilience: the characteristics and spatial distribution of fishing pressure from the recreational and artisanal fisheries of the Cayman islands. Oral presentation. Reef Conservation UK. 12th Annual Meeting. London Zoo. 5th December.

Gall, S., Turner, J.R., McCoy, C. (2009). The effect of long established marine protected area on Caymanian coral reefs. Oral presentation. Reef Conservation UK. 12th Annual Meeting. London Zoo. 5th December.

McCoy, M., Dromard, C., Turner, J.R. (2009). An evaluation of Grand Cayman Marine Protected Area Performance: a comparative study of coral reef fish communities. Paper Presented at 62nd GCFI Gulf and Caribbean Fisheries Institute, Cumana Venezuela.

Campbell, J. (2010) Recovery of Caymanian reefs after a coral bleaching event. *M.Sc. thesis, University of Bangor*. 89p

Barton, A. (2010). An assessment of Caymanian coral reefs: are the long established marine no take zones enough? *M.Res. Thesis, University of St Andrews.* 102p.

Gall, S. (2009). The effect of long established Marine Protected Areas on the resilience of Caymanian coral reefs. *M.Sc. Thesis* University of Wales, Bangor.113p.

Henshall, B. (2009). Maintaining reef resilience: the characteristics and spatial distribution of fishing pressure from the recreational and artisanal fisheries of the Cayman islands. *M.Sc. Thesis* University of Wales, Bangor.107p.

### 4.4 Progress towards the project purpose and outcomes

Strong progress has been made towards the stated purposes and outcomes.

Purpose: To ensure coastal protection for human settlements and future tourism income by enhancing the protection of coral reefs thereby allowing rehabilitation of supporting ecosystems, through increased resilience to climate change.

Outcome: A review of the effectiveness of the Marine Protected Area system of the Cayman islands in maintaining resilience of coral reefs and shallow marine ecosystems in response to direct human impact and climate change, and if appropriate, to provide the information base to extend the system to increase that effectiveness

It is too early to assess the full impact of the project, but an enhanced MPA system is planned, underpinned by scientific evidence and to date, widespread public support. The purpose level assumptions still hold true and the indicators for measuring outcomes remain appropriate.

### 4.5 Progress towards impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits

This Darwin project has already provided considerable scientific evidence; undertaken a substantial first public consultative process to raise awareness and seek views on new MPAs; planned a second public consultation on options for new MPAs; enriched expertise to enable the Cayman Islands to increase the area of shelf sea under protection from 16.7% to approximately 30 or even 50%, thereby going significantly beyond the recommendations of the Convention on Biological Diversity of 10%. The project has provided (and continues to provide) the information base for the DOE to assess, review, plan, and promote an extended MPA system for the foreseeable future. DOE do not have the scientific resources to undertake such major interim studies, but they do have the expertise and goodwill of the local population to effectively manage and enforce the current and an extended MPA system, which is essential to maintain the resilience of reefs and associated ecosystems in response to coastal development and climate change. Datasets and specifically trained personnel will further enhance capacity, enabling Cayman to address its BAP and future national conservation legislation. Coral reefs are the most biologically diverse habitats of the oceans and provide essential ecosystem goods and services. However, at today's level of 387ppm $CO_2$, reefs are fast declining (19% lost, 35% threatened) with consequential impacts on associated ecosystems. Resilient reefs are known to have a better capacity to recover from damage, and management actions that reduce harvesting of herbivorous fish to sustainable levels, maintain trophic levels, manage water quality and minimise stressors will increase resilience. Networks of marine protected areas provide an effective mechanism for such management, and a revised and updated MPA system covering at least 30% of representative habitats of coral reef and associated ecosystems in the Caymans will protect island biota, pelagic, reptile, seabird and sea mammal species at a time of increasing human impact and climate change and will ensure that the system maintains the capacity of the reefs to meet user defined conservation goals.

## 5. Monitoring, evaluation and lessons

Project progress is monitored and evaluated by the Principal Investigators (Ebanks-Petrie (DOE), Turner (SOS Bangor) and Byrne (TNC), and through meetings of the Steering Committee. Financial monitoring is provided within DOE (by Financial administrator Margaret Buchanan) and by Bangor University Finance Office. Evaluation is being undertaken by the Marine Conservation Board, and scientific outputs are destined for peer review.

The objectives and methodologies to produce outputs were initially scrutinised by the Steering Committee in September 2010, and then presented for consultation and approval via the Marine Conservation Board and Watersports Association Stakeholders. Year 2 activities have similarly been monitored by 2 meetings of the Steering Committee

To date, the project has adhered to its activity list, budget and predefined outputs. Preliminary results have been presented to the Marine Conservation Board, other key stake holder groups and wider community (in focussed and general public meetings, in our dedicated education pack – approx. 50 copies distributed – on the project page on the DOE website and dedicated Facebook page, in Cayman, examined in M.Sc. degree dissertations, and presented at regional and international conferences for peer review, and have been submitted as research papers for peer review.

The Steering Committee agreed to raise the number of monitoring sites from 55 to 63 to strengthen the experimental design to allow for more robust statistical analysis. The additional sites on the sister islands balanced the numbers of sites within and outside MPAs, and on deep and shallow terraces.

The outputs from year 1 activities largely resulted from scientific surveys of reefs and their resources within and outside of Marine Protected Areas. The project moved into a new phase in Year 2, in which the data from Year 1 has been used together with public feedback from a preliminary stage of public consultation to develop options for extended and new MPAs, to be presented to the general public and stakeholders in year 3 for their consideration. Consequently, it has become more difficult to assess achievement, because a successful outcome may be perceived differently by different groups of stakeholders and on different islands. However, the first stage of public consultation (with 23 relatively well attended meetings) feedback was mostly extremely positive with most comments made in thanks for the efforts and amount of information given, with no clear and direct opposition to the concept of park enhancement. Success will ultimately be measured by the percentage increase in well enforced marine protected areas on the Cayman shelf, beyond 16.7% and to 30 or 50%.

Two Steering Committee meetings were held in Year 2 (scheduled SC meetings 3 and 4) in addition to more Darwin project team meetings than in year 1, because the project has to be responsive to issues raised by the general public and stakeholders. The Project Leader was able to make more frequent visits to Cayman in year 2 to assist with some greater decision making and in-water assessments. However, DOE, rather than UK staff have largely been the public face of the project in Cayman, especially during stakeholder meetings and this will continue into the third year of the project. The socioeconomic fishery surveys have revealed how the attitudes of fishers can vary between islands, and have highlighted important issues, where a sensitive approach is required. DOE continues to: (1) promote the enhanced protection of the biologically (and socially) sensitive Grouper Spawning Aggregation Sites, and (2) promote the National Conservation Bill to central government, and (3) suggest amendments to the current Marine Conservation Law and Marine Parks Regulations to include further protection to habitats within the marine parks, specifically, though not limited to coral reefs and areas of sea-grass.

John Turner, Project Leader, was invited to brief the Cayman Island Government Office in London, (CIGOL) about the Darwin Project on 9th February 2012. Subsequently, the project was brought to the attention of the Parliamentary Under-Secretary for Natural Environment and Fisheries, Minister Richard Benyon. The Director of CIGOL, the Rt. Hon. Lord Blencathra, Lady Tara Blencathra, Executive Assistant Bruce Morrissey, 3 visiting UK MPs (Graham Brady, chairman of the Cayman Islands All-Party Parliamentary Group; Brian Donohoe, vice chair of the APPG; and Andrew Rosindell, chairman of the Overseas Territories) and Cayman Island Governor Minister Hon. Mark Scotland and Chief Officer Jennifer Ahearn were further briefed on the project together in late March during their visit to Grand Cayman. In addition, Henry Bellingham, Minister for Africa, the UN, OTs and Conflict Issues was also briefed on the project during his visit to Cayman in April 2012.

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

Not applicable.

## 7. Other comments on progress not covered elsewhere

Not applicable

## 8. Sustainability

During year 1, the project aimed to establish the scientific evidence for promoting an enhancement to the Marine Protected Area System of the Cayman Islands. The Project therefore established a sound dataset prior to being publicly launched by the Governor, such that a case could be made for MPA enhancement to the general public and stakeholders.

In year 2, the emphasis has been on public and stakeholder engagement in considering different options for MPA design. The Cayman has celebrated (and continues to celebrate) 25 years of Marine Protected Areas in this 2nd year of the project, providing excellent on-going opportunities to raise the profile of the project and its aims (as can been seen in the following section on dissemination, section 9). There will be considerable legacy aspects to this project including the logistical and legal framework to support an enhanced marine protected area system in the Cayman Islands (with the optimal configuration of enlarged MPA system increasing coverage from the current 16.7% to at least 30% of the Cayman shelf if appropriate), The stable end-point will be an enhanced MPA system of representative habitats of coral reef and associated ecosystems, thereby helping to protect island biota, pelagic, reptile, seabird and sea mammal species at a time of increasing human impact and climate change. DOE is ensuring that the MPA system is a central component of current and future planning, to be incorporated into future national climate change response policy (including: Grand Cayman Development Plan, Disaster Risk Management Framework, National Conservation Bill, Storm Atlas). Involvement of most DOE staff in field training and Marine Workshops has already enhanced institutional capacity and personal involvement in future planning. After the project, McCoy will have a doctorate, and is committed to working in DOE in Cayman in the long term. Collaborative partner TNC has established expertise in nurturing MPAs in the Caribbean region over the long term, through increasing funding, building support and improving management. A robust MPA system will need to be reviewed regularly and maintain flexibility with continued stakeholder consultation and representation in management. The establishment of financial mechanisms that drive funding to protected areas including endowment funds, and payments for natural resources and services that protected areas supply may be necessary in the future.

## 9. Dissemination

Project year 2 (current reporting period):

Dissemination efforts continue to be targeted at key stakeholders in government, business and marine resource users in the wider community (represented by the Marine Conservation Board, Watersports Association and district communities) with strong and consistent media coverage throughout the year:

### Press coverage in host country:

19.04.11 Caymanian Compass: 'DoE celebrates 25 years'
http://www.compasscayman.com/caycompass/2011/04/19/DoE-celebrates-25-years/

27.05.11 cayCompass.com: 'New enforcement boat named' (in aid of 25th anniversary of marine parks)
http://www.compasscayman.com/caycompass/2011/05/27/New-enforcement-boat-named/

29.06.11 iNews: 'Reef study moving forward' (DoE/Darwin Initiative press briefing dated 24.06.11)
http://ieyenews.com/archives/29-06-2011WEB.pdf

29.06.11 Cayman Islands Government website news: 'Future Marine Parks' (DoE/Darwin Initiative press briefing dated 04.06.11)
www.gov.ky/portal/page?_pageid=1142,5543010&_dad=portal&_schema=PORTAL

01.07.11 Cayman Net News: 'The DOE after 25 years' (DoE/Darwin Initiative press briefing dated 24.06.11)
http://caymannetnews.com.ky/news-detail.php?iNewsId=404

05.07.11 Caymanian Compass (Front page): 'Marine parks being evaluated' (DoE/Darwin Initiative press briefing dated 24.06.11)
http://www.compasscayman.com/caycompass/2011/07/05/Marine-parks--being-evaluated/

05.07.11 Caymanian Compass editorial: 'Ensure marine life protected' (DoE/Darwin Initiative press briefing dated 24.06.11)
http://www.compasscayman.com/caycompass/2011/07/05/Editorial-for-July-5--Ensure-marine-life-protected/

08.07.11 Cayman News Service: 'Marine research to shape future of parks' (DoE/Darwin Initiative press briefing dated 24.06.11)
http://www.caymannewsservice.com/science-and-nature/2011/06/29/marine-research-shape-future-parks

03.08.11 What's Hot magazine (caycompass.com): 'Cayman's Marine Parks turn 25' (with mention of Darwin project and forthcoming public consultation)
http://www.compasscayman.com/whatshot/2011/08/03/Cayman%E2%80%99s-Marine-Parks-turn-25/

02.09.11 Caymanian Compass: 'Marine parks review goes public'
http://compasscayman.com/caycompass/2011/09/02/Marine-parks-review-goes-public/

03.09.11 inews: 'First Marine Parks Meeting on Cayman Brac'
http://www.ieyenews.com/2011/09/first-marine-parks-meeting-on-cayman-brac/

08.09.11 Cayman News Service: 'Marine Parks are Working'
http://www.caymannewsservice.com/science-and-nature/2011/09/07/marine-parks-are-working

12.09.11 Caymanian Compass: 'Marine conservation consultation starts' (DoE/Darwin Initiative press briefing dated 07.09.11)
http://www.compasscayman.com/caycompass/2011/09/12/Marine-conservation-consultation-starts/

12.09.11 Caymanian Compass editorial: 'Selective environmentalism' (editorial discussing poor attendance at Bodden Town district public presentation during first stage public consultation)
http://www.compasscayman.com/caycompass/2011/09/12/Editorial-for-12-September--Selective-environmentalism/

14.09.11 Caymanian Compass: 'Losing ecosystems will be costly' (article following press attendance at West Bay district community Marine Park Review presentation during first stage public consultation)
http://www.compasscayman.com/caycompass/2011/09/15/Losing-ecosystems-will-be-costly/

16.09.11 inews: 'DOE appeal for public input on marine parks' (article following press attendance at Bodden Town district community Marine Park Review presentation during first stage public consultation)
http://www.ieyenews.com/2011/09/doe-appeal-for-public-input-on-marine-parks/

23.09.11 Caymanian Compass: 'Marine life threatened by people' (article discussing East End public consultation meeting during first stage public consultation)
http://www.compasscayman.com/caycompass/2011/09/23/Marine-life-threatened-by-people

12.12.11 cayCompass.com: 'Views on marine parks sought' (article discussing public marine parks review questionnaire).
http://www.compasscayman.com/caycompass/2011/12/12/Views-on-marine-parks-sought

**National television features in host country (Cayman27):**

04.04.11 *Environment Break*: Reef Watch (not directly related to project but public outreach and involvement in reef health assessments)
http://cayman27.com.ky/2011/04/04/environment-break-reef-watch

11.04.11 *Environment Break*: Marine Parks History
http://cayman27.com.ky/2011/04/11/environment-break-marine-parks-history

18.04.11 *Environment Break*: Marine Parks
http://cayman27.com.ky/2011/04/18/environment-break-marine-parks

02.05.11 *Environment Break*: The future of Cayman's Marine Parks
http://cayman27.com.ky/2011/05/02/the-future-of-caymans-marine-parks

09.05.11 *Day Break*: Children's poster competition (to celebrate 25th anniversary of marine parks in Cayman Islands)
http://cayman27.com.ky/2011/05/09/childrens-poster-competition

09.05.11 *Environment Break*: Name the boat (in aid of 25th anniversary of marine parks)
http://cayman27.com.ky/2011/05/09/environment-break-name-the-boat

23.05.11 *Day Break*: Marine Parks open house
http://cayman27.com.ky/2011/05/23/marine-parks-open-house

24.05.11 News feature: Marine Parks turning 25
http://cayman27.com.ky/2011/05/24/marine-parks-turning-25

24.06.11 News feature: DoE/Darwin Initiative press briefing
(Link unavailable)

29.08.11 *Environment Break*: Marine Park Review Under Way
http://www.cayman27.com.ky/2011/08/29/environment-break-marine-park-review-under-way

05.09.11 *Environment Break*: Closer look at the Marine Parks review
http://www.cayman27.com.ky/2011/09/05/environment-break-closer-look-at-the-marine-parks-review

12.09.11 *Environment Break*: Marine Parks Public Meetings
http://www.cayman27.com.ky/2011/09/12/environment-break-marine-parks-public-meetings

16.09.11 News feature: Marine parks versus the survival of fishermen
http://www.cayman27.com.ky/2011/09/16/marine-parks-and-the-survival-of-fishermen

19.09.11 *Environment Break*: Reef surveys
http://www.cayman27.com.ky/2011/09/19/environment-break-reef-surveys

26.09.11 *Environment Break*: Cayman's Coral Cover
http://www.cayman27.com.ky/2011/09/26/caymans-coral-cover

03.10.11 *Environment Break*: Coral Recruitment
http://www.cayman27.com.ky/2011/10/03/environment-break-coral-recruitment

19.12.11 *Environment Break*: (Discussion re. DOE attendance at the 64th GCFI meeting in Mexico, and also discussed the Darwin Initiative marine park review online survey for the project.)
http://www.cayman27.com.ky/2011/12/19/environment-break-6

27.02.12 *Environment Break*: Taking stock of marine protected areas (Croy discussing fish biomass survey for 2012 and context in Darwin Initiative MPA assessment).
http://www.cayman27.com.ky/2012/02/27/taking-stock-of-marine-protected-areas

12.03.12 *Environment Break*: Darwin marine park review (Reminder of project work and aims, plus mention of Little Cayman public meeting on 15th March 2012).
http://www.cayman27.com.ky/2012/03/12/darwin-marine-park-review

## Radio features:

**Host country:**

01.07.11 **Radio Cayman**: DoE/Darwin Initiative press briefing dated 24.06.11
http://www.radiocayman.gov.ky/servlet/page?_pageid=1816&_dad=portal30&_schema=PORTAL30&_mode=3&p_thi_id=193247&orgcode=18

30.08.11 **Radio Cayman advertising**: Series of advertisements for 1st stage consultation detailing times and locations of public meetings.
(Link unavailable)

08.09.11 **Rooster FM 101.9FM 'Cayman Crosstalk'** (radio call-in talk show): Project partners Gina Ebanks Petrie, Tim Austin and John Turner discuss the marine park review project and stage 1 of public consultation with Austin Harris.
(Minuted notes and photos available on request.)

14.09.11 **Radio Cayman 'Talk Today'** (radio call-in talk show): Project partners Gina Ebanks-Petrie, Tim Austin and John Turner discuss the marine park review project and stage 1 of public consultation with Sterling Dwayne Ebanks.
(Audio file and minuted notes available on request.)

**UK:**

07.10.11 **BBC Radio Wales**: John Turner talks to presenters about the Darwin Initiative, the marine parks review and Bangor University's involvement with DOE (as part of a 'Behind the Scenes at Bangor University' show).
http://www.bbc.co.uk/iplayer/console/b015grnj

## Events in host country:

Public and focussed meetings for first stage public consultation:

11.08.11 **Presentation: To Minister (Hon. Mark Scotland), Jennifer Ahearn, and Sheila Watler**. Discussion of forthcoming public consultation meetings about Darwin project and marine parks review. Draft presentation given by (Tim). Proposed meetings approved by Minister.

29.08.11 **Presentation: to Ministry and Caucus**. (Preliminary presentation to Minister and Caucus - discussion of current threats to marine environment, need for parks enhancement and encouraged discussion.

02.09.11 **Presentation: To Opposition/MLAs**. (Attendees: Ezzard Miller and Kirk Tibbets: discussion of current threats to marine environment, need for parks enhancement and discussion. Also discussed grouper fishery and need for closure.)

05.09.11 **Presentation: To Brac District Commissioner's Office**. (Discussion of current threats to marine environment, need for parks enhancement and discussion. Attendees - 10. Minutes and photos available on request.)

05.09.11 **Presentation: To Brac District Community**. (Discussion of current threats to marine environment, need for parks enhancement and discussion. Attendees - 35. Minutes and photos available on request.)

06.09.11 **Presentation: University College Cayman Islands (UCCI), Cayman Brac**. (Discussion of current threats to marine environment, need for parks enhancement and discussion. Attendees - 10. Minutes and photos available on request.)

07.09.11 **Presentation: To Bodden Town District Community**. (Discussion of current threats to marine environment, need for parks enhancement and discussion. Attendees – 3 including 2 press. Minutes and photos available on request.)

08.09.11 **Presentation: To North Side District Community**. (Discussion of current threats to marine environment, need for parks enhancement and discussion. Attendees – 7. Minutes and photos available on request.)

09.09.11 **Presentation: To Marine Conservation Board**. (Discussion of current threats to marine environment, need for parks enhancement and discussion. Attendees - 10. Minutes and photos available on request.)

09.09.11 **Presentation: To DOE staff**. (Overview of presentation given to public. Discussion of current threats to marine environment, need for parks enhancement and discussion. Attendees - 13. Minutes and photos available on request.)

10.09.11 **Presentation: To friends of DOE/environment**. (Discussion of current threats to marine environment, need for parks enhancement and discussion. Attendees - 20. Minutes and photos available on request.)

11.09.11 **Presentation: To Land and Sea Coop and Angling Club**. (Discussion of current threats to marine environment, need for parks enhancement and discussion. Attendees - 8. Minutes and photos available on request.)

12.09.11 **Presentation: To CITA Board**. (Discussion of current threats to marine environment, need for parks enhancement and discussion. Attendees - 8. Minutes and photos available on request.)

12.09.11 **Presentation: To West Bay District Community**. (Discussion of current threats to marine environment, need for parks enhancement and discussion. Attendees – 37. Minutes and photos available on request.)

13.09.11 **Presentation: To Ministers' Association**. (Discussion of current threats to marine environment, need for parks enhancement and discussion. Attendees - 2. Minutes and photos available on request.)

13.09.11 **Presentation: To George Town District Community**. (Discussion of current threats to marine environment, need for parks enhancement and discussion. Attendees - 16. Minutes and photos available on request.)

15.09.11 **Presentation: To East End District Community**. (Discussion of current threats to marine environment, need for parks enhancement and discussion. Attendees - 9. Minutes and photos available on request.)

21.09.11 **Presentation: To UCCI, Grand Cayman**. (Discussion of current threats to marine environment, need for parks enhancement and discussion. Environmental education class, UCCI, Grand Cayman. Attendees: 35. Minutes and photos available on request.)

21.09.11 **Presentation: To UCCI, Grand Cayman**. (Discussion of current threats to marine environment, need for parks enhancement and discussion. Environmental education class, UCCI, Grand Cayman. Attendees: 30. Minutes and photos available on request.)

21.09.11 **Presentation: To UCCI, Grand Cayman**. (Discussion of current threats to marine environment, need for parks enhancement and discussion. Environmental education class, UCCI, Grand Cayman. Attendees: 6. Minutes and photos available on request.)

18.10.11 **Presentation: To Seafarers' Association**. (Discussion of current threats to marine environment, need for parks enhancement and discussion. Attendees – 35. Minutes and photos available on request.)

07.12.11 **Presentation: To Human Rights Commission.** (Presentation video shown to members of the Human Rights Commission (DOE/project staff not present) due to unavailability.

15.03.12 **Presentation: To Little Cayman District Community**. (Discussion of current threats to marine environment, need for parks enhancement and discussion. Attendees - 23. Minutes and photos available on request.)

Other events:

06.05.11 **Earth Clean-Up Day/DoE 25th Marine Parks Anniversary Celebratory day DoE staff day** on Barkers Beach, with beach clean-up and lionfish culling exercise in the morning followed by a lunchtime BBQ and "team-building" activities in the afternoon. (Photos available on request).

23.05.11 **MP25 Launch Open House presentation** of 25 years of Cayman Islands marine parks, presenting information on the Darwin Initiative project; shark, turtle, conch, grouper programs; (4.30-6.30pm, George Town Public Library, free admission). For remarks made by Gina Ebanks-Petrie (DoE Director and Darwin project in-country coordinator) see http://www.doe.ky/25-years-of-marine-parks-directors-remarks/. For opening remarks by the Minister for Health, Environment, Youth, Sports & Culture, The Hon. Mark Scotland see http://www.doe.ky/ministers-remarks-marine-parks-open-house/. (Photos available on request).

24.06.11 **Press briefing: project progress reporting**. DoE/Darwin Initiative press briefing to discuss project progress and things to come in this 2nd year. Project attendees: Gina Ebanks-Petrie, Tim Austin, Croy McCoy, John Turner, Laura Richardson. Press attendees: Cornelia Olivier - Government Information Services (GIS), Tad Stoner - inews, Ngamate Mwangi - Cayman Net News, Janelle Muttoo and camera-man - CITN (Cayman 27), Eugene Bonthuys - Cayman Free Press, Radio Cayman (representative). (Photos available on request).

07.07.11 **Aaron Peirsol Fundraising dinner for Cayman Marine Parks** (in collaboration with Camana Bay Aquatic Club) Funds raised by the event were donated to DoE's Darwin Initiative marine parks project and Marine Turtle Programme. Three panel static poster display presented at the event with informational posters on the Marine Parks 25th Anniversary, the Darwin Marine Parks Initiative and the DoE's Turtle Programme. Marine Park Banners (2m tall each) also displayed for additional decoration. DoE images of coral reefs and turtles shown on large screen in the background. Gina Ebanks-Petrie represented DoE and the Darwin project at the event and publically thanked the Camana Bay Aquatic Club for donating the proceeds to the DoE's Marine Parks work and specifically to the Marine Turtle Programme.

06.09.11 **MP25 Poster Competition Prize Giving** - Layman E Scott Senior High School, Brac Prizes given for MP25 poster competition to students of the High School in Cayman Brac. Gina Ebanks-Petrie gave talk on Darwin Initiative marine park review (amended from the public presentation, without slides) to all students and staff of the school during morning assembly. (Photos available on request).

07.09.11 **Press briefing: Stage 1 of public consultation.** Discussion of current threats to marine environment, need for parks enhancement and discussion. Project attendees: Gina Ebanks-Petrie, Tim Austin, Croy McCoy, John Turner, Laura Richardson. Press attendees: Cornelia Olivier - Government Information Services (GIS), Janelle Muttoo and camera-man - CITN (Cayman 27), Eugene Bonthuys - Cayman Free Press. (Photos available on request).

07.11.11 **CITA International Underwater Film Festival**. DoE hosted a stall, providing information on the marine parks, Darwin project, marine enforcement, conch/turtle/shark population monitoring, lion fish eradication program among other on-going DoE projects. Information (leaflets and discussions) were given out to the public.

12.11.11 **Marine parks themed Annual Pirates Week Parade** to celebrate 25 years of marine parks in the Cayman Islands. DOE participated with its own float in the parade, handing out MP25 stickers, pins and information. (Photos available on request).

14.11.11 – 18.11.11 **Cayman Islands Heritage Days** (during Pirates Week). DOE booth present at all Heritage Days (in hosted in each district). Marine parks review questionnaire given to people asking for feedback on the marine park review and what people think are important. SUPPORT YOUR MARINE PARKS pens handed out, together with information on other current DOE projects.

22.02.12 **45th Annual Agricultural Show**. Public annual family event, Grand Cayman, with equestrian activities, live music and dance, and exhibits including animals, preserves, antiques, plants and crafts, drawing strong attendance of residents in Grand Cayman. DoE hosted a stall, providing information on DoE work (terrestrial and marine) including information on CI marine parks, the current Darwin project and park review, marine enforcement, conch/turtle/shark

population monitoring, lion fish eradication program among other ongoing DoE projects. Information (leaflets and discussions) were given out to the public and members of staff were available to answer questions.

24.03.12 **Little Cayman Agricultural Show/Exhibition**. Public annual family event, Little Cayman, with sales booths, competitions, exhibits including animals, preserves, antiques, plants and crafts, drawing strong attendance of residents in Little Cayman. Marine Parks Review questionnaire available for additional public feedback following the public meeting on 9th March 2012.

## Online dissemination efforts in host country:

12.04.11 **DoE website news**: 'Marine Research News – Marine Parks 25th Anniversary Issue'.
http://www.doe.ky/wp-content/uploads/2011/04/DoEMarineResearchNewsVol5.pdf

09.05.11 **Cayman Islands Government website news** (video clip): 'GIS Spot Light: 25 Years of Marine Parks'.
http://www.gis.ky/services/electronic-media/gis-spotlight/videos/2011/05/9/25-years-of-marine-parks

30.05.11 **Cayman Islands Government website news** (video clip): 'GIS Spot Light: 25 Years of Marine Parks Part 2'.
http://www.gis.ky/services/electronic-media/gis-spotlight/videos/2011/05/30/25-years-of-marine-parks-part-2

31.08.11 **DoE website update:** New page on DOE website with link to recent Environment Break 'Marine Park Review Under Way'.
http://www.doe.ky/marine/25-years-of-marine-parks/marine-parks-anniversary-review/

05.09.11 **Online Youtube video**: 'Environment Break: Closer look at the Marine Parks review'.
http://www.youtube.com/watch?v=-Qb87-TJ-XQ

05.09.11 **Cayman Islands Government website news** (video clip): 'GIS Spot Light: Darwin Initiative – Report'.
http://www.gis.ky/services/electronic-media/gis-spotlight/videos/2011/09/5/darwin-initiative-report

14.09.11 **DoE website update:** 'Darwin Initiative Project Video 1: Cayman Islands Marine Park Review'.
http://www.doe.ky/information/doe-tv/

14.09.11 **Online Youtube video:** 'Darwin Initiative Project Video 1: Cayman Islands Marine Park Review'.
http://www.youtube.com/watch?v=3-rpCGhIjzU

Various **DoE website update:** Marine Parks Anniversary Review page: A series of Environment Breaks highlighting various aspects of the research and review process.
http://www.doe.ky/marine/25-years-of-marine-parks/marine-parks-anniversary-review/

15.09.11 **Cayman Islands Government website news** (video clip): 'Darwin Initiative Project Video 1: Cayman Islands Marine Park Review'

http://www.gis.ky/services/electronic-media/gis-spotlight/videos/2011/09/15/darwin-initiative-update

02.12.11 **Online Youtube video:** Stage 1 public consultation presentation posted. Part 1: http://www.youtube.com/watch?v=LGwKldHjdS8&feature=youtu.be; Part 2: http://www.youtube.com/watch?v=mRdVnlrFhu0&feature=related

02.12.11 **Cayman Islands Government website update:** Presentation on GIS website. Part 1: http://www.gis.ky/services/electronic-media/gis-spotlight/videos/2011/12/2/doe-marine-parks-review-1st-half

02.12.11 **Cayman Islands Government website update:** Presentation on GIS website. Part 2: http://www.gis.ky/services/electronic-media/gis-spotlight/videos/2011/12/2/doe-darwin-marine-parks-review-2nd-half

05.12.11 **Social media: Facebook group** 'Cayman Islands Marine Parks - DOE and Darwin Initiative Review' set up within DOE Cayman Facebook profile. Group contains information on the project, photos, video, and news of past or forthcoming events. DOE Cayman 'friends' invited to join group to receive project updates and provide a forum for giving feedback and comments on the review and the future of Cayman marine conservation. Marine parks and marine conservation information delivered as 'Facts of the Day'. (Appendix 3, annex 29) Cayman Islands Marine Parks - DOE and Darwin Initiative Review

12.12.11 **DoE website news**: Updated DOE website with details of new Facebook group, links to presentation video (2 parts detailed above), and link to online survey. www.doe.ky

### Other dissemination efforts in host country:

Throughout year **On-going use of 25th anniversary of marine parks logo** in all DOE email signatures, dedicated stickers and pins (distributed at various DOE attended events), t-shirts, banners at events, and on DOE website.

01.08.11 **Marine Parks Awareness Advertisement : Cayman Islands Yellow Pages**: Three full page advertisements: MP25 detailing why marine parks are important; 2 pages covering existing marine conservation regulations and park boundaries. (Proof copies available on request.) (Appendix 3, annex 30)

14.11.11 **Promotional gift: Support your marine park pens**. Printed 500 pens, "SUPPORT YOUR MARINE PARKS WWW.DOE.KY". For distribution at DOE attended public events and meetings. Due to the size of the pen, it was not possible to include the Darwin Initiative or DOE logos. (Photos available on request). (Appendix 3, annex 27).

23.11.11 **Marine parks review questionnaire mail-out:** to schools/college staff. Electronic questionnaire sent out to teachers/school contacts by email, prior to sending out Marine Park Review education pack. (Copy of document available on request). (Appendix 3, annex 27).

01.12.11 **Marine parks review questionnaire mail-out:** to all Cayman Islands government staff and civil servants 'All Government Users'. http://www.surveymonkey.com/s/SS3HTXH

01.12.11 **Darwin Initiative Marine Parks Review Education pack for schools**: MP Review education pack for schools and other local education institutions (Appendix 3, annex 27). Education pack contents: 1.Cayman Islands Marine Park Review: Project overview (10 minute video), Presentation (38 minute video – slide show plus voiceover), Presentation (PowerPoint slides plus transcript), Presentation (PowerPoint slides as hand-out - PdF), Current Marine Park Regulations & Marine Conservation Laws (2011), General marine park review information booklet; 2. Supporting information and materials: Coral reef biology – 'Coral Gardens' (including teacher's guide), Sharks – their biology, importance to us and their threatened survival, Groupers – their importance and threatened survival; 3. Activity materials: Marine parks colouring and activity book, Large colouring pictures, SPAW (Specially Protected Areas and Wildlife) protocol activities book. Approx. 50 copies of this pack have been distributed to all government and public schools, other education bodies (including some dive operators), the prisons and environmental organizations that provide outreach to the public. (Copies available on request).

06.12.11 **Marine parks review questionnaire mail-out:** by email to all Cayman Islands government staff, civil servants, and councils of associations contact lists, requesting distribution to members. Also posted to MP Review Facebook group page.
https://www.surveymonkey.com/s/2WR32N3

07.12.11 **Marine parks review questionnaire mail-out:** by email to all media contacts held by local Government Information Services (GIS).
https://www.surveymonkey.com/s/2WR32N4.

08.12.11 **Marine parks review questionnaire mail-out:** by email to teachers and staff of other education institutions.
https://www.surveymonkey.com/s/2WR32N3

30.12.11 **Promotional gift: Bumper Stickers.** Printed 1500 "Support Your Marine Parks" bumper stickers (3 designs x 500 units): 1. "SAVE YOUR TOMORROW, TODAY", 2. "REEF LOVER ON BOARD" and 3. "OUR ISLANDS, OUR REEFS" (with Nassau grouper image) (Appendix 3, annex 27). For distribution at DOE attended public events and meetings, available also for collection from DOE offices. Free of charge and advertised on DOE Facebook group page 'Cayman Islands Marine Parks - DOE and Darwin Initiative Review'.

The DOE continues to actively promote their work and efforts with media dissemination, public outreach (meetings, receptions, community events e.g. Agricultural shows, school and educational visits) and through scientific research conducted and presented to the wider scientific community via national, regional and international conferences and published studies in scientific journals. As such, it is expected that DOE will continue such activities in relation to the enhanced MPA system that will result from this project.

## Other International dissemination efforts:

23.05.11-
28.05.11 **Presentations at regional scientific conference:** The 35th Scientific Conference of the Association of Marine Laboratories of the Caribbean (AMLC). Presentation of 2 scientific posters of studies completed as part of Darwin Initiative project research (Fishing Pressure in Cayman Islands 2011, and Reserve effect on algal biomass 2011). Conference attendees: from multiple other Caribbean countries (scientists and marine resource managers).
http://www.amlc-carib.org/meetings/2011.html

18.10.11-
20.10.11 **Presentation at regional scientific conference**: REEF RESILIENCE CONFERENCE 2011. Presentation by Tim Austin and Croy McCoy on Darwin project and reef resiliency in the Cayman Islands.
http://frrp.org/2ndRRC.htm

21.10.11 **Participation at regional meeting**: 26th U.S. Coral Reef Task Force Meeting. Provided a valuable opportunity for NOAA, the State of Florida, members of the U.S. Coral Reef Task Force and other major partners in the Florida Reef Resilience Program to connect with a broad range of experts in planning and reef resilience.
http://www.coralreef.gov/meeting26/

31.10.11-
04.11.11 **Presentations at regional scientific conference**: International Gulf and Caribbean Fisheries Institute (GCFI) 64th annual meeting. Presentation of 2 scientific posters of studies completed as part of Darwin Initiative project research (Fishing Pressure in Cayman Islands 2011, and Reserve effect on algal biomass 2011, and Darwin Project video no. 1). Conference attendees: >1000, from multiple other Caribbean countries (scientists and marine resource managers).
http://www.gcfi.org/index.php

21.03.12-
24.03.12 **Presentation at international scientific conference**: International Benthic Ecology Meeting (41st annual meeting), Norfolk, Virginia). Oral presentation by Croy McCoy (Cayman Islands marine parks and reef resiliency). This is one of the largest scientific meetings for marine biologists in the USA. The 41st meeting hosted more than 700 registrants; a mix of the US's top marine ecologists and up-and-coming graduate and undergraduate students.
http://sci.odu.edu/bem/

Project year 1 (previously reported):

Dissemination efforts were targeted at key stakeholders in government and business (represented by the Marine Conservation Board, Watersports Association and district communities) during the launch period of the project (October 2010) and national media activity in the Cayman Islands will have widened the impact:

Press coverage in host country:

29.10.10 cayCompass.com: '*Marine parks could be doubled*' (http://www.compasscayman.com/caycompass/2010/10/29/Marine-park...)
29.10.10 Caymanian Compass (national newspaper): '*Marine parks could be doubled*'
29.10.10 Cayman Islands Government www.gov.ky: '*Marine Parks: A delicate Balance*' (http://www.gov.ky/portal/page?_pageid=1142,5140536&_dad=portal)

National Cayman television features:

'New initiative launched to protect marine biodiversity' (27th October 2010): (http://www.cayman27.ky/news/item/7394**)**

'Environment Break: Darwin Initiative' (8th November 2010): (http://www.cayman27.com.ky/news/item/7548)

Associated with this Darwin project, the Cayman Islands are celebrating 25 years of marine parks (MP25), which is being actively promoted by DOE with a dedicated logo (featured on outgoing email correspondence from DOE, DOE website banners and MP25 web page on the DOE site), media coverage (documenting the history of Cayman marine parks in a 3 part series; part 1 'Environment Break: Marine Parks History'(11th April 2011): http://www.cayman27.ky/news/item/9395) and public outreach events. In project year 2, a number of public outreach events promoted the MP25, including more television features, a children's poster campaign and reception event entitled 'Meet the Marine Parks', strong promotion of MP25 at the annual 'Pirates' Week' and proposed partnerships with the Cayman Islands Government Department of Tourism and key tourism industry members for the purposes of cross-branding their activities with the MP25. It was hoped that with promotion of the existing parks, this would feed well into the parks eventual proposed enhancement and expansion with the completion of this project. Press releases in the UK during the Darwin project launch and in this first reporting year will have also expanded the impact of this project on an international scale:

Press coverage in UK:

Bangor web page: Bangor scientist to help protect Marine Biodiversity in the Caribbean 28.10.10 http://www.bangor.ac.uk/news/full.php.en?nid=2401&tnid=2401

02.11.10 ITV Wales blog: '*Welsh scientists join Cayman Islands conservation project*' (http://itvwalesblog.com/2010/11/02/welsh-scientists-join-cayman-islands-conservation-project/)
02.11.10 Wales Tonight (ITV Wales) – ITV Local: '*Caribbean Conservation*' (http://www.itv.com/wales/cayman-islands-research39013/)
02.11.10 Welsh Country Magazine: '*Bangor University Scientist to help protect Marine Biodiversity in the Caribbean*' (http://www.welshcountry.co.uk/news-from-around-wales/74-gwynedd/8312-bangor-university-scientist-to-help-protect-marine-biodiversity-in-the-caribbean)
03.11.10 Science News blogspot: '*Bangor Scientist to help protect Marine Biodiversity in the Caribbean*' (http://news-science-news.blogspot.com/2010/11/marinebiologyinternational-bangor.html)
03.11.10 Daily Post (regional Welsh newspaper): '*Reef Relief: Caribbean Mission for N. Wales University Team*'

UK Overseas Territories Conservation Forum, *Forum News No 37, P.16 December 2010.*

In project year 2, we had planned to expand web, media and newsletter activity alongside scientific presentation of research findings in high impact international journals and at international conferences to increase the profile of the project within the host country, Caribbean region and UK, and the broader international scientific community.

The Darwin logo is displayed on DOE research boats (photos available on request).

The DOE actively promotes their work and efforts with media dissemination, public outreach (meetings, receptions, community events e.g. Agricultural shows, school and educational visits) and through scientific research conducted and presented to the wider scientific community via national, regional and international conferences and published studies in scientific journals. As such, it is expected that DOE will continue such activities in relation to the enhanced MPA system that will result from this project.

## 10. Project Expenditure

**Table 3 project expenditure during the reporting period (1 April 2011 – 31 March 2012)**

| Item | **Budget** (please indicate which document you refer to if other than your project application or annual grant offer letter) | **Expenditure** | **Variance/ Comments** |
|---|---|---|---|
| Staff costs specified by individual:<br>Gary Murphy (Fish biomass field survey)<br>Rhiannon Meier (recreational fishery survey)<br>Laura Richardson (Project Support Officer) | | | |
| Overhead costs | | | |
| Travel and subsistence | | | |
| Operating costs | | | |
| Capital items/equipment (specify) | | | |
| Others: Consultancy | | | |
| Others (please specify) | | | |
| TOTAL | | | |

There is a 15.5% variance in the Item: Travel and Subsistence expenditure, which we have mostly met by the variance in Staff Costs, resulting in a final small overspend of £1463.44. This was mostly attributable to an increase in costs due to increases in fuel costs, and in part to bad weather and illness, which meant that the survey team had to return to the sister islands last summer to recommence fieldwork, which, required additional costs of flights and subsistence. This change has not yet been approved by LTS.

## 11. 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 LTS and 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 *Darwin Initiative project to Enhance an Established Marine Protected Area System, Cayman Islands* is 2 years into a 3 year programme. Field surveys of reef health, fish abundance and fishing pressure have been conducted around all 3 islands and we are now able to provide evidence to show the benefit of the MPAs to Cayman. Coral cover is higher on protected reefs, and coral bleaching and coral disease is lower than unprotected areas. There are more fish in protected areas, and there is spill over of fish from the protected areas into the surrounding waters. The Parks have served Cayman well for 25 years, but today's threats are more substantial than ever before. Besides coastal development, overfishing and population growth, new threats include ocean warming causing coral bleaching and disease, increased strength and frequency of storms, sea level rise, ocean acidification, and invasive species.

There is an urgent need to review the protected area system and make it fit for the next 25 years. The highlight of this year's work has been a wide consultation, in which the Darwin team made presentations to the public, and government and non-governmental organisations. A road-show was taken to community centres to harness opinions on marine issues from local people. Awareness was raised by a campaign on radio, television, newspaper, videos, and Facebook and through online questionnaires, encouraging everyone in Cayman to take part. Older Caymanians described how the reefs once looked, and how easy it was to fish in their youth. Most people were keen to see more of the marine environment protected, recognising the value of rich and vibrant reefs to tourism and coastal protection, but highlighted the need for education and greater enforcement. There were of course concerns from fisherman, but also growing realisation that enhanced marine parks will provide resources for future generations. Only 17% of the narrow shelf of the Cayman Islands is actually fully protected, and the aim of the project is to protect 30-50% of habitats, such as mangrove, seagrass, back reef and reef terrace habitats. The project is now using protected area planning tools similar to those used for the Great Barrier Reef Marine Park in Australia, to develop options for new protected areas, which the team will present to the Caymanian public in another round of consultation this summer, before designing a new system of marine parks, with strong public support.

(397 words)

**Images:** We have a large number of excellent digital images of meetings with stakeholders, local partners and SOS Bangor staff involved with marine and socio-economic fieldwork, marine parks planning and design workshops and meetings, and the coastal and marine environment (fish, corals, mobile invertebrates, marine birds, algae and diver surveyors, boats with Darwin logo), all of which we would be happy to share to raise the profile of our work and the Darwin Initiative. We also have high definition video illustrating underwater life and the project team undertaking underwater surveys.

Examples of images:

**Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2011-2012** ***(Text in blue italics refer to activities completed in year 1)***

| Project summary | Measurable Indicators | Progress and Achievements April 2011 - March 2012 | Actions required/planned for next period |
|---|---|---|---|
| ***Goal:*** *To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve*<br>⇒ The conservation of biological diversity,<br>⇒ The sustainable use of its components, and<br>⇒ The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources | | Significant steps have been made towards project aims in the second year of a 3 year project. | [redacted] |
| ***Purpose***<br>To ensure coastal protection for human settlements and future tourism income by enhancing the protection of coral reefs thereby allowing rehabilitation of supporting ecosystems, through increased resilience to climate change. | Increases in species abundance diversity, biomass, size and fecundity and therefore resilience to major impacts both in and (through spillover) outside MPAs. | Training, monitoring, research and involvement of key stakeholders for the purpose of marine protected area system enhancement with completion of the project is well underway and nearing completion. | Marine Protected Area planning tools and GIS continue to be used to design options for consideration and consultation at stakeholder workshops and District community meetings to determine optimal configuration of protected areas that meet user defined goals. |
| ***Output 1.*** *Map the reef and associated subtidal ecosystem habitats around the islands to assess habitat variation and examine representativeness* | *Marine Habitat classification and GIS available in Cayman from Darwin project 14051.*<br>*Additional data from satellite, In situ acoustic surveys (multibeam) & ground-truthing surveys from TNC Caribbean Challenge (Byrne).*<br>*Report to DOE / papers* | *Progress was excellent with all planned activities for Q1 successfully completed and output 1 completed in full and in some cases well ahead of schedule. Indicators remain appropriate.*<br>*Surveys established that despite many corals bleaching in September 2009, that there was no mass mortality event and that habitats need not be reclassified.*<br>*Local and UK press and television coverage supported the project launch by Cayman Islands Governor.* | |
| *Activity 1.1 Steering Group Meeting 1 to Establish Darwin project in DOE with project partners* | | *Meeting held, excellent format for periodic project review – all key project members present. Topics covered included: project partnerships, links with previous Darwin project, review of project objectives, activities, work plan, training, budget, publicity and stakeholder liaison.* | |

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| *Activity 1.2 Stakeholder meeting 1: Marine Conservation Board* | | *Meeting held with key project members and seven key Marine Conservation Board representatives. Topics discussed: project outline and objectives. Engagement and ideas exchange encouraged.* |
| *Activity 1.3 Link with Darwin 14051 (Exeter) review of BAP and GIS Marine habitat maps (Cayman)* | | *Completed with DOE project 14051 personnel in Grand Cayman and key current Darwin project personnel. Habitat mapping from 2004 and 2008 is robust (supported by independent assessment). BAPs for marine habitats and species reviewed. Aimed expansion of current no take zones from 16.7% of Cayman shelf to at least 30% and possible aim of 50% agreed.* |
| *Activity 1.4 Assess existing long term data sets* | | *Data collated and assessed as suitable for analysis. Some preliminary qualitative analysis undertaken.* |
| *Activity 1.5 Initial Ecological Gap Analysis assessment (EGA) (Marine Conservation Workshop 1)* | | *EGA assessment completed for Grand Cayman during Marine Conservation Workshop 1, resulting in creation of marine environmental risk surface, list of biodiversity conservation targets, and latest software training.*<br>*The same has also been completed for Cayman Brac and Little Cayman following the workshop.* |
| *Activity 1.6 Steering Group Meeting 2: Objectives and methodologies* | | *Meeting held – all key project members present (including previous Darwin project staff from DOE). Research objectives and methodologies finalised.* |
| **Output 2.** Assessment of the current level of reef resilience within and outside the Marine Protected Areas of Grand Cayman, Little Cayman and Cayman Brac<br><br>An assessment of the extent | Measures of:<br><br>Coral cover<br>Coral species abundance<br>Calcareous and fleshy macroalgae<br>Coral recruits<br>Frequency of coral diseases and bleaching<br>Frequency of Herbivorous fish<br>Quantification of other impacts e.g. anchoring damage.<br><br>Report to DOE / papers<br><br>Diving surveys of fish species abundance and size, to assess | Output 2 has been completed for years 1 and 2 with all proposed activities successfully completed. Preliminary results have been widely disseminated at regional and UK scientific meetings. Year 3 assessments are scheduled for June and July 2012, in the next and final reporting year. Indicators remain appropriate, although in addition, surveys will include the invasive lionfish, and disease in gorgonian corals and sponges. |

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| of overspill of fish biomass from the No Take Zones into surrounding zones | biomass at sites within and at increasing distances outside of No Take Marine Protected Zones.<br>Report to DOE. | |
| *Activity 2.1 Reef resilience field training and survey* | | *Training and surveys for year 1 completed: benthos video and photo surveys for all islands; 2 M.Sc. theses produced; algal biomass survey carried out on Grand Cayman, results presented at regional conference.* |
| *Activity 2.2 Fish biomass field training and survey* | | *Repeated training and fish biomass surveys completed twice within reporting period: early 2010 and 2011. Results to date have been presented at regional meetings.* |
| *Activity 2.3 ½ year reports Darwin Initiative* | | *Submitted.* |
| *Activity 2.4 Stakeholder meeting 2: Marine Conservation Board* | | *Meeting held: preliminary results of surveys discussed with stakeholders to promote benefits of MPA system. Key stakeholder concerns identified.* |
| Activity 2.5 Reef resilience survey 2 | | Training and surveys for year 2 completed: benthos video and photo surveys for all islands; 2 M.Sc. theses produced with focus on coral colony size, recruits and community structure, and coral bleaching and disease.<br>Benthos surveys will be repeated in the next period, with a focus on Barrel Sponges and the Cayman lionfish population, and archival video recording, with training provided where required. Scheduled July-August 2012. |
| Activity 2.6 Fish biomass survey 2 | | Training and surveys for year 2 completed in January-March to remain consistent with previous surveys |
| Activity 2.7 ½ year report to Darwin Initiative | | ½ year report submitted. |
| ***Output 3.*** *An assessment of the artisanal/recreational fishery* | *Socio-economic questionnaires directed at recreational fishers (visiting piers, and via patrol boat), tourists in departure lounge at airport and via hotel excursion operators, diving operators, charter boat skippers, and migrant* | *Interim report submitted. Additional analysis linking fishing pressure and current fish biomass carried out.*<br>*Indicators are appropriate* |

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| *workers Report to DOE.* | |
| *Activity 3.1 Socioeconomic assessment of artisanal and migrant worker fishers* | *Surveys completed successfully on all three islands.* |
| *Activity 3.2 Socioeconomic assessment of recreational fishers* | *Surveys completed successfully on all three islands.* |
| *Activity 3.3 Interim report of fisher surveys* | *Report produced.* |
| *Activity 3.4 Annual Reporting to Darwin Initiative* | *Submitted.* |
| **Details of Output 4-7** | Project is ahead of schedule in relation to output 4, activities 4.1 to 4.4, output 5, activity 5.1, output 6, activity 6.5. Indicators remain appropriate. |
| *Activity 4.1 Ecological Gap Analysis update and review* | *Completed for all three islands.* |
| Activity 4.2 Steering Group Meeting 3: Identification of concerns and threats | Meeting held – all key DOE and Bangor University project members present. Concerns and threats comprehensively identified. |
| Activity 4.3 District community stakeholder meetings on Grand Cayman, Little Cayman and Cayman Brac: engage comments on perceived threats and goals | 22 different meetings held around all three islands in September and October 2011 presenting data and discussing options for an enhanced marine parks system, including public meetings in each district, discussions with the Ministry and Caucus, members of the opposition, the Marine Conservation Board, the Commissioner's Office in Cayman Brac, four classes at University College of the Cayman Islands in Cayman Brac and Grand Cayman, the Land and Sea Cooperative, the Angling Club, the Seafarers' Association, the CITA board, the Ministers' Association and the Human Right Commission. |
| *Activity 4.4 Environmental Risk Assessment and mapping* | *Completed ahead of schedule for all three islands.* |
| Activity 4.5 Field survey to verify specific habitats | Monitoring field surveys indicate classification and map robust, thus verification unnecessary until after new MPA boundary designation. |
| Activity 5.1 Steering Group Meeting 4: Marine Protected Area Planning | Meeting held – all key project members present. Marine Protect Area planning and next stakeholder consultation discussed. |
| Activity 5.2 Marine Conservation workshop 2 and training: Site Conservation Index and Relative Biodiversity Index Assessment Calculation Workshop | Workshops and training successfully completed during the period December 2011-February 2012. |
| Activity 5.3 Marine Conservation Workshop 3 and training: Use of Marxan protected area modelling software | Workshops and training successfully completed during the period December 2011-February 2012. |

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| Activity 5.4 Review conservation scenarios - determine optimal configuration of protected areas that meet user defined conservation goals | Review completed with MARXAN outputs, biological reef health data and user defined conservation goals in March 2012. |
| Activity 5.5 Field verification of possible configurations | Scheduled for May June 2012 (month later than planned). |
| Activity 6.1 Marine Conservation Board and Community Stakeholder consultation (3) on MPA protected area optimal configuration | Scheduled May 2012. |
| Activity 6.2 Steering Group Meeting 5: Consideration of feedback and implementation planning | Scheduled July 2012. (CHANGED FROM SCHEDULED 'APRIL') |
| Activity 6.3 Marine Conservation Law modifications | Scheduled July – December 2012. (CHANGED FROM SCHEDULED 'MAY') |
| Activity 6.4 Development of MPA management plan, monitoring plans, enforcement plans and education plans | Scheduled July – December 2012. (CHANGED FROM SCHEDULED 'MAY') |
| Activity 6.5 Presentations at international conferences | Presentations made at regional and international conferences, including: *Yr 1: Euro. ISRS Symposium Netherlands, Reef Conservation UK London, GCFI Puerto Rico, GCFI Venezuela;* Yr 2: GCFI Mexico 2011, AMLC Costa Rica 2011, Benthic Ecology Meeting USA 2011, IMCC Canada 2011 (attendance and informal presentation on project only), and Reef Resilience Conference USA 2011 to date. Further presentations planned for International Coral Reef Symposium, Cairns 2012 and GCFI Colombia 2012. |
| Activity 6.6 ½ year report to Darwin Initiative on implementation | Scheduled October 2012. |
| Activity 6.7 Finalisation of maps, signage and brochures | Scheduled from January – February 2013. |
| Activity 6.8 Acceptance and implementation of extended MPA system | Scheduled from March 2013. |
| Activity 7.0 Final Steering Group Meeting and Final Report to Darwin Initiative | Scheduled March 2013. |

## Annex 2 Project's full current logframe

| 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 review the effectiveness of the Marine Protected Area system of the Cayman islands in maintaining resilience of coral reefs and shallow marine ecosystems in response to direct human impact and climate change, and if appropriate, to provide the information base to extend the system to increase that effectiveness | Measures of resilience (see below – output 1)<br><br>Area (km $^2$) of specific MPA zones<br>Currently 103.8 km $^2$ protected. Increase by approx 30% if appropriate | Coral reef and associated ecosystem survey, including in water, acoustic and satellite data sets<br><br>Geographical Information System and Report of MPA acceptance and implementation, supported by public workshops and followed by management | [redacted] |
| Purpose: To ensure coastal protection for human settlements and future tourism income by enhancing the protection of coral reefs thereby allowing rehabilitation of supporting ecosystems, through increased resilience to climate change. | Increases in species abundance diversity, biomass, size and fecundity and therefore resilience to major impacts both in and (through Spillover) outside MPAs | Future monitoring and resilience in the face of climate change, especially when compared with inadequately protected sites in many degraded Caribbean locations | Major coral bleaching event during project could severely impact shallow reefs, resulting in change of emphasis to one of assessing reef resilience and recovery. Occurred October – November 2009 to 90m depth.<br><br>In medium term, and due to time lag, ocean acidification will almost certainly result from high atmospheric carbon dioxide concentrations resulting in the catastrophic loss of coral reefs. Only the most resilient species will survive in a greatly modified habitat |

| Project summary | Measurable Indicators | Means of verification | Important Assumptions |
|---|---|---|---|
| Outputs<br>1. Map the reef and associated subtidal ecosystem habitats around the islands to assess habitat variation and examine representativeness | Marine Habitat classification and GIS available in Cayman from Darwin project 14051.<br>Additional data from satellite,<br>*In situ* acoustic surveys (multibeam) & groundtruthing surveys from TNC Caribbean Challenge (Byrne).<br>Report to DOE / papers | Accuracy assessment conducted under Darwin 14051 and by DOE.<br>Additional assessment necessary to identify any change resulting from October 2009 bleaching event. | That temperatures cool in November (2009) (happening), and that bleached corals recover rather than display mass mortality (signs of recovery are apparent). |
| 2. Assessment of the current level of reef resilience within and outside the Marine Protected Areas of Grand Cayman, Little Cayman and Cayman Brac | Measures of:<br>Coral cover<br>Coral species abundance<br>Calcareous and fleshy macroalgae<br>Coral recruits<br>Frequency of coral diseases and bleaching<br>Frequency of<br>Herbivorous fish<br>Quantification of other impacts e.g. anchoring damage.<br>Report to DOE / papers | Reef survey at 55 established permanent sites around islands using visual census and video techniques.<br>Comparisons with old data and photographs for some sites from 1970s and 1980s (source Ogden).<br>Comparisons with permanent photo quadrats from early 2000s by McCoy.<br>Statistical comparisons with video and visual census by Gall, McCoy & Turner, 2009. Use of experienced team with species specific knowledge, and training for junior members | Sites and techniques already established and old data and photographs archived, so no expected problems. New video data archived.<br>Bleaching event October 2009 means early comparison with pre bleaching survey of July 2009 essential.<br>Will require additional training of junior staff in DOE to provide appropriate dive team size to satisfy health and safety requirements and ensure future monitoring capability. Assisted by MPA Darwin Fellow and Bangor M.Sc. project students. |
| An assessment of the extent of overspill of fish biomass from the No Take Zones into surrounding zones | Diving surveys of fish species abundance and size, to assess biomass at sites within and at increasing distances outside of<br>No Take Marine Protected Zones.<br>Report to DOE | Regular tests of visual assessments of fish size and accuracy of species recognition<br>Enforcement of No Take Zone by MPA patrols | As above.<br>Assumes enforcement ensures No Take Zones are not transgressed. |

| Project summary | Measurable Indicators | Means of verification | Important Assumptions |
|---|---|---|---|
| 3. An assessment of the artisanal/recreational fishery | Socio-economic questionnaires directed at recreational fishers (visiting piers, and via patrol boat), tourists in departure lounge at airport and via hotel excursion operators, diving operators, charter boat skippers, and migrant workers Report to DOE. | Unbiased questionnaires and recorded interviews analysed from representative cross section. Questionnaires tested and trialled in 2009 by Henshall, McCoy & Turner | May not get honest answers when recreational fishers approached in patrol boat, but in general, such fishers are compliant.<br>Honesty and safety will be issue when interviewing migrant workers who tend to fish late evening/night. |
| 4 - 7 (subdivided below for clarity) Plan and promote an extension to the MPA system with full public consultation and involvement. | Using data from 1-4, plan extended MPA zones to cover all representative habitats, covering at least 30% shallow marine environment.<br>Initial consultation to ensure public participation on all 3 islands. Show benefits in terms of results of MPA effects on reef resilience<br>Ecological gap Analysis, and Protected Area Tools in GIS such as Environmental Risk Surface, Relative Biodiversity Index, and Marxan and Marzone protect area planning software<br>GIS data system to show revised boundaries and purpose of zones<br>Stakeholder workshops and public presentations on all 3 islands<br>Acceptance and implementation of extended MPA system. | MPA plans led by Dept of Environment (DOE), Cayman Islands to ensure local ownership, with overseas scientists maintaining behind the scenes advisory scientific role.<br>Changes in legislation required, facilitated by Director, DOE through Government<br>Modified Management plan accepted<br>Modified Monitoring plans accepted<br>Modified enforcement plans accepted | Unusually, there are few assumptions or risks here. Caymanians have been highly supportive of MPA system since benefits have been so obvious, especially in comparison with other Caribbean islands where reefs are substantially more degraded<br>Threats from climate change are widely recognised (especially increased intensity and frequency of hurricanes, sea level rise and mass coral mortality from bleaching and disease) because most have suffered effects. Coastal protection and income from tourism are recognised as being widely important and need to update MPA system is generally understood.<br>Sensitization is already high due to existing MPA system, and education elements are already exceptionally strong. |

| | Activities (detailed in work plan) | Monitoring Indicators |
|---|---|---|
| 1.1 | Steering Group Meeting 1 to Establish Darwin project | Existing data assessed and initial EGA completed to identify survey objectives. Stakeholders engaged with Darwin project.<br><br>2 Steering Group Meetings (1 & 2)<br>1 Marine Conservation Board (1)<br>1 Marine Conservation Workshop (1) |
| 1.2 | Stakeholder meeting 1: Marine Conservation Board | |
| 1.3 | Link with Darwin 14051 (Exeter) review of BAP and GIS Marine habitat maps (Cayman) | |
| 1.4 | Assess existing long term data sets | |
| 1.5 | Initial Ecological Gap Analysis assessment (EGA) (Marine Conservation Workshop 1) | |
| 1.6 | Steering Group Meeting 2: Objectives and methodologies | |
| 2.1 | Reef resilience field training and survey | Darwin Fellows trained in specific methodologies to take part in field work<br>Data on MPA effects on resilience attained and compared with pilot studies<br>Impact of October 2009 bleaching event quantified in short term and medium term<br>Papers on reef resilience presented at GCFI 2010, Euro ISRS 2010 and ICRS 2012 accepted<br>Benefits of MPA system quantified, and communicated to stakeholders<br>Importance of effective enforcement reinforced and Marine Conservation Officers informed/training enhanced<br><br>1 Marine Conservation Board (2)<br>2 x ½ year DI reporting |
| 2.2 | Fish biomass field training and survey | |
| 2.3 | ½ year reports Darwin Initiative | |
| 2.4 | Stakeholder meeting 2: Marine Conservation Board | |
| 2.5 | Reef resilience survey 2 | |
| 2.6 | Fish biomass survey 2 | |
| 2.7 | ½ year report to Darwin Initiative and Final report on Benefits of extended MPAs | |
| 3.1 | Socioeconomic assessment of artisanal and migrant worker fishers | Data on non-commercial fishing pressure attained & compared with pilot survey. Fisher impact compared with fish biomass study<br>Papers on recreational fishing presented at GCFI 2010, Euro ISRS 2010 and ICRS 2012 accepted<br>EGA reviewed in context of new field data<br>Stakeholders views on threats and conservation goals assessed<br>Environmental risks to specific habitats/species mapped and verified<br><br>1 Steering Group Meeting (3)<br>3 Community Stakeholder meetings (3 islands)<br>Annual DI reporting |
| 3.2 | Socioeconomic assessment of recreational fishers | |
| 3.3 | Interim report of fisher surveys | |
| 3.4 | Annual Reporting to Darwin Initiative | |
| 4.1 | Ecological Gap Analysis update and review | |
| 4.2 | Steering Group Meeting 3: Identification of concerns and threats | |
| 4.3 | District community stakeholder meetings on Grand Cayman, Little Cayman and Cayman Brac: engage comments on perceived threats and goals | |
| 4.4 | Environmental Risk Assessment and mapping | |
| 4.5 | Field survey to verify specific habitats | |

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| 5.1 Steering Group Meeting 4: Marine Protected Area Planning<br>5.2 Marine Conservation workshop 2 and training: Site Conservation Index and Relative Biodiversity Index Assessment Calculation Workshop<br>5.3 Marine Conservation Workshop 3 and training: Use of Marxan protected area modelling software<br>5.4 Review conservation scenarios - determine optimal configuration of protected areas that meet user defined conservation goals.<br>5.5 Field verification of possible configurations | Darwin Fellows trained in Protected Area tools<br>Biodiversity Index for sites quantified<br>Optimal configuration of protected areas that meet user defined conservation goals determined<br>Verified by field assessment<br>Papers on protected area enhancement based on quantitative assessment<br>presented at IMCC Washington DC<br><br>1 Steering Group Meeting (4)<br>2 Marine Conservation Workshops (3 & 4) |
| 6.1 Marine Conservation Board and Community Stakeholder consultation (3) on MPA protected area optimal configuration<br>6.2 Steering Group Meeting 5: Consideration of feedback and implementation planning<br>6.3 Marine Conservation Law modifications<br>6.4 Development of MPA management plan, monitoring plans, enforcement plans and education plans<br>6.5 Presentations at international conferences<br>6.6 ½ year report to Darwin Initiative on implementation<br>6.7 Finalisation of maps, signage and brochures<br>6.8 Acceptance and implementation of extended MPA system | Stakeholders consulted on proposed options for MPA area configuration<br>Relevant changes in Marine Conservation Law made<br>Monitoring plans, enforcement plans and education programs adopted<br>Clear dissemination of new laws and areas<br>Optimal configuration of enlarged MPA covering 30% Cayman shelf accepted if appropriate<br>Increases in species abundance diversity, biomass, size and fecundity and therefore resilience to major impacts both in and (through Spillover) outside MPAs<br>½ year DI reporting<br>Marine Conservation Board (3)<br>3 Stakeholder Community Meetings (3 islands)<br>1 Steering Group Meeting (5) |
| 7.0 Final Steering Group Meeting and Final Report to Darwin Initiative | Final Steering Group Meeting (6)<br>Final DI Reporting |

## Annex 3 Onwards – supplementary material (optional but encouraged as evidence of project achievement)

This may include outputs of the project, but need not necessarily include all project documentation. For example, the abstract of a conference would be adequate, as would be a summary of a thesis rather than the full document. If we feel that reviewing the full document would be useful, we will contact you again to ask for it to be submitted.

It is important, however, that you include enough evidence of project achievement to allow reassurance that the project is continuing to work towards its objectives. Evidence can be provided in many formats (photos, copies of presentations/press releases/press cuttings, publications, minutes of meetings, reports, questionnaires, reports etc) and you should ensure you include some of these materials to support the annual report text.

### ABSTRACTS OF CONFERENCE PRESENTATIONS, PROCEEDINGS, SUBMITTED PUBLICATIONS AND DISSERTATIONS

Accepted abstracts for oral presentation by Turner, J., McCoy, C. and Austin, T. at the 12th International Coral Reef Symposium (ICRS), 9th-13th July 2012, Cairns, Australia (Will take place in year 3 of project):

1. **Impacts of recreational and artisanal fisheries, Cayman Islands, Caribbean. Turner, J.R.[1]; McCoy, C[1,2]; Meier, R[1]; Austin, T.[2]; Ebanks-Petrie; G.[2], Richardson, L.[1, 2].**

2. **Cayman Islands Marine Protected Areas, a 25 year legacy. Austin, T.[1]; McCoy, C[1, 2]; Ebanks-Petrie, G.[1]; Turner, J.[2]; Richardson, L.[1, 2]; Hillyer, K[2]; Looker, E.[2].**

3. **Marine Protected Areas effectiveness on reef fish assemblages; Cayman Islands. Austin, T.[1]; McCoy, C[1, 2]; Ebanks-Petrie, G.[1]; Turner, J.[2]; Richardson, L.[1, 2]**

Project year 2 (reporting period):

4. **Quantifying the Impacts of Recreational and Artisanal Fisheries in the Cayman Islands through the use of Socioeconomic Questionnaires. McCoy, C[1,2], Meier, R[1], Turner, J.R.[1]**

5. **Estimating marine reserve effects through quantification of macroalgal biomass on a central Caribbean coral reef. McCoy, C[1,2], Richardson, L[1], Turner, J.R.[1]**

6. **Cayman Islands Marine Protected Areas, a 25 Year Legacy. McCoy, C[1, 2]; Austin, T.[1]; Ebanks-Petrie, G.[1]; Turner, J.[2]; Richardson, L.[1, 2]; Hillyer, K[2]; Looker, E.[2].**

7. **Influence of Marine Protected Areas on Resilience to Bleaching, Disease and Compromised Health in Scleractinian and Milleporid Corals, the Cayman Islands, Caribbean. Hillyer, K.**

8. **Assessing the Effect of Marine Protected Areas on Coral Recruitment, a Measure of Reef Resiliency, in the Cayman Islands, Caribbean. Looker, E.**

*Project year 1 (previously reported):*

9. ***The effect of long established marine protected area on Caymanian coral reefs. Gall, S.[2], McCoy[1,2], C., Turner, J.R[2] (paper prepared for Biological Conservation)***

10. *An evaluation of Grand Cayman MPA performance: a comparative study of coral reef fish communities. McCoy, C[1,3], Dromard, D.,[2] and Turner, J.R.[3]*

11. *Maintaining reef resilience: the characteristics and spatial distribution of fishing pressure from the recreational and artisanal fisheries of the Cayman Islands. Henshall, B.[2], McCoy, C.[1,2] and Turner, J.R.[1] (paper prepared for PLoSOne).*

12. *Report Abstract from TNC Visiting Scientist to Cayman Islands Department of Environment. Steve Schill, April 6-16, 2010*

13. *Recovery of Caymanian Reefs after a coral bleaching event; can Marine Parks help? Campbell, J.L.*

14. *An Assessment of Caymanian Coral Reefs, Are the Long Established Marine No-Take Zones Enough? Barton, A.*

15. *The Effect of Long Established Marine Protected Areas on the Resilience of Caymanian Coral Reefs. Gall, S.*

16. *Maintaining Reef Resilience: The Characteristics and Spatial Distribution of Fishing Pressure from the Recreational and Artisanal Fisheries of the Cayman Islands. Henshall, B.*

17. *Recovery of Caymanian reefs after a coral bleaching event; can marine parks help? Campbell, J.L.*

18. *Evaluation of Marine Protected Area's Performances: The Case of Little Cayman and Cayman Brac, Cayman Islands. Dromard C. R.[2,] McCoy, C [1,3], and Turner, J.R. [3]*

19. *Quantifying the impact of recreational and artisanal fisheries, in the Cayman Islands, through the use of socio-economic questionnaires. Meier, R., McCoy, C., Richardson, L., and Turner, J.R.*

20. *Established Marine Protected Areas enhance the resilience of Caymanian coral reefs. Turner, J.R., McCoy, C.*, Byrne, J., Barton, A[1]., Dromard, C[2]., Campbell, J., Gall, S., Henshall, B., C., Pisani, N.*

21. *Towards Enhancing an Established Marine Protected Area System, Cayman Islands Turner, J.R., McCoy, C.*, Byrne, J., Barton, A[1]., Dromard, C[2]., Campbell, J., Gall, S., Henshall, B., C., Pisani, N.*

22. **Example of Output: Environmental Risk Surfaces for Grand Cayman, Little Cayman and Cayman Brac**

23. **Example of Output: Marine Habitat maps for Grand Cayman, Little Cayman and Cayman Brac**

24. **Example of Output: Reef Health Index at monitoring sites around Grand Cayman, Little Cayman and Cayman Brac**

25. **Example of Marxan Output: Best Solution for Potential Marine Protected Areas with a 50% goal for the most important habitats of Grand Cayman, Little Cayman and Cayman Brac.**

**26. Example of Output: Possible configuration of New Marine Protected Areas for Grand Cayman, Little Cayman and Cayman Brac**

## 27: Promotional gifts

**Support your marine park pens (x500)**.
For distribution at DOE attended public events and meetings. (Due to the size of the pen, it was not possible to include the Darwin Initiative or DOE logos).

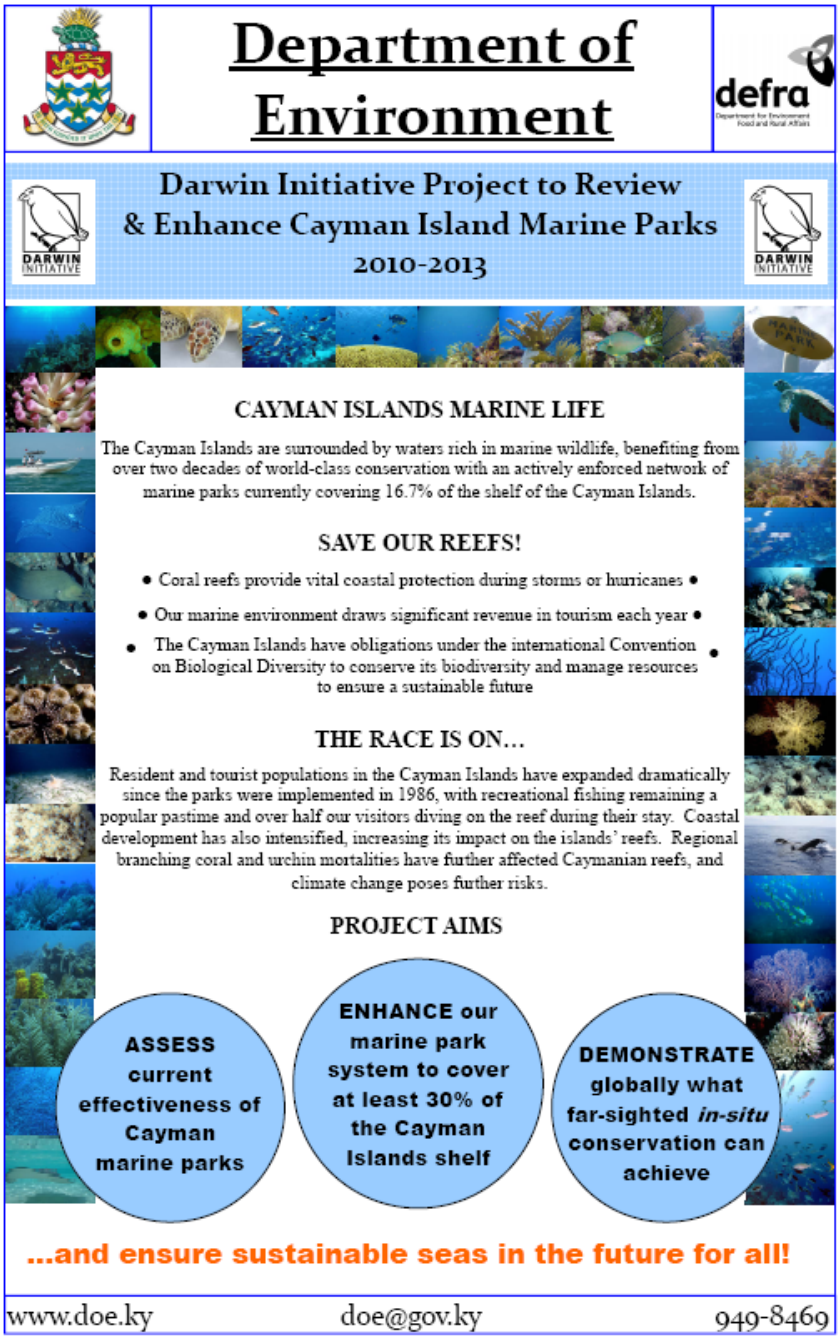


**Bumper Stickers (x1500)**
3 designs x 500 units: 1. "SAVE YOUR TOMORROW, TODAY", 2. "REEF LOVER ON BOARD" and 3. "OUR ISLANDS, OUR REEFS". For distribution at DOE attended public events and meetings, available also for collection from DOE offices. Free of charge and advertised on DOE Facebook group page 'Cayman Islands Marine Parks - DOE and Darwin Initiative Review'.



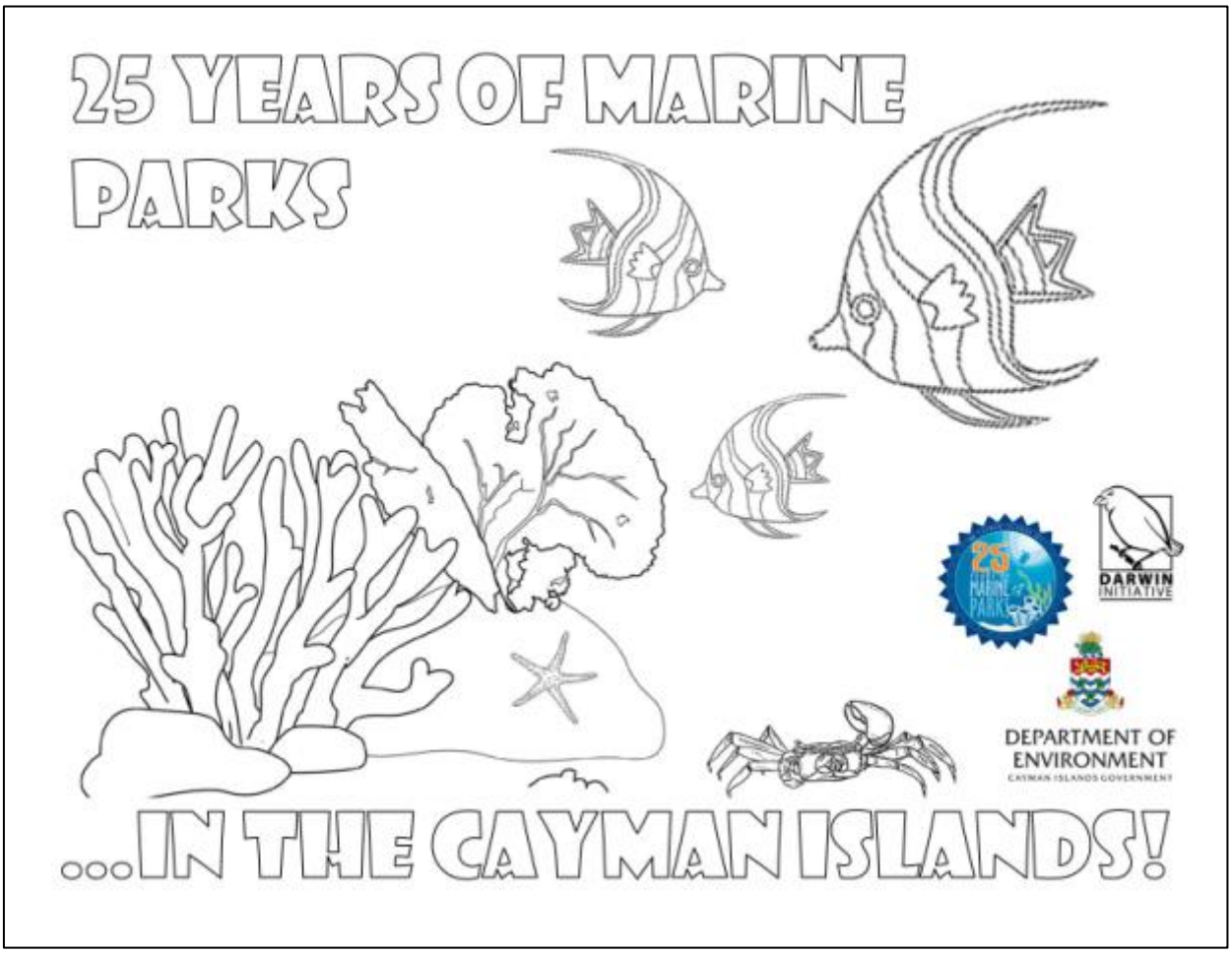
## 28: Other outreach

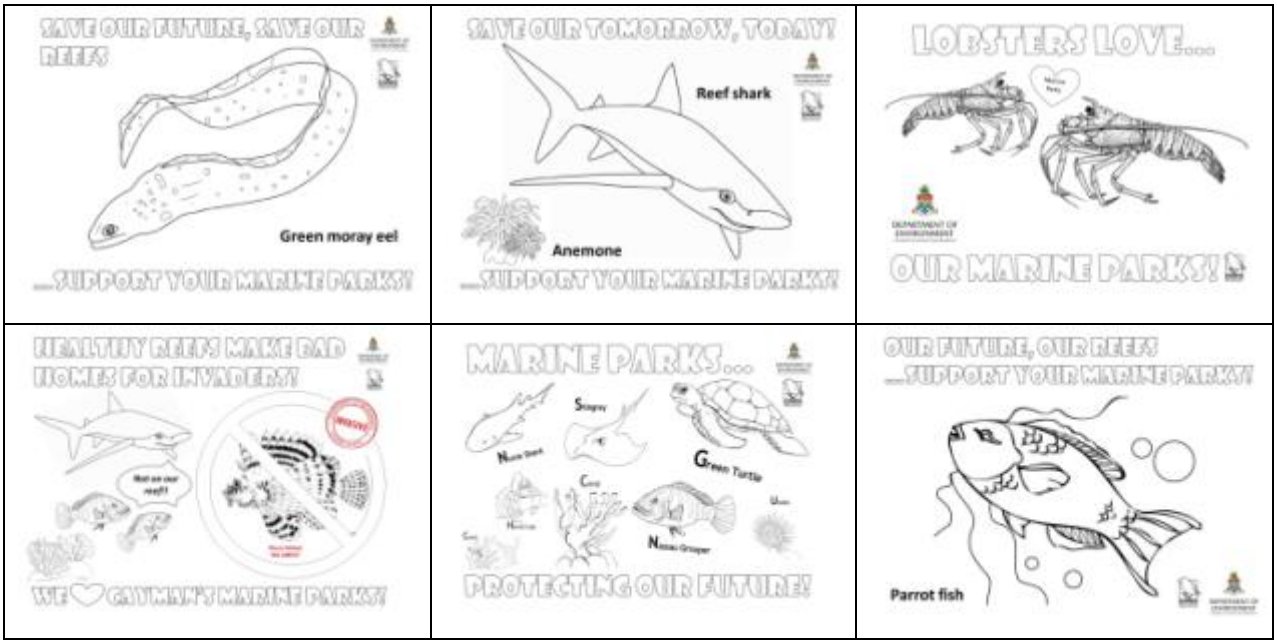
**Information poster (for permanent display in DOE offices and displayed also at DOE attended public and private events**



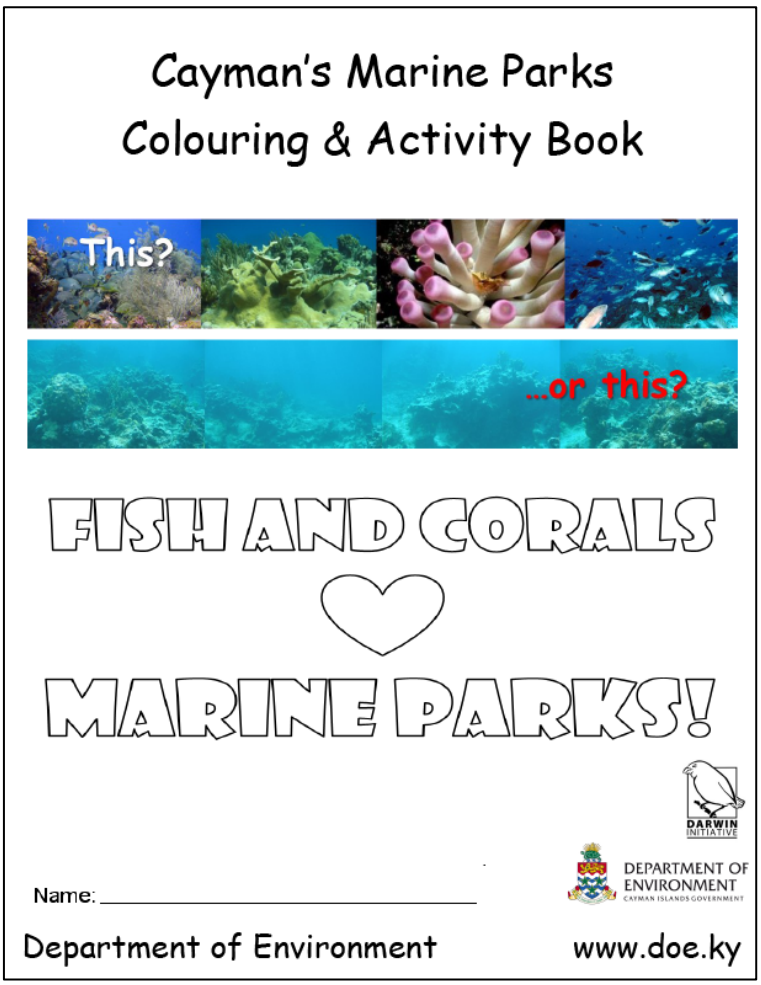
**Marine parks survey:**

**Children's activity items:**

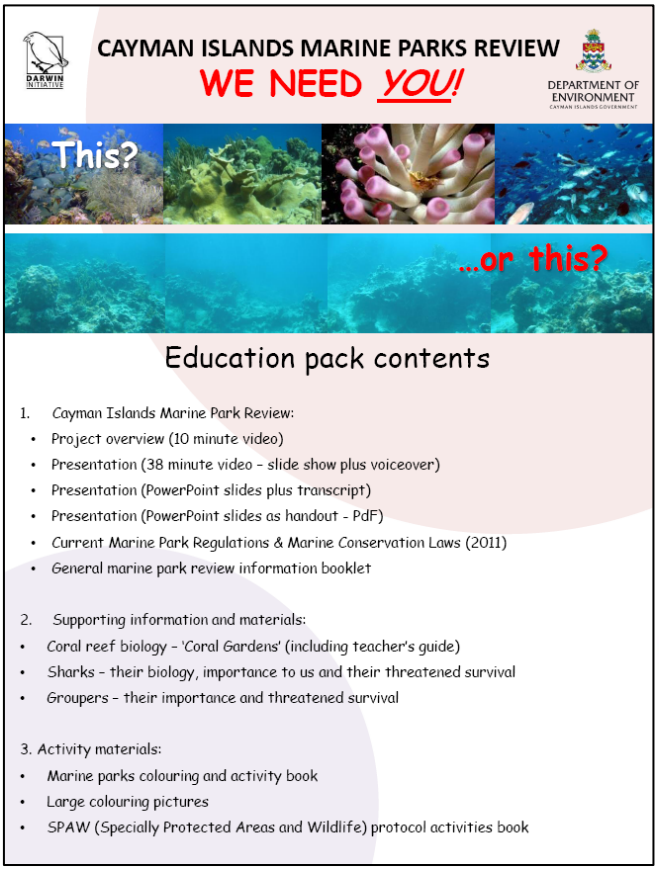


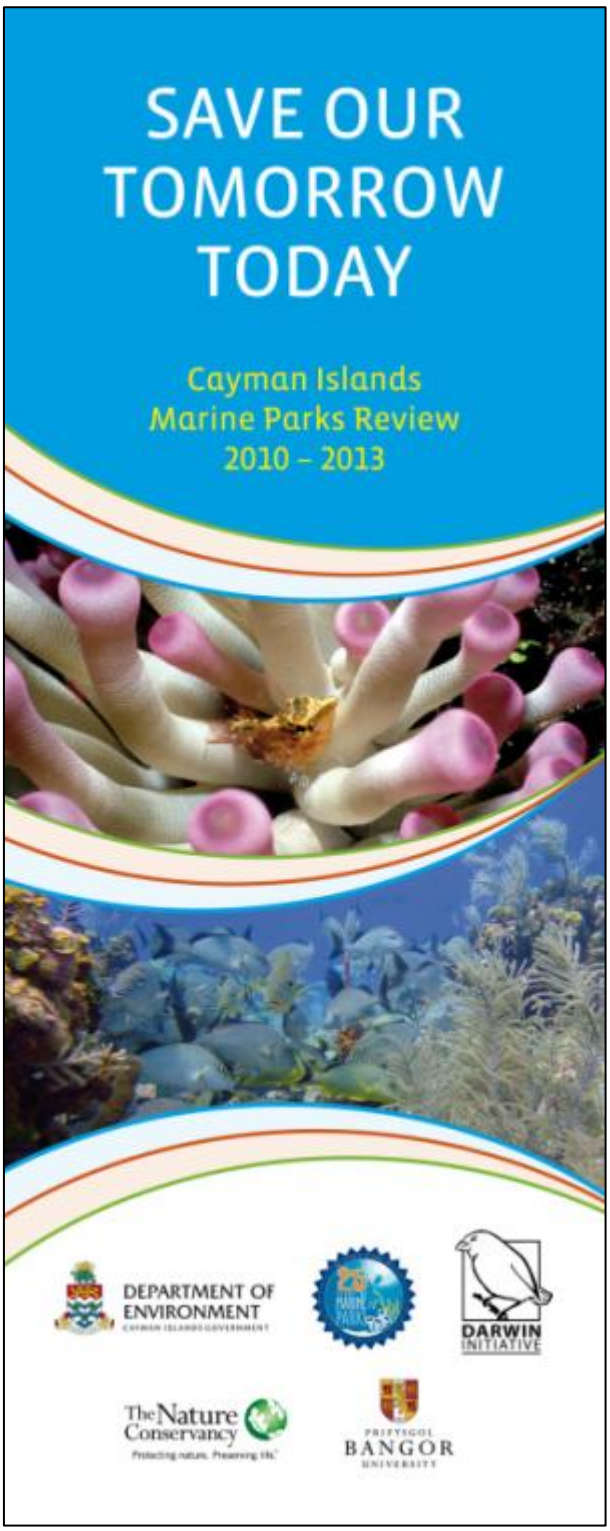
**Colouring and Activity Book:**

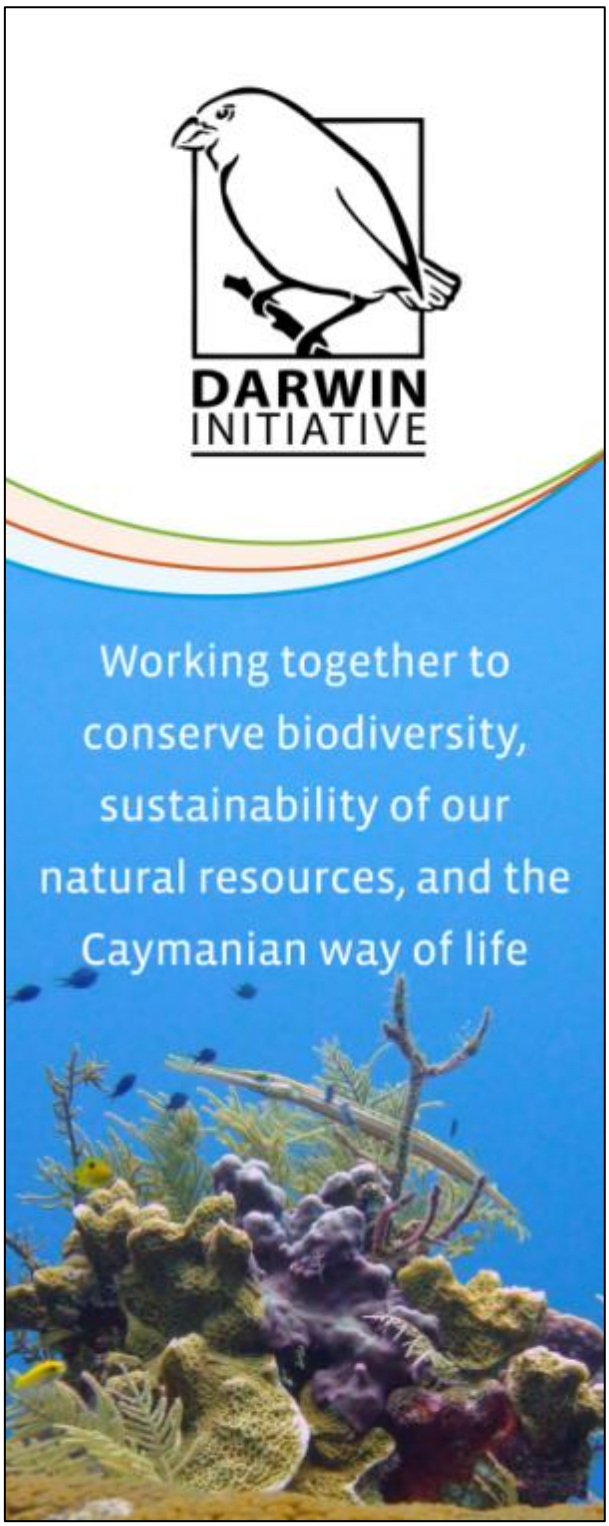



**Education pack:**



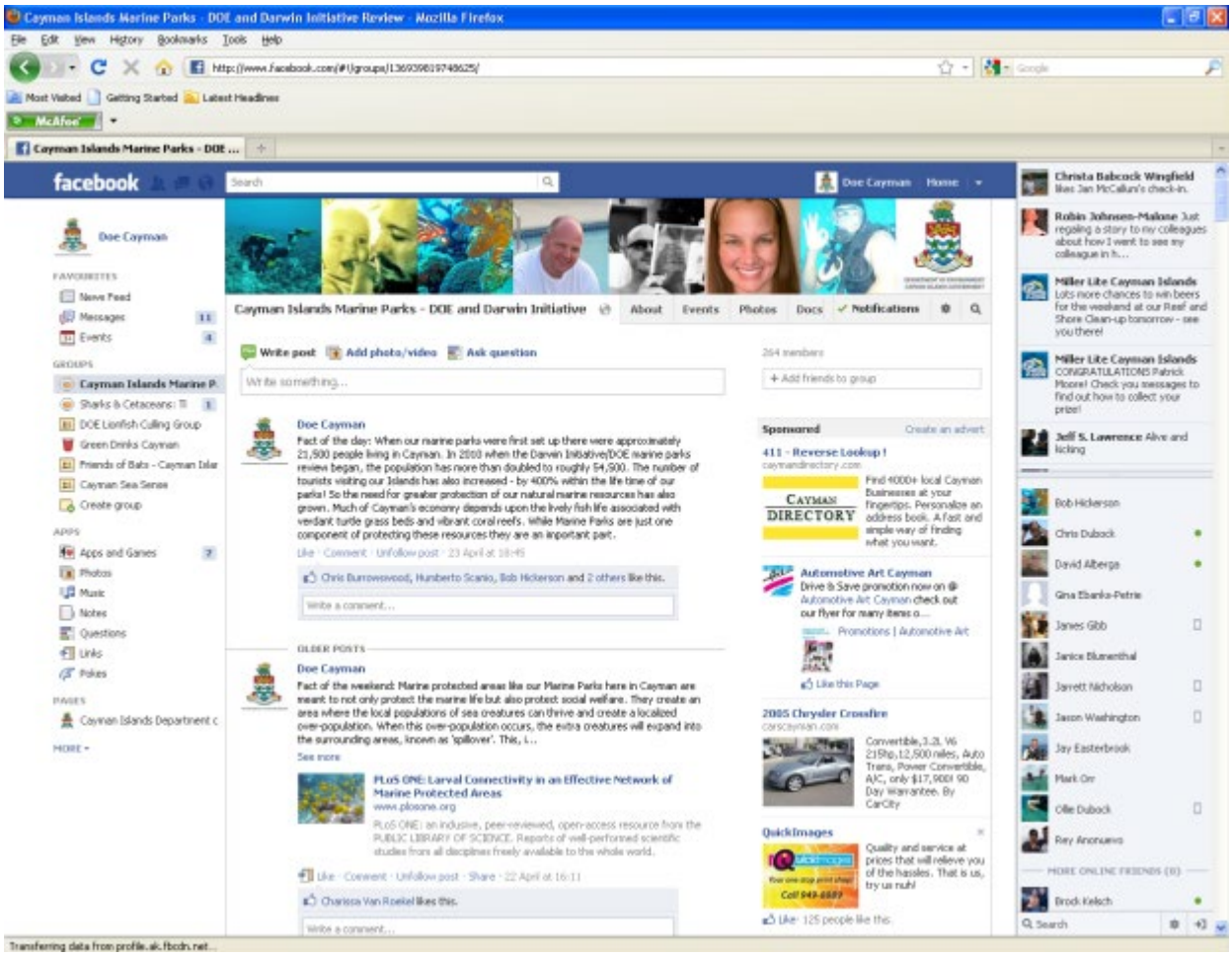

**Outreach banners for meetings, consultations, presentations and press briefings:**



# 29: Facebook group

## Facebook group page



**Facebook group description:**

"In 2011 Cayman marine parks turned 25 years old!

As a result, the Department of Environment is currently carrying out a comprehensive review of the parks to ensure that, 25 years on, they are still optimally configured to protect Cayman's marine habitats and resources for future generations. Assessments have been undertaken to identify and quantify, where possible, the current level of threat to the marine environment as well as the capacity of our coral reefs and other marine systems to cope with future threats such as climate change and coral bleaching. Funded by the UK Government's Department of the Environment, Food and Rural Affairs, this is a Darwin Initiative project which brings together expertise from here at DOE, Bangor University in the UK and The Nature Conservancy in the USA.

In September 2011 the project team went out to the public to present the scientific findings and hear what people would like to see in an improved marine parks system for the Cayman Islands. We presented the data and discussed options for an enhanced marine park system at 22 different meetings, around all three islands. This included public meetings in each district, discussions with the Ministry and Caucus, members of the opposition, the Marine Conservation Board, the Commissioner's Office in Cayman Brac, four classes at University College of the Cayman Islands in Cayman Brac and Grand Cayman, the Land and Sea Cooperative, the Angling Club, the Seafarers' Association, the CITA board, the Ministers' Association and the Human Right Commission. A public meeting is due to be held in Little Cayman early in the New Year. This presentation has also been videoed and combined with supporting materials in an education pack. Forty-five copies of this pack have been distributed to all government and public schools, other education bodies, the prisons and environmental organizations that provide outreach to the public.

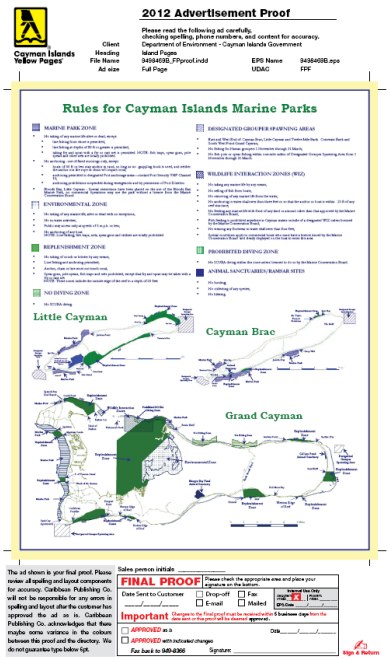
Public input gained during these meetings and ongoing will be logged, combined with our long-term biological data and together with the habitat maps that we have put together over the last few years, we will design various options for improving protection of the marine environment around Cayman. We will map those options and come back out to the public again in April 2012 to seek your input on which you believe to be the best.

The purpose of this Facebook group is to provide an additional forum through which you can learn more about this important review of Cayman marine parks and provide YOUR own feedback about what is important to you and how together we might improve protection of the Cayman Islands marine environment so that in another 25 years, we can still enjoy all that we have enjoyed in the past and what we enjoy today. If you would prefer to provide feedback and comments or ask questions directly, please do not hesitate to contact DOE on DOE@GOV.KY or Tel. 949-8469. We hope you will enjoy contributing to and reading about the project."

# 30: Complementary DOE outreach efforts

## Launch of MP25 (DOE initiative celebrating 25 years of marine parks in the Cayman Islands)


## Yellow pages advertisement


## 31: Press activity

**Project year 2 (reporting period):**

(Detailed in Dissemination section)

*Project year 1 (previously reported):*

***Bangor University Press Release 27th October 2010: Bangor helps to protect Marine Biodiversity in the Caribbean***

### Checklist for submission

| | Check |
|---|---|
| **Is the report less than 5MB?** If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line. | Yes |
| **Is your report more than 5MB?** 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. | |