Darwin Initiative – Final Report

Darwin Project information

Project Reference	17-005
Project Title	Darwin Marine Biodiversity Action Plan for Gabon
Host country	Gabon
UK Contract Holder Institution	University of Exeter (**UoE**)
Host Country Partner Institution(s)	Agence National des Parcs Nationaux (**ANPN**) Partenariat pour les Tortues Marines du Gabon (**PTMG**) Ministry of Forestry, Water, Fisheries & Agriculture (**MEFEP**; Fisheries Directorate) SEATURTLE.org (**ST.org**) Wildlife Conservation Society - Gabon **(WCS)**
Darwin Grant Value	£299,746
Start/End dates of Project	October 2009 – March 2012
Project Leader Name	Prof Brendan J Godley and Dr Annette C Broderick
Project Website	http://www.seaturtle.org/mtrg/projects/gabon/
Report Author(s) and date	Godley, Broderick, Collins, Formia, McClellan, Rees, Witt 1 June 2012

1 Project Background

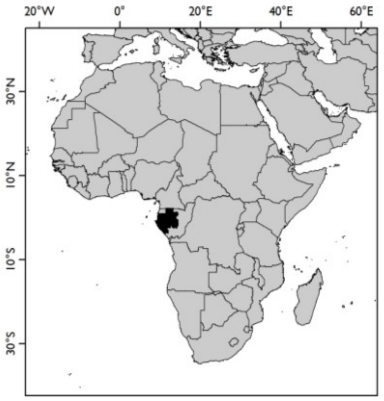

Figure 1. Gabon (filled polygon) and the African continent.

Gabon has significant natural resources with potential for poverty alleviation *e.g.* ecotourism and sustainable fishing. Although substantial efforts have been focussed on terrestrial conservation, the country's marine biodiversity has been largely neglected, despite considerable offshore oil exploitation and increasing fishing pressure. Key marine biodiversity includes:

Major fishing resources: these are currently exploited through a national industrial trawling fleet and concessions to international fleets. Marked under-capacity for spatial management of fisheries and assessment/mitigation of bycatch was identified.
Globally important marine turtle populations: the world's single largest rookery for the leatherback turtle (tens of thousands of nests annually and animals migrating through UK waters of St Helena/ Ascension Island); also regionally important, yet under-researched, nesting of olive ridley turtles and regionally important foraging sites for green and hawksbill turtles that are still subject to direct harvest.
Globally important, yet understudied, marine mammal populations: species include humpback whales and Atlantic humpback dolphins; data are sparse.

There is a clear need for enhanced marine resource management and the project aimed to facilitate a **Marine Biodiversity Action Plan** process that would see the integration of all available information on the spatial distribution of biodiversity and threats. The project set out to:

1) increase local capacity to undertake research to further inform the development and implementation of key actions, and 2) increase awareness among key stakeholders and the general public as to the importance of marine biodiversity. This report describes the project's activities.

2 Project support to the Convention on Biological Diversity (CBD)

The project was designed to contribute broadly to CBD and other MEA's (CITES and CMS). Capacity building initiatives contribute to articles 5, 6, 7, 10, 12, 14, 16 and 17. Research initiatives contribute to articles 5, 6, 7, 8, 14 and 16. Awareness raising initiatives contribute to articles 13,16 and 17.

3 Project Partnerships

The lead in-country partner was The Ministry of Forestry, Water, Fisheries and Aquaculture (MEFEP), which had responsibility for all fisheries related aspects of the project, including work related to the fisheries vessel monitoring system (VMS) and the fisheries observer programme. However fisheries department moved to Ministere de l'Agriculture, de l'Elevage de la Peche et du Developpement Rural during the project time-frame. The Ministry also plays a key role in liaising with other Government organisations including Agence National des Parcs Nationaux (ANPN; the CBD focal point with which we have a close working relationship), Centre National de la Recherche Scientifique et Technologique (CENAREST), Centre National des Données et de l'Information Océanographiques (CNDIO) and the Gabonese Navy. Further partner organisations include the Marine Turtle Partnership of Gabon (PTMG), who facilitate aspects of project work concerning marine turtles (including work in Congo, Equatorial Guinea, São Tome) in addition to the Wildlife Conservation Society (WCS), who coordinate and provide logistical support for the project activities in Gabon, Congo and Equatorial Guinea and finally SEATURTLE.ORG supplies logistical support for marine turtle work. Our relationship with project partners was maintained through periods of in-country fieldwork and by an email circulation list, e-mails, telephone and Darwin Newsletters. The Darwin project website has been an important repository listing the activities and outputs of the project. Additionally, formal meetings with partners were held during periods of in-country fieldwork when project staff were present.

Additional Unforeseen Collaboration: The Darwin project developed collaboration with the National School of Water and Forests (L'Ecole Nationale des Eaux et Forêrets; ENEF), which is the Gabonese Government training school for Water and Forestry management. ENEF are responsible for training all National Parks managers and technical advisors. This relationship was facilitated by collaboration on a project satellite tracking green turtles. Other collaborators include Aventures Sans Frontiers (ASF), a Gabonese NGO concerned with the protection of habitats and species. ASF assist with activities in Pongara National Park in the north of Gabon, primarily relating to work on sea turtles.

In the Cap Esterias / Corisco Bay region the project formed essential partnerships and gained the suport of the local mayor, the gendarmerie, the marine patrol, and the military stationed on Mbanye Island.

At the end of the project, the partnerships demonstrated great strength, with communication and collaboration of all parties leading to the successful production of the Biodiversity Action Plan, Marine Biodiversity Atlas and close cooperation for the delivery of the fisheries observer workshop and resulting fisheries monitoring programme.

4 Project Achievements

4.1 Impact: achievement of positive impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits

Significant developments have been made towards creating an infrastructure that will allow Gabon's fisheries to be sustainably managed with regard to food security and biodiversity impacts: The first fishery observer programme has been launched, with related installations of TED in shrimp trawls, there is greater capacity to deal with VMS data and there is an appetite for a sustainable fisheries management plan when enough data have been gathered.

Local conservation organisation Manga, which is having impact on sea turtle conservation in the trans-frontier Corsico Bay through education, monitoring and research. Preliminary signs are that turtle exploitation has virtually ceased.

Knowledge of marine biodiversity has increased and much data has been integrated into a national marine biodiversity GIS. This has highlighted key knowledge gaps and has created strong interest in an evidence-based approach to significantly expand the extant of marine protected areas . Awareness of the importance of marine biodiversity is greatly improved across stakeholders of all levels.

4.2 Outcomes: achievement of the project purpose and outcomes

The overall purpose was to see improved national and local capabilities applied to the sustainable and equitable management of marine biodiversity of Gabon. To do this, the project set out to create a Marine Biodiversity Action Plan (BAP) with supporting research and capacity. The Government of Gabon has broadly agreed with the BAP and associated key conservation actions. Indeed it is seeking our support for a second project to action some of them.

4.3 Outputs (and activities)

The project achieved all its outputs as laid out in the logical framework, meeting all targets and greatly exceeding most e.g. in-country expert time and the magnitude of training.

The multiple high-level personnel and organisational changes in the ministries covering fisheries did not negatively impact the project as strong links between all partners at different levels meant the project was able to continue solidly throughout these transitions.

4.4 Project standard measures and publications

Annex 4 quantifies the standard measures (SM) and the project's accomplishments against expected outcomes. Here we detail a few of the highlights.

One of the strengths of the project was its investment in ***training*** on diverse subjects relating to biodiversity management and protection. We were fortuitously able to provide guidance and training to several university-level students, from undergraduate to Master's level, when none was originally planned and we more than tripled the planned number of people who received education and training according to SM 6A.

Likewise the project had better than anticipated impact on ***scientific data collection and analysis*** (SMs 9-14). We were able to establish and enhance more datasets, which when combined with training has led to stronger management capacity. Additionally the extensive research supported by and analysed as part of the project has led to several key scientific publications.

A total of 7 peer-reviewed scientific papers were published during the project with 1 additional paper in submission and several more planned. Of note are two concerning marine turtles. The first, Witt et al. (2010), covers the long-range habitat use of leatherbacks and hence the interconnectedness of Gabon with countries throughout the south Atlantic whilst underlining the potential impacts of high-seas fisheries. The second, Maxwell et al. (2011), highlights the appropriate designation of a bi-national protected area between Gabon and Congo, as the marine habitat of both nations is used by olive ridley turtles during their breeding season. Both papers were picked up by the media and resulted in quite widespread coverage over a range of broadcast media.

The ***Darwin Marine Biodiversity Atlas*** draws together the many geospatial data layers that have been created by, or made available to, the Darwin Project. The gathered data are hosted both digitally (within a format suitable for Geographic Information System software) and in physical hardcopy format. The atlas contains data regarding the annual and seasonal progression of the physical environment, such as sea surface temperature, ocean surface productivity and ocean winds. Along with these data the atlas presents information on the distribution of marine species, including marine turtles (leatherback, olive ridley, hawksbill and green turtles) and marine mammals (humpback whales and humpback dolphins), gathered over a decade by beach patrols, aerial surveys, boat surveys and satellite tracking technologies. The atlas also includes information on anthropogenic influences in the sea, such as light from hydrocarbon activities, industrial fisheries operating in coastal and offshore

habitats and the density of logs along the coast of Gabon that pose a risk to nesting sea turtles. At the completion of the project, the full atlas (digital and physical) was handed to the Government of Gabon.

The Darwin project combined forces with the parallel activities of Wildlife Conservation Society Gabon to produce a broad ranging ***Strategic Plan for the Conservation of Congo Basin Coasts*** in 2011. As well as this Marine Biodiversity Action Plan, completed by the Darwin Project, we presented an updated ***Priority Marine Conservation Actions*** needed for the conservation of marine biodiversity in Gabon under the five strategies suggested by the CBC Plan. This document in French/English has been widely circulated and is hosted on the Darwin Project Website.

4.5 Technical and Scientific achievements and co-operation

Extensive collaborative research has been undertaken on marine turtle nesting patterns, movements and distribution, marine mammal distribution as well as the diversity of threats. These activities have also extended into the Republic of Congo and Equatorial Guinea. Technical work on the development of key GIS databases on VMS and species distribution and threat layers have been created together with a wide range of stakeholders, particularly the fisheries department.

4.6 Capacity building

Capacity building was an integral component of Darwin Project actions. Local capacity has been significantly enhanced through many weeks of training, provision of equipment and materials and organisational development. Partners receiving training have included DG Peche (VMS analysis training), students from ENEF, and the local NGO Manga.

Numerous workshops were convened to train members of governmental departments and key individuals identified in relevant communities and organisations. Planned workshops included those for VMS/GIS data management, which were given by Drs Witt and McClellan to DG Peche staff. Training for in-water monitoring techniques was provided to Darwin field officers (Villarubia, Ikoubou, Ikaka, Agamboué), ANPN Akanda ecoguards (Gabon) and INDEFOR ecoguard (EG) and was reinforced and expanded through the several periods of in-country presence of UoE specialists(Drs Formia, McClellan, Witt, and Mr Rees).

Training in turtle biology and conservation techniques was delivered annually by the Marine Turtle Partnership of Gabon developing skills for ANPN staff, technicians from other turtle NGOs and interested individuals to better protect Gabon's globally important marine turtle populations.

A Fisheries observer programme was instigated following the initiation of of marine observer work, which was brought about by efforts from Drs Witt and McClellan of University of Exeter, Dr Formia and Mr Collins of WCS and the specialist training team from NOAA in the US.

Regional NGO 'Manga' was established under facilitation of the Darwin Project. Darwin Fellow, Dr Formia led its organisational development, with training carried out by Dr McClellan (UoE). During the project, members of *Manga* / Darwin field officers and the fisheries department have experienced networking opportunities at international conferences held in the US and Mexico and training and management development in Brazil.

Extensive ecoguard and ANPN staff training in marine mammal monitoring and conservation was provided by Mr Collins at all protected areas with a marine component in Gabon together with similar training offered to corresponding staff in Congo.

4.7 Sustainability and Legacy

Fisheries observer work is likely to endure as Gabon seeks to improve its position in environmentally-friendly fisheries, which are an increasing concern in the global market. Marine turtle monitoring will also continue as the nation holds the world's largest population of leatherbacks and significant breeding and foraging habitats for other species. Training given to staff of Gabon and Congo's national parks, *e.g.* marine mammal stranding recording and species identification, will form the basis of future monitoring and protection programmes.

Project staff will seek to continue their work through further fundraising initiatives, assisted by UK and international partners, which will use the results and successes of the DI project as leverage.

5 Lessons learned, dissemination and communication

We used a multi-faceted communication and dissemination strategy that has served us well in previous Darwin projects to share information regarding project initiatives and achievements. Information was disseminated in a wide range of national and international fora. Governmental and public meetings in Libreville and coastal regions have shared the results of the project and expanded dialogue between authorities and stakeholder communities. Results from the project have been presented at meetings of international experts, e.g. International Sea Turtle Symposia, related African regional meetings, and the International Whaling Commission. Lastly, project findings have been widely communicated through Darwin Newsletters, the Darwin website, Darwin Project press releases and related media attention, following significant actions, such and the fishery observer workshop and scientific publications. The legacy of the project is ensured; dissemination will continue as several scientific articles are either in review or in preparation and the project website will continue to host and make available key project documents. A key lesson learned was that the Darwin Marine Biodiversity Atlas had a much greater impact that we might have imagined. It became an excellent physical manifestation of the marine biodiversity GIS that allowed those without experience of GIS to appreciate its utility.

5.1 Darwin identity

The DI identity was promoted in all actions relating to the project. Funding was acknowledged at meetings where DI staff made presentations, on press releases and scientific publications and the tracking website, and in written reports circulated to officials in local communities. The logo appears on the Darwin Newsletter, the Marine Biodiversity Atlas and the Congo Coasts Strategic Biodiversity Action Plan, three key outputs of the project. DI support was recognised as both a distinct project where it comprised the key funding partner in an action, e.g. support behind the Manga team, and as a collaborating partner in larger programmes where actions spanned topics of established investigations such as marine mammal and marine turtle monitoring. Familiarity with the DI is present in the host country from high-level officials who acknowledge the tremendous input it has had in supporting and growing capacity for marine biodiversity protection, to coastal stakeholders that see initiatives developing in their communities.

6 Monitoring and evaluation

The project did not undergo any major redesign during its term. Only issues with timing, e.g. fisheries observer workshop, materialised and these were used to our advantage, allowing us to broaden the scope and increase the magnitude of the activity and inclusion of expert partners. Regular communication between the PI and the Darwin Research Fellows with in-country partners and international collaborators ensured all work was completed. Biannual reporting to the DI conveyed the successes of the project and did not reveal any shortcomings that needed to be addressed. Evaluation of the work has come through completion of project actions that result from collaborations of several partners who are satisfied with the outcomes. Additional feedback and acceptance was achieved through publication of scientific articles in respected journals. The key mark of approval is the request by the Government of Gabon to lead a follow-up project.

6.1 Actions taken in response to annual report reviews

No additional actions were requested from annual report reviews

7 Finance and administration

7.1 Project expenditure

Current Year's Costs	2011/12 Grant (£)	2011/12 Total actual Darwin Costs (£)	Variance %	Comments (please explain any variance)
Staff costs				Variance within 10% of the budget
Overhead Costs				Variance within 10% of the budget
Travel and subsistence				Variance within 10% of the budget
Operating Costs				Variance within 10% of the budget
Capital items (Equipment)				Variance only slightly over 10%
Other (Printing, Genetics)				N/A
Others (Audit)				Current Audit Quote is less than originally anticipated.

			Claimed So Far	Claim for this period	Surrender Amount
TOTAL	**A**	**B**	**C**	**D**	**E**

A – This should match the total annual grant approved in the offer letter or agreed with the Department thereafter

B – this should be the actual costs incurred

C – Amount already claimed

D – Either **A** or **B** (whichever is the lesser amount) minus **C**

E – unclaimed grant to be surrendered to Defra

NB. Budgets are as per email from Eilidh Young to Brendan Godley dated 18/02/11.

7.2 Additional funds or in-kind contributions secured

All of the intended matched funding was received and substantial additional support was received from Mohammed Bin Zaied Species Conservation Fund, NOAA-NMFS, US Fish and Wildlife Service, Waitt Foundation, Wallace Foundation, WCS and WWF.

7.3 Value of DI funding

The DI funding has transformed the marine conservation scene in Gabon. Capacity has been increased greatly with a functioning marine fisheries observer programme, enhanced capacity to manage VMS data, new field programmes underway, and a national marine biodiversity GIS assembled. Awareness of marine biodiversity has increased considerably. The project has been very well received by local partners and we have been invited by ANPN, the national parks authority to co-write a new project that will capitalise on the project's success, further act upon key priorities including assembling the evidence base to radically expand the nation's marine parks.

Annex 1 Report of progress and achievements against final project logframe for the life of the project

Project summary	Measurable Indicators	Progress and Achievements October 2009 - 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 • The conservation of biological diversity, • The sustainable use of its components, and • The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources		Significant strides have been made towards creating an infrastructure that will allow Gabon's fisheries to be sustainably managed with regard to food security and biodiversity impacts: The first fishery observer programme has been launched; there is greater capacity to deal with VMS data and there is an appetite for a sustainable fisheries management plan when enough data have been gathered. Local conservation organisation Manga is having an impact on sea turtle conservation in the trans-frontier Corsico Bay through education, monitoring and research. Preliminary signs are that turtle exploitation is decreasing and sea turtle abundance increasing. Knowledge of marine biodiversity is at an all time high and much data have been integrated into a national marine biodiversity GIS. This has highlighted key knowledge gaps and has sparked strong interest in an evidence based approach to significantly expand the extant marine protected areas level. Awareness of the importance of marine biodiversity is greatly enhanced.	(do not fill not applicable)
Purpose Improved national and local capabilities applied to the sustainable and equitable management of marine biodiversity of Gabon	Marine Biodiversity Action Plan effectively enacted.	The Government of Gabon has broadly agreed with the BAP and associated key conservation actions. Indeed it is seeking our support for a second project to action some of them.	(Highlight key actions planned for next period)

Output 1. Partners trained in monitoring, research and database use.	Training workshops Training of Darwin Conservation Officer and other local partners Training of Darwin Graduate Trainee to MSc Darwin Staff to international conferences	Training levels exceeded planned project targets for number of individuals trained and duration of training provided and, in addition to the original plans, some training for university-level students was undertaken.
Activity 1.1 Workshops (1. Visioning; 2. GIS/VMS; 3. Fisheries Observer; 4. In-water Monitoring; 5. Action Planning)		More workshops were undertaken than planned. The GIS/VMS and in-water monitoring workshops were each run in two parts, the second building upon the knowledge base established around the first one, for maximum impact. The Darwin Project organised a landmark fisheries observer training course for Central Africa. This was carried out in collaboration with Gabon's Department of Fisheries (DG Peche), the Gabon Sea Turtle Partnership, the Wildlife Conservation Society (WCS), the World Wide Fund for Nature (WWF) and the National Oceanic and Atmospheric Administration of the USA (NOAA). The two-week course taught fisheries sampling techniques, fish and bycatch identification, as well as health and safety. This included sessions in the classroom but also identification classes in the laboratory, safety sessions in a swimming pool and practical sessions at-sea on a Gabonese registered coastal trawler. In addition to these planned workshops, 10 others were organised to train target personnel and disseminate findings of the Darwin Project and Darwin findings were presented at a further 24 seminars and conferences. Organised workshops were: Two annual Gabon Marine Turtle Partnership meetings A coastal cetacean monitoring workshop in neighbouring Congo Public meeting in Cap Esterias, involving local authorities and residents Workshops with partners and stakeholders such as FAO, WCS, ANPN, DG Peche and DG hydrocarbons. Additionally, PI Prof. Godley has delivered Darwin seminars to University of Lund, CEFAS, Swedish National Academy, and several institutions across the UK including the Universities of Bristol, Aberdeen and Plymouth.

Activity 1.2 Darwin Graduate Trainee identified	The host country Darwin graduate trainee (Mr Franck Mbebe) was identified by MEFEP and released from government duties so to undertake academic study. At the request of MEFEP he has begun his Fisheries GIS course in France and was to be supported by the Darwin Project. This support included an offer of a placement at the University of Exeter, working on Gabon fisheries data under supervision of UK Darwin staff. Government backing was located to support Mr Mbebe and at request of project partners, fiscal support was instead directed to Mr. Mesmin Ngabikoumou Wada of DG Peche who received a Darwin scholarship to cover tuition and a significant proportion of his subsistence costs for studies of Masters in Oceanography at Université Aix Marseille II, France, due to finish in September 2012. This will greatly facilitate his work as an analyst of data from Vessel Monitoring Systems aboard industrial fishing vessels. A third MSc candidate from Mayumba National Park (Quevain Makaya) has been identified and has been awarded a full fee scholarship by the University of Exeter. Additional support has been secured from oil companies in Gabon. Mr Makaya will undertake his MSc studies in UK beginning Oct 2012. Further, Dr Formia (WCS) and Dr McClellan (UoE) supervised a graduate-level thesis of ENEF student (Lionnel Ndoulobha), whose work focused on the satellite tracking of green turtles in Corisco Bay.
Activity 1.3 Darwin Project Officer identified	In place of the single Darwin Project Officer originally identified by the project, four three full-time field officers and a clerical assistant were continuously employed. These field officers received intensive training from UoE and WCS experts to maximise their potential, strengthen skill sets and build capacity for continuation of their conservation actions, post-project. As well as in country training, Darwin Field Officers were supported by the DI to attend international meetings. Armando Villarubia and Innocent Ikoubou, Severin Ikaka were key figures who have received training in marine surveying techniques as well as satellite transmitter deployment and basic IT skills. Mr Ikoubou travelled to Brazil for a community development training experience whereas Mr Villarubia presented preliminary satellite tracking results at the International Sea Turtle Symposium in San Diego, USA.
Activity 1.4 Conference attendance Darwin staff	Project staff participated in the 30th International Sea Turtle Symposium in April 2010 in Goa, India. Darwin Research Fellow, Dr Witt (UoE) presented data on offshore density estimation of leatherback sea turtles during the leatherback breeding season, contributed to a workshop on

		satellite telemetry techniques for marine turtles that was chaired by Dr McClellan (who also chaired a fisheries bycatch session) and additionally participated in the African Regional Meeting. A presentation on Gabon-Congo Atlantic Humpback dolphins was made by Mr Tim Collins at the 62nd International Whaling Commission meeting in Agadir, June 2010. Darwin Field Officer Armando Villarubia, Dr Catherine McClellan (UoE) and Dr Angela Formia (WCS) attended the 31st International Sea Turtle Symposium in the USA in April 2011. Research work from Corisco Bay was presented during the main Symposium and also at the well-attended African regional meeting held at the same location just prior to the Symposium. To increase regional impact of the DI project, Jesus Mba Mba from INDEFOR Equatorial Guinea (EG), who was instrumental in expanding turtle tracking into EG, was also part sponsored to attend the Symposium. Dr Witt also attended the International Marine Conservation Congress conference in the US and the Spatial Ecology and Conservation conference in the UK, both in 2011, where he presented on project activities. Drs Formia and Witt also attended the 'South Atlantic Sea Turtle Network' meeting in Namibia where they discussed issues relating to the conservation of marine turtles from Gabon in a regional context. Dr Formia and Mr. Pierre Didier Agamboué (part-time Darwin Field Officer) also attended and presented at the 32nd International Sea Turtle Symposium and related African regional meeting in Mexico, March 2012.
Output 2. Increased knowledge of the marine biodiversity of Gabon to inform decision makers	GIS Database Marine Biodiversity Action Plan Species and habitat maps Scientific Papers Darwin conference	
Activity 2.1 GIS database		A GIS database including physical and biological oceanography, marine species distributions and numerous resource use layers including VMS data, has been compiled into the planned Marine Biodiversity Atlas (MBA).

Activity 2.2 VMS data	VMS data has been obtained and synthesised, added to GIS database with local colleagues instructed on its utility. Significant amounts of training were provided to MEFEP/DG Peche staff to manage these data. As a result they are well-versed and competent in analysis and interpretation of the Gabon VMS system results. Summary data have been included in the Darwin Marine Biodiversity Atlas.
Activity 2.3 Fisheries observer programme	As a result of additional support from the National Oceanographic and Atmospheric Administration (NOAA) of the US Government, a much larger scale marine observer training programme was undertaken. This collaboration resulted from identified lack of capacity for any kind of fishery observer work, not just marine vertebrate bycatch as the project had initially envisioned. The workshop took place in November 2011. Training and implementation for this conservation measure was in close accord with the onboard observer programme envisaged by this project and hence we linked the two initiatives in collaboration with NOAA. The first missions have been undertaken co-funded by the Darwin Project and WWF. An observer co-ordinating unit has been established in the DG Peche (Coordinator: Mr Jean-Noel Bibang Bi Nguuema; Logistics Officer: Mr Pulcherie Mengue M'Adzaba; Database Manager: Mr Davy Angueko).
Activity 2.4 Scientific papers	A total of 7 papers have been published with 1 additional paper in submission and several more planned.
Activity 2.5 Marine Vertebrate Monitoring	There have multiple significant campaigns running throughout the project. These include: Effort-related marine mammal observations (Gabon and Congo) Collation of marine mammal strandings (Gabon and Congo) Leatherback turtle satellite tracking (Gabon) Green turtle satellite tracking (Gabon and Equatorial Guinea) Olive ridley satellite tracking (Gabon) Pan-Gabon marine turtle nesting monitoring Foraging green and hawksbill turtles and harvest in Corisco Bay (Gabon and Equatorial Guinea)

Activity 2.6 Darwin conference		It proved to be too logistically challenging to find a suitable date for the wide diversity of project partners to have a one-off end of project conference. Instead, over two weeks, the Darwin team (Prof. Godley, Drs Witt, Formia & Mr Collins) reported the findings of the project in 6 separate Darwin Seminars at the key offices and ministries. (see 3.4 below). This approach enabled a far more detailed dissemination of project findings and proved to be very successful.
Output 3. Increased awareness of the marine environment	Website; newsletters; press releases; workshops; Darwin conference	
Activity 3.1 Website		The website was established early on and has been a repository for published articles, newsletters and photographs etc. from this time. Additional project pages on satellite tracking marine turtles in Gabon and Equatorial Guinea have been set up and are linked on the main Darwin Project website.
Activity 3.2 Newsletters		The four planned newsletters have been published, printed and distributed in country and are available to download in both French and English from the project's web site.
Activity 3.3 Press releases		Press releases around key events in Gabon typically resulted in better than expected TV and radio coverage and features in the national press (*Gabon Matin*). Significant media activity in the UK and internationally came from two major publications on turtle tracking in Gabon.

Activity 3.4 Darwin Seminars for key stakeholders		Local authorities in the Cap Esterias region of Gabon and Corisco/Bata region of Equatorial Guinea were kept fully updated throughout the project on the results of green turtle tracking in Corisco Bay (shared by both nations) through regular reporting. Awareness and education activities in the Cap Esterias region culminated in a Manga/Darwin Initiative led public meeting at which project findings were presented and questions from local residents and administrative officials were fielded by the Manga team (Dr. McClellan, Mr. Ikoubou). At the end of the project, in lieu of a Darwin Conference, over a period of two weeks the Darwin team (Godley, Witt, Formia, Collins) reported the findings of the project in 6 separate Darwin Seminars at the key offices and ministries. These included ANPN, ASF, CENEREST, CNDO, DG Peche, DG Hydrocarbons, FAO, WCS and WWF. This way we could hand deliver the Darwin Outputs and interact with over 100 key stakeholders. These meetings were very well received and all organisations are very keen to continue collaborations.
Activity 3.5 Additional awareness raising activities		For the last two years the Darwin Initiative has supported activities for 'Turtle Day' in Gabon that takes place at four coastal communities in addition to Libreville, the capital. Activities of the day involve raising awareness for the protection of the environment and especially for sea turtles, which includes a parade through the town with people carrying a life-sized replica leatherback turtle on their shoulders. The events encourage young and old to take part in picking up litter and beach cleaning as well as competitions and contests, while at the same time being informed about sea turtle protection through films, slideshows and exhibits.
Output 4. Project monitoring	Darwin reporting Steering group meetings	
Activity 4.1 Darwin reporting		All reporting so far was undertaken in a timely manner and well received by DI indicating project has progressed satisfactorily.
Activity 4.2 Steering Group meetings		Steering group meetings were undertaken during each field visit by UK staff and followed up with e-mail correspondence and Skype in between**.**

Annex 2 Project's final logframe, including criteria and indicators

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: The marine biodiversity of Gabon is well conserved for future sustainable use.	Fisheries observer programmes show reduced levels of marine vertebrate bycatch Marine fisheries effectively managed and illegal fisheries excluded from marine protected areas. Increasing populations of key marine taxa	Data from Ministry of Forestry, Water and Fisheries (MFWF) Surveillance by Gabonese Navy and National Parks, VMS data Data from governmental and non-governmental monitoring programmes	
Purpose Improved national and local capabilities applied to the sustainable and equitable management of marine biodiversity of Gabon	Marine Biodiversity Action Plan effectively enacted.	Monitoring continued. Reports and publications by partner organisations	Central African Partner organisations incorporate new knowledge into future strategies and work plans. Continued political stability
Outputs 1. Partners trained in monitoring, research and database use	Training workshops Training of Darwin Conservation Officer and other local partners Training of Darwin Graduate Trainee to MSc Darwin Staff to international conferences	Workshop Reports Functioning fisheries observer programme and bycatch database MSc thesis	Trained individuals remain in employment by partner organisations.
2. Increased knowledge of the marine biodiversity of Gabon to inform decision makers	GIS Database Marine Biodiversity Action Plan Species and habitat maps Darwin conference Scientific Papers	Outputs provided to Darwin; included on project website and reports	Partners provide and share data.

3. Increased awareness of the marine environment	Website; newsletters; press releases; workshops; Darwin conference	Web hits Circulation of Darwin Newsletter Media Items Conference outputs	
4. Project monitoring	Darwin reporting Steering group meetings	Reports to Darwin Initiative Minutes of meetings	

Activities (details in workplan)

1.1 Workshops (1. Visioning; 2. GIS/VMS; 3. Fisheries Observer; 4. Inwater Monitoring; 5. Action Planning; Dates per work plan)
1.2 Darwin Graduate Trainee identified
1.3 Darwin Project Officer identified
1.4 Conference attendance Darwin staff
2.1 GIS database established
2.2 VMS data under analysis
2.3 Fisheries observer programme underway
2.3 Marine Vertebrate monitoring underway
2.4 Scientific papers
2.5 Darwin conference
2.6 Marine Biodiversity Action Plan
3.1 Website established
3.2 Production of Darwin Newsletters
3.3 Press releases in Gabon and UK
3.3 Darwin Seminars for key stakeholders
3.4 Darwin Conference
4.1 Darwin reporting
4.2 Steering Group meetings

Monitoring activities:

Indicator 1 – Minutes from 6-monthly Steering Committee meetings

Indicator 2 – Maps of fishing effort

Indicator 3 – Fisheries observer programme underway

Indicator 4 - New marine vertebrate monitoring underway

Annex 3 Project contribution to Articles under the CBD

Project Contribution to Articles under the Convention on Biological Diversity

Article No./Title	Project %	Article Description
6. General Measures for Conservation & Sustainable Use	10	Develop national strategies that integrate conservation and sustainable use.
7. Identification and Monitoring	10	Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities that have adverse effects; maintain and organise relevant data.
8. In-situ Conservation	10	Establish systems of protected areas with guidelines for selection and management; regulate biological resources, promote protection of habitats; manage areas adjacent to protected areas; restore degraded ecosystems and recovery of threatened species; control risks associated with organisms modified by biotechnology; control spread of alien species; ensure compatibility between sustainable use of resources and their conservation; protect traditional lifestyles and knowledge on biological resources.
9. Ex-situ Conservation	0	Adopt ex-situ measures to conserve and research components of biological diversity, preferably in country of origin; facilitate recovery of threatened species; regulate and manage collection of biological resources.
10. Sustainable Use of Components of Biological Diversity	10	Integrate conservation and sustainable use in national decisions; protect sustainable customary uses; support local populations to implement remedial actions; encourage co-operation between governments and the private sector.
11. Incentive Measures	0	Establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.
12. Research and Training	15	Establish programmes for scientific and technical education in identification, conservation and sustainable use of biodiversity components; promote research contributing to the conservation and sustainable use of biological diversity, particularly in developing countries (in accordance with SBSTTA recommendations).
13. Public Education and Awareness	15	Promote understanding of the importance of measures to conserve biological diversity and propagate these measures through the media; cooperate with other states and organisations in developing awareness programmes.
14. Impact Assessment and Minimizing Adverse Impacts	10	Introduce EIAs of appropriate projects and allow public participation; take into account environmental consequences of policies; exchange information on impacts beyond State boundaries and work to reduce hazards; promote emergency responses to hazards; examine mechanisms for re-dress of international damage.
15. Access to Genetic Resources	0	Whilst governments control access to their genetic resources they should also facilitate access of environmentally sound uses on mutually agreed terms; scientific research based on a country's genetic resources should ensure sharing in a fair and equitable way of results and benefits.
16. Access to and Transfer of Technology	10	Countries shall ensure access to technologies relevant to conservation and sustainable use of biodiversity under fair and most favourable terms to the source countries (subject to patents and intellectual property rights) and ensure the private sector facilitates such assess and joint development of technologies.
17. Exchange of Information	10	Countries shall facilitate information exchange and repatriation including technical scientific and socio-economic research, information on training and surveying programmes and local knowledge
19. Bio-safety Protocol	0	Countries shall take legislative, administrative or policy measures to provide for the effective participation in biotechnological research activities and to ensure all practicable measures to promote and advance priority access on a fair and equitable basis, especially where they provide the genetic resources for such research.
Other Contribution	0	Smaller contributions (eg of 5%) or less should be summed and included here.
Total %	100%	Check % = total 100

Annex 4 Standard Measures

Code	Description	Totals (plus additional detail as required)
Training Measures		
1a	Number of people to submit PhD thesis	
1b	Number of PhD qualifications obtained	
2	Number of Masters qualifications obtained	1 (100%) September 2012
3	Number of other qualifications obtained	
4a	Number of undergraduate students receiving training	4 (none planned)
4b	Number of training weeks provided to undergraduate students	13 (none planned)
4c	Number of postgraduate students receiving training (not 1-3 above)	1 (none planned)
4d	Number of training weeks for postgraduate students	4 (none planned)
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification(i.e. not categories 1-4 above)	
6a	Number of people receiving other forms of short-term education/training (i.e. not categories 1-5 above)	83 (>400%)
6b	Number of training weeks not leading to formal qualification	>100 (>250%)
7	Number of types of training materials produced for use by host country(s)	7 (>200%)
Research Measures		
8	Number of weeks spent by UK project staff on project work in host country(s)	57 (>200%)
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (s)	1 (100%)
10	Number of formal documents produced to assist work related to species identification, classification and recording.	
11a	Number of papers published or accepted for publication in peer reviewed journals	8 (200%)
11b	Number of papers published or accepted for publication elsewhere	6 (none planned)
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country	11 (>300%)
12b	Number of computer-based databases enhanced (containing species/genetic information) and handed over to host country	10 (>300%)
13a	Number of species reference collections established and handed over to host country(s)	
13b	Number of species reference collections enhanced and handed over to host country(s)	

Code	Description	Totals (plus additional detail as required)
Dissemination Measures		
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin Project work	10 (500%)
14b	Number of conferences/seminars/ workshops attended at which findings from Darwin Project work will be presented/ disseminated.	>20 (>1000%)
15a	Number of national press releases or publicity articles in host country(s)	6 (>100%)
15b	Number of local press releases or publicity articles in host country(s)	
15c	Number of national press releases or publicity articles in UK	3 (150%)
15d	Number of local press releases or publicity articles in UK	3 (150%)
16a	Number of issues of newsletters produced in the host country(s)	4 (100%)
16b	Estimated circulation of each newsletter in the host country(s)	1000+downloads (>100%)
16c	Estimated circulation of each newsletter in the UK	250+downloads (>100%)
17a	Number of dissemination networks established	1 (100%)
17b	Number of dissemination networks enhanced or extended	
18a	Number of national TV programmes/features in host country(s)	8 (400%)
18b	Number of national TV programme/features in the UK	2 (none planned)
18c	Number of local TV programme/features in host country	
18d	Number of local TV programme features in the UK	2 (none planned)
19a	Number of national radio interviews/features in host country(s)	6 (300%)
19b	Number of national radio interviews/features in the UK	1 (none planned)
19c	Number of local radio interviews/features in host country (s)	
19d	Number of local radio interviews/features in the UK	5 (500%)
Physical Measures		
20	Estimated value (£s) of physical assets handed over to host country(s)	£81,750 (130%)
21	Number of permanent educational/training/research facilities or organisation established	
22	Number of permanent field plots established	>100 (>100%)
23	Value of additional resources raised for project	£419,964
Other Measures used by the project and not currently including in DI standard measures		
	Additional print and Internet media	30+ Internet and print articles resulting from DI project work.

Annex 5 Publications

Type * (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £
Journal	Witt MJ, Baert B, Broderick AC, Formia AC, Fretey J, Gibudi A, Moussounda C, Mounguengui GAM, Ngouessono S, Parnell RJ, Roumet D, Sounguet G-P, Verhage B, Zogo A, Godley BJ (2009) Aerial surveying of the world's largest leatherback turtle rookery: A more effective methodology for large-scale monitoring. Biological Conservation 142: 1719-1727	Elsevier	Project website Publisher's website	N/A
Journal	Godley BJ, Barbosa C, Bruford M, Broderick AC, Catry P, Coyne MS, Formia, Hays GC, Witt MJ (2010) Unravelling migratory connectivity in marine turtles using multiple methods. *Journal of Applied Ecology* 47: 769–778	Wiley	Project website Publisher's website	N/A
Journal	Tomás J, Godley BJ, Castroviejo J, Raga JA (2010) Bioko: critically important nesting habitat for sea turtles of West Africa. *Biodiversity and Conservation.* 19:2699–2714	Springer	Project website Publisher's website	N/A
Journal	Witt MJ, Åkesson S, Broderick AC, Coyne MS, Ellick J, Formia A, Hays GC, Luschi P, Stroud S, Godley BJ (2010) Assessing accuracy and utility of satellite tracking data using Argos-linked Fastloc GPS. *Animal Behaviour* 80: 571-581	Elsevier	Project website Publisher's website	N/A
Journal	Witt MJ, EA Bonguno, AC Broderick, MS. Coyne, A Formia, GAM Mounguengui, C Moussounda, M NSafou S Nougessono, RJ. Parnell, GP Sounguet, S Verhage and BJ Godley (2011) Tracking leatherback turtles from the world's largest rookery: assessing threats across the South Atlantic. Proceedings of the Royal Society B :10 (online)	Royal Society	Project website Publisher's website	N/A
Journal	Maxwell SM, Breed GA, Nickel BA, Makanga-Bahouna J, Pemo-Makaya E, Parnell RJ, Formia A, Ngouessono S, Godley BJ, Costa DP, Witt MJ, Coyne MS (2011) Using satellite tracking to optimize protection of long- lived marine species: olive ridley sea turtle conservation in central Africa. PLoSOne 6(5): e19905	Public Library of Science	Project website Publisher's website	N/A
Journal	Caroline R. Weir CR, Van Waerebeek K, Jefferson TA, Collins T. 2011. West Africa's Atlantic Humpback Dolphin (*Sousa teuszii*): endemic, enigmatic and soon Endangered? African Zoology 46(1):1-17	Bio One	Project website Publisher's website	N/A
Journal	Pikesley SK, Formia A, Cardiec F, Godley BJ, Mills C, Agamboue PD, Bonguno EA, Boussamba F, Laurence W, Mabert BDK, Mounguengui GAM, Moussounda C, Ngouessono S, Parnell RJ, Sounguet GP, Verhage B, White L, Witt MJ. Here today, here tomorrow: Beached timber in Gabon, a persistent threat to nesting sea turtles. Submitted to Oryx	Cambridge		

Annex 6 Darwin Contacts

Ref No	17-005
Project Title	Darwin Marine Biodiversity Action Plan for Gabon
UK Leader Details	
Name	Prof. Brendan J Godley
Role within Darwin Project	PI
Address	Centre for Ecology & Conservation University of Exeter, Cornwall Campus TR10 9EZ, UK
Phone	
Email	
Partner 1	
Name	Dr Angela Formia
Organisation	WCS
Role within Darwin Project	In-country expert and facilitator
Address	Gabon Program, 250 Boulevard Quaben, BP7847, Libreville Gabon
Email	
Partner 2 (if relevant)	
Name	Guy Anicet Rerambyath
Organisation	MEFEP- DG Peche
Role within Darwin Project	Director General of Fisheries
Address	Ministere de l'Agriculture, de l'Elevage de la Peche et du Developpement Rural, Direction Generale des Peches et de l'Aquaculture, Boulevard Triomphal, BP 9498, Libreville, Gabon
Email	
Partner 3 (if relevant)	
Name	Prof. Lee White
Organisation	ANPN
Role within Darwin Project	Partner
Address	Agence National des Parcs Nationaux, Quartier Batterie IV, BP 20379, Libreville, Gabon
Email	