

# Darwin Initiative – Final Report

(To be completed with reference to the Reporting Guidance Notes for Project Leaders (<http://darwin.defra.gov.uk/resources/>) it is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

## Darwin project information

Project Reference	18-001
Project Title	Darwin Sustainable Artisanal Fisheries Initiative (Peru)
Host country(ies)	Peru
Contract Holder Institution	University of Exeter
Partner Institution(s)	ProDelphinus
Darwin Grant Value	£299,966
Start/End dates of Project	October 2010 / September 2013
Project Leader Name	Prof. Brendan Godley
Project Website	ProDelphinus <a href="#">Facebook</a> page & <a href="http://www.prodelphinus.org">www.prodelphinus.org</a>
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## 1 Project Rationale

**The problem:** Peru has significant natural resources with potential for poverty alleviation (sustainable fishing and ecotourism). Although substantial efforts have focussed on terrestrial conservation, the country's marine biodiversity is largely neglected, despite massive industrial and artisanal fishing.

Key biodiversity includes:

- 1. Major fishing resources:** currently exploited through industrial purse-seiners and artisanal fleets. There is marked under-capacity for spatial management and assessment/mitigation of bycatch which preliminary assessments suggest is globally significant.
- 2. Globally important, yet understudied, marine mammal populations:** Multiple species subject to intense bycatch and harpooning for bait by gillnet and longline fisheries.
- 3. Globally important, yet understudied, seabird populations:** Sole foraging ground for endemic, critically endangered waved albatross. Globally important foraging ground for other endangered species.
- 4. Globally important marine turtle populations:** Foraging area and/or migratory route for five species of sea turtles all subject to direct hunting and incidental capture.
- 5. Globally important, yet understudied, shark populations:** Multiple shark species taken by artisanal fisheries in large numbers as both target and incidental catch.

**Priority:** There are clear needs for: a national **Sustainable Artisanal Fisheries Initiative (Darwin-SAFI)** integrating all available information on the spatial distribution of biodiversity and threats; increased local capacity to carry out research to further inform the development/implementation of the Darwin-SAFI; increased awareness among key stakeholders and the general public as to the importance of Peruvian marine biodiversity.



Figure 1. Peru (filled polygon and the South American continent).

The project will work from the bottom up (fishermen and communities) and top down (government agencies, NGOs) to inform key decision-makers of project findings. Key agency decision-makers IMARPE and MINAM will be able to use project results to fulfill international obligations and identify and implement future research and management priorities; fishermen can use results immediately to reduce bycatch and promote fishery sustainability.

## **2 Project Achievements**

### **2.1 Purpose/Outcome**

The overall purpose was to see improved national and local capabilities applied to the sustainable and equitable management of marine biodiversity of Peru. To do this, the project set out to implement a series of inter-connected research, implementation, training and outreach activities under the umbrella of the Sustainable Artisanal Fisheries Initiative (SAFI). The purpose of the project was achieved and lives on in the continued work of project partners, enhanced collaborations and widely enhanced capacities of local partners and stakeholders.

### **2.2 Goal/ Impact: achievement of positive impact on biodiversity and poverty alleviation**

Significant developments have been made towards creating an infrastructure that will allow for the sustainable and equitable management of Peru's marine biodiversity. The fishery observer programme is underway as is continued monitoring of marine vertebrates, and trials and implementation of a variety of bycatch mitigation solutions. These activities have greatly improved understanding of these animal populations and the risks they face from regional fisheries. This work has also highlighted key knowledge gaps and has created strong interest in an evidence-based approach to effectively address the long-term sustainability of small-scale fisheries. Local partner organisation ProDelphinus has maintained an aggressive agenda of education, monitoring and research activities, made possible in part through training received as part of the project. Bycatch mitigation solutions have been identified by the project, with some already implemented, that have shown reductions in interactions or mortality of sea turtles, seabirds and marine mammals. Awareness of the importance of marine biodiversity is greatly improved across stakeholders at all levels and there is a clear appetite among stakeholders to adopt more sustainable fishing methods when the data show it is possible.

The Darwin-SAFI functioned in part by empowering fishers and fishing communities to work proactively to make their fisheries sustainable in the long term – both economically and in terms of biodiversity. In so doing the project sought to maintain and protect the economic welfare of these communities.

### **2.3 Outputs**

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. Knowledge surrounding Peru's small scale fisheries and their interactions with marine fauna has been greatly expanded as evidenced by the prolific reporting by the project. Awareness of this information among stakeholders was also greatly enhanced through repeated, and ongoing workshops and information sharing activities at communities along the entire Peru coast. Bycatch mitigation trials and implementation advanced ahead of schedule throughout the project and there are now vessels actively employing some of the measures identified and tested during the project. In-country partners were effectively trained to conduct and monitor bycatch mitigation and marine conservation projects and these efforts will continue into the foreseeable future.

The project did not experience any severe problems in achieving outputs.

## **3 Project support to the Conventions (CBD, CMS and/or CITES)**

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. The project in-country partner ProDelphinus had regular interactions with convention focal point MINAM as well as Foreign Affairs and IMARPE throughout the project and provided information developed during the project for use by the government in fulfilling various convention obligations.

## 4 Project Partnerships

The lead in-country partner for the Darwin Sustainable Artisanal Fisheries Initiative (Peru), or Darwin-SAFI, was the marine research NGO ProDelphinus (PD). PD facilitated contacts with government agencies and other partners and led coordination and implementation of all project activities in Peru, including research, training and outreach. Further partner organisations in the Darwin-SAFI included: (1) Federación de Integración y Unificación de Pescadores Artesanales del Peru (FIUPAP) which assisted in coordination and logistics of fishermen workshops and training at ports and landing sites along the coast and assists with coordination of site visits; (2) Instituto del Mar del Peru (IMARPE); and (3) Ministerio del Ambiente (MINAM), the CBD focal point in Peru. Our relationship with project partners was maintained through periods of in-country field work and by an email circulation list, e-mails and telephone. Formal meetings with partners were held during periods of in-country fieldwork when project staff are present.

**Additional Unforeseen Collaboration:** The Darwin-SAFI developed collaborations with numerous educational, governmental and non-governmental institutions both within Peru and regionally to advance project goals and objectives. The groups with which the project developed and fostered collaborations included local, regional and global NGOs and commercial interests and consortiums. The project also expanded its collaboration with the industrial purse-seine fishing industry. Partnerships were also developed with three Peru universities and the Ministry of Education. MOUs are now in place between ProDelphinus and Universidad Científica del Sur and with IMARPE to further facilitate continued collaboration. A formal association of fishermen, “Pescadores Amigos de la Naturaleza” (Fishermen Friends of Nature), which is dedicated to promoting responsible, sustainable fishing practices was also established with help from the project.

As an additional means to tap into what we have identified as demand among fishermen, restaurateurs and consumers for information on sustainably managed fisheries and fish products, the project has also developed a smartphone application called boVEDA. The app is an interactive way to promote sustainable fisheries. It was developed in collaboration with some of the Peru’s leading chefs and restaurants contains a wide variety of information (e.g. recipes, species information, fishing bans) of interest to stakeholder groups.

At the end of the project, the partnerships demonstrated great strength, with communication and collaboration of all parties leading to a SAFI project that will continue beyond the current DI. Many of the collaborations that emerged during the project are representative of a nascent, growing interest in the themes addressed and the DI was the vehicle that served to draw these groups together. Given the natural overlaps of many of these groups’ interests we are confident that partners will remain in contact. In many cases follow-up projects are already underway and some collaborations have been formalized.

## 5 Contribution to Darwin Initiative Programme Outputs

### 5.1 Technical and Scientific achievements and co-operation

Extensive collaborative research has been undertaken on sea turtle, seabird, marine mammal and shark movements and distribution, small-scale fishery monitoring, experimentation with alternative fishing techniques and technologies and large scale assessments of the threats small-scale fisheries in Peru and the southeast Pacific Ocean pose to protected marine fauna. These activities have extended into Ecuador and Chile. These collaborations involved transfers of both technical expertise and technologies, the results of which were subject to rigorous review through the 13 peer reviewed publications the project produced, the graduate level training received by five project participants, as well as the input from local stakeholders and Peru government offices.

### 5.2 Transfer of knowledge

Extensive collaborative research has been undertaken on sea turtle, seabird, marine mammal and shark movements and distribution, small-scale fishery monitoring, experimentation with alternative fishing techniques and technologies and large scale assessments of the threats small-scale fisheries in Peru and the southeast Pacific Ocean pose to protected marine fauna. A wide variety of platforms were used including media (print, radio, television, internet, smartphone apps), local, national and international information dissemination, and extensive and diverse training and research programs with stakeholders and project participants.

### **5.3 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 the local NGO ProDelphinus, participating fishermen and the fishing association FIUPAP and other local associations, elementary and high school student groups, students from Universidad de Piura, Universidad Alas Peruanas, Universidad Científica, Peru government officials at coastal offices and staff of participating NGOs and other institutional partners.

Numerous workshops were convened to train key individuals identified in relevant communities and organisations members and of governmental departments. Planned workshops included those for fisheries observers, spatial ecology, and bycatch mitigation which were given by Drs Witt, Godley and Broderick in cooperation with core ProDelphinus staff. Additional workshops were held to further expand training to the larger community of project participants including fishermen, local government officers, students and NGOs. These were managed by ProDelphinus staff with assistance from visiting UoE students.

Marine biodiversity monitoring capacities were enhanced. Fishermen were trained to safely release incidentally captured species and to use bycatch mitigation technologies. This training was institutionalized in part through the creation of a formal association of fishermen, Pescadores Amigos de la Naturaleza. The establishment of this association provides a level of permanence (and fund raising capacity) that will help ensure its persistence. The institutional capacity of ProDelphinus was enhanced through graduate training, workshop training of staff and development of self-financing capabilities. This capacity is evident in the additional funding received to continue this research beyond the DI as well as the sustained and strengthening collaborations that continue to develop between many of the project partners and participants. In many senses we feel the program developed under the Darwin SAFI and continuing beyond its end has few counterparts anywhere in the world in terms of its pace, quality and output of research, the geographic reach of the project, the number of participants trained or touched by the project, and the degree to which it was able to collaborate with a wide range of stakeholders.

Information developed through the project and reported to government offices is evidence of work toward implementation of the Conventions and also helps fulfil reporting requirements.

Four Peru residents received graduate level training through the project and continue working in Peru and apply that expertise either with ProDelphinus or related marine conservation projects.

### **5.4 Sustainability and Legacy**

Each of the main project achievements (monitoring, awareness raising, training, experimentation and implementation) are likely to endure because the lead in-country partner, ProDelphinus, maintains its presence, efforts and collaborations in the region. Indeed, those capabilities of project partners and stakeholders have been enhanced as one of the main outputs of the project. While some staff have departed the project, the vast majority continue to work in marine conservation in the region. PD, through its collaborations and fund raising, assisted by UK and international partners, will use the results and successes of the DI project as leverage as it continues to develop and implement activities begun in the Darwin-SAFI project.

## **6 Lessons learned**

We highlight three items that could improve/inform future Darwin projects, (1) the importance of a capable lead in-country partner, (2) the importance of communication at all levels and between all project partners, staff and stakeholders, and (3) challenges that can develop with purchasing and importing necessary equipment. Given the duration and size of the project, having one lead in-country partner was vital in ensuring that project activities stayed on schedule and that staff, logistics and equipment were available. This can be particularly true in regions with developing economies and complex bureaucracies. Constant communication at all levels - between staff and project partners - also proved vital from ensuring data integrity and effective scheduling of activities to confirming that partners were aware of project goals, activities and outcomes in a timely manner. As it can lead to serious delays or significant added costs, we also recommend that future projects consider well what

equipment/technology may be needed for a project, where it will be purchased, how it will be transported to the project country and what bureaucratic hurdles or import fees may be associated.

## 6.1 Monitoring and evaluation

The project did not undergo any major redesign during its term. Only issues with timing, e.g. adjusting scheduling of workshops, materialised and these did not have a deleterious impact on project results or outcomes. 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. A key mark of project approval has been the continuation and expansion of collaborations, often through official MOUs, among project partners.

## 6.2 Actions taken in response to annual report reviews

No additional actions were requested from annual report reviews

## 7 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 and all other educational and outreach materials prepared as part 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 for Year 1 survey efforts, 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 observe 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.

## 8 Finance and administration

### 8.1 Project expenditure

Complete the expenditure table below, providing a breakdown of salaries, capital items and explanations of 'Other' costs. If the budget was changed since the project started, please clarify the main differences. Explain any significant variation in expenditure where this is +/- 10% of the approved budget lines.

Project spend since last annual report	2012/13 Grant (£)	2012/13 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)				na
Consultancy costs				na
Overhead Costs				na
Travel and subsistence				na
Operating Costs				na
Capital items (see below)				na
Others (see below)				na
<b>TOTAL</b>	<b>110,079.68</b>	<b>109,632.24</b>	0.4	na

Staff employed (Name and position)	Cost (£)

Dr Jeff Mangel (Darwin Project Officer)	
Dr Joana Alfaro (Darwin Project Officer)	
Local Field Staff	
<b>TOTAL</b>	

<b>Capital items – description</b>	<b>Capital items – cost (£)</b>
Minor pieces of equipment	
<b>TOTAL</b>	

## 8.2 Additional funds or in-kind contributions secured

All of the intended matched funding was received and substantial additional support was received from Agreement on the Conservation of Albatrosses and Petrels (ACAP), American Bird Conservancy (ABC), Birdlife International, Columbus Zoo, Conservation Leadership Programme (CLP), International Seafood Sustainability Foundation (ISSF), National Fish and Wildlife Foundation (NFWF), NOAA-National Marine Fisheries Service (NOAA-NMFS), and Whitley Fund for Nature (WFN).

<b>Source of funding for project lifetime</b>	<b>Total (£)</b>
University of Exeter	
ProDelphinus	
ACAP	
ABC	
Birdlife International	
Columbus Zoo	
CLP	
ISSF	
NFWF	
NOAA-NMFS	
WFN	
<b>TOTAL</b>	<b>505,960</b>

<b>Source of funding for additional work after project lifetime</b>	<b>Total (£)</b>
NFWF	
NOAA-NMFS-Pacific Islands Fisheries Science Center	
NOAA-NMFS-Office of International Affairs	
<b>TOTAL</b>	<b>89,000</b>

## 8.3 Value for Money

The DI funding has been transformative for marine conservation in Peru. Capacity has been increased greatly with a functioning small-scale fisheries observer programme (with few comparable examples

anywhere in the world), enhanced capacity to manage spatial, species and fishery data, field programmes have been established and enhanced, and often ground-breaking research has been conducted that is already reducing marine fauna bycatch in Peru and which has relevance to similar fisheries in other parts of the world. Hundreds of fishing trips were monitored by staff trained through the Darwin-SAFI, thousands of people were reached with information on marine conservation and as a result, awareness of marine biodiversity has increased considerably. In the four years of the project 13 peer reviewed articles and three book chapters were published. Five project participants received advanced degrees, including two PhDs. The project has been very well received by local partners and has facilitated the creation of partnerships among governmental and non-governmental stakeholders that will serve as the project's legacy. In short, we believe it would be challenging to find greater value for money than was achieved in this project.

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

Note: For projects that commenced after 2012 the terminology used for the logframe was changed to reflect DFID's terminology.

Project summary	Measurable Indicators	Progress and Achievements in the last Financial Year 2013 - 2014	Actions required/planned for next period
<p><b>Goal:</b> The marine biodiversity of Peru is preserved for future sustainable use.</p> <p><b>Purpose/outcome:</b> Improved national and local capabilities applied to the sustainable and equitable management of marine biodiversity of Peru.</p>		<p>Significant strides have been made towards creating an infrastructure that will allow Peru's small-scale fisheries to be sustainably managed with regard to food security and biodiversity impacts.</p> <p>The fishery observer programme has been launched; monitoring of marine vertebrates is underway as are efforts to reduce fishery impacts on these populations; information developed by the project has greatly improved our understanding of the scale of characteristics of interactions between fisheries and protected marine fauna; local stakeholders have been trained to monitor and reduce impacts and awareness of the importance of marine biodiversity is at an all-time high.</p> <p>In-country lead partner ProDelphinus is now a regional leader in marine conservation efforts and is well-positioned to continue ground-breaking research in the years to come. Efforts begun during the Darwin-SAFI project have already proven successful and have measurably reduced bycatch of sea turtles, small cetaceans and seabirds.</p>	<p>Do not fill not applicable</p>



<p><b>Purpose/Outcome</b></p> <p>Improved national and local capabilities applied to the sustainable and equitable management of marine biodiversity of Peru</p>	<p>Sustainable artisanal fisheries initiative effectively enacted</p>	<p>The Darwin-SAFI project was broadly successful in achieving its purpose. National and local capabilities have been vastly improved and projects, mechanisms, relationships and collaborations between governmental and non-governmental institutions and the public have been put in place that will help ensure the continued development of activities well beyond the project end date that will promote sustainable and equitable management of Peru's marine biodiversity.</p>	<p>Do not fill not applicable</p>
<p><b>Output 1.</b></p> <p>Partners trained in monitoring, research and database use</p>	<ul style="list-style-type: none"> <li>• Training workshops</li> <li>• Training of Darwin Research Fellow and other local partners</li> <li>• Training of Darwin Graduate Trainee to MSc</li> <li>• Darwin Staff to international conferences</li> </ul>	<p>Training levels far exceeded planned project targets for number of individuals trained and duration of training provided. Project staff maintained an active schedule of training and outreach and information dissemination.</p>	
<p>Activity 1.1 Workshops (1. Visioning; 2. Fisheries observers; 3. Spatial ecology; 4. Bycatch mitigation; 5. Conservation workshops; Dates per workplan)</p>		<p>The core Visioning, Fisheries Observers, Spatial Ecology and Bycatch Mitigation workshops were completed in Year 1 as a means to guide subsequent work on the project. Follow-up Fisheries Observer, Spatial Ecology and Bycatch Mitigation workshops were also conducted in each subsequent project year to reach stakeholders in coastal communities and as new project participants or agencies were identified.</p> <p>By project end over 20 fisheries observers were trained in five ports. In addition to training, numerous field guides and observer materials were produced and made available to observers, fishermen and the public.</p> <p>Five Spatial Ecology workshops were held in Lima and University of Exeter.</p> <p>Bycatch Mitigation Workshops developed into a core activity of the project and as a means of reaching out to fishermen along the Peru coast. Over 50 workshops were held at 35 locations and reached over 1000 fishermen.</p>	

	<p>Conservation workshops were also undertaken on a continuing basis throughout the life of the project and were directed and students, fishing communities and the general public. Over 50 events were held in more than 20 ports and these events reached over 2000 participants.</p>
Activity 1.2 Darwin Graduate Trainee identified	<p>Natalia Ortiz was identified as the Graduate Trainee and completed her MSc at the University of Exeter in August 2012 and is now preparing that work for submission to a peer-reviewed journal. Her research was integral to the project and represents ground-breaking efforts into means to reduce sea turtle bycatch in net fisheries and has led to subsequent years of testing for potential to implement at a wider scale in Peruvian net fisheries.</p> <p>Three other University of Exeter MSc students also participated in the project, spent considerable time in Peru directly involved in all aspects of project activities and developed their MSc research on active project components (shark and small cetacean fishery interactions and acoustics), each of which is also currently being developed into a manuscript for submission to a peer-reviewed journal.</p>
Activity 1.3 Darwin-IMARPE Fellow identified	<p>IMARPE-Pisco biologist Evelyn Paredes was identified as the Darwin-IMARPE Fellow and her participation and that of other IMARPE personnel has been integral in developing cooperation and data/information sharing with regional laboratories.</p>
Activity 1.4 Conference attendance Darwin staff	<p>Project staff participated in numerous national and international marine biology and conservation conferences and meetings at which research and progress from the project were presented:</p> <p>In October 2010, JAS attended to the Small scale fisheries world conference, held in Bangkok.</p> <p>Darwin staff have also presented project findings at a Red List meeting held by MINAM in October 2010.</p> <p>In November 2010, JCM attended a sea turtle meeting in Guayaquil, Ecuador, organized by the Comisión Permanente del Pacífico Sur (CPPS).</p> <p>In April 2011, JAS, JCM and NOE attended the International Sea Turtle Symposium held in California, USA where they presented data on sea turtle bycatch rapid assessment work done in Peru, Ecuador and Chile.</p> <p>In July 2011, NOE attended the 3 week conservation training course in Vancouver, Canada organized by the Conservation Leadership Programme where she presented information on numerous aspects of the Darwin SAFI</p>

	<p>project.</p> <p>In July 2011, NBC attended the 5 week marine conservation summer session at Duke University Marine Laboratory, North Carolina, USA where she presented information collected as part of the Darwin SAFI project.</p> <p>In August 2011, JAS and JCM attended the meeting of the Seabird Bycatch Working Group of the Agreement on the Conservation of Albatrosses and Petrels held in Guayaquil, Ecuador where they presented seabird bycatch data for Peruvian and Ecuadorian artisanal fisheries.</p> <p>In November 2011, JAS and JCM attended the 19<sup>th</sup> Conference on the Biology of Marine Mammals organized by the Society for Marine Mammalogy and held in Florida, USA where they presented data on marine mammal bycatch and bycatch mitigation.</p> <p>JAS and JCM were also invited to attend the workshop, “Addressing bycatch in artisanal gillnet fisheries” held prior to the main Marine Mammal Biennial meeting, November 2011, and bringing together experts in the topic from around the world.</p> <p>In July 2012, JAS attended a meeting regarding regional sea turtle conservation in Iquique, Chile, and presented information on efforts in Peru.</p> <p>In October 2012, JCM attended the meeting of the South Pacific Regional Fisheries Management Organisation held in Lima, Peru to monitor discussion of the impacts of fisheries on threatened seabirds.</p> <p>In October 2012, TSY attended the Zoonosis in Wild Animals Conference, Florianopolis, Brazil and presented research on green turtle haematology and biochemistry.</p> <p>In December 2012, JAS and ECF attended the Marine Turtles and Fishery Interactions meeting organized by Pacifico Laud in Tarapaca, Chile and shared information on advances in sea turtle bycatch mitigation made through the Darwin-SAFI project.</p> <p>Four project staff participated in the Conservation Leadership Programme grant writing workshop, September 2012 and PD helped in meeting logistics and coordination.</p> <p>Multiple staff attended the 3<sup>rd</sup> Congress of Marine Science in Peru, June 2012, and gave poster presentations on shark catch in Peruvian fisheries and marine mammal strandings</p>
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JAS attended the multi-day Humboldt Current Large Marine Ecosystem capacity building workshop, September 2012 to foster cooperation and build capacity among the multiple environmental research and management institutions operating within the Humboldt Current LME.

In February 2013, JAS and TSY attended the International Sea Turtle Symposium held in Maryland, USA where they presented data on low-cost vessel monitoring systems and green turtle haematology and biochemistry. JAS was also invited to be a panel member on a discussion of success stories in sea turtle conservation, highlighting some of the work made possible by the Darwin SAFI project.

In April 2013, JCM and JAS attended the annual meeting of the Birdlife International-Albatross Task Force, held in Cambridge, UK and presented information on progress toward monitoring and mitigation seabird bycatch in Peruvian small-scale net and longline fisheries.

In May 2013, JAS and JCM attended the ACAP Seabird Bycatch Working Group meeting, La Rochelle, France where they presented data on fisheries interactions and satellite tracking of pink-footed shearwaters (*Puffinus creatopus*) in Peru and Chile.

In addition to these conferences attended by Darwin-SAFI staff, research findings from the project were also presented by collaborating researchers at the following conferences:

1. 19<sup>th</sup> Conference on the Biology of Marine Mammals, December 2013. A poster was presented on the use of acoustic monitoring of small cetaceans in Peruvian small-scale fisheries.
2. Pacific Seabird Group, Oregon, USA, February 2013: Project information on bycatch of pink-footed shearwaters (*Puffinus creatopus*) in Ecuador, Peru and Chile was detailed in an oral presentation.
3. Latin America Society of Aquatic Mammal Specialists, Puerto Madryn, Argentina, September 2012: A paper was presented on advances in marine mammal mitigation in Peru.
4. World Congress of Herpetology, Ichthyologists and American Elasmobranch Society, Vancouver, Canada, August 2012. A poster was presented on the use of barcoding to identify shark species caught in Peru's small-scale fisheries using data collected under the Darwin-SAFI project.
5. First Workshop for Latin American Otter Research and Conservation,

		Corumba, Brazil, June 2012: Information was shared on the status of marine otter ( <i>Lontra felina</i> ) conservation in Peru.
<p><b>Output 2.</b></p> <p>Increased knowledge of the marine biodiversity of Peru to inform decision makers</p>	<ul style="list-style-type: none"> <li>• Current assessment of artisanal fisheries and associated bycatch</li> <li>• Sustainable Artisanal Fisheries Initiative</li> <li>• Species and fisheries effort maps</li> <li>• Darwin conference</li> <li>• Scientific Papers</li> </ul>	<p>Progress in all action areas was excellent and indicators were broadly appropriate. All indicators of project success were accomplished through the combination of project activities (fisheries assessments, observer monitoring, etc.). Information prepared in these activities led to implementation of the SAFI, completion of the fisheries assessment, and species and fishery mapping. Results of these efforts were presented at the Darwin conference and through published manuscripts and conference papers and reports.</p>
<p>Activity 2.1 Artisanal fisheries assessment completed</p>		<p>Surveys in over 30 ports (30% of the total number of small scale ports, &gt;800 surveys conducted) were successfully completed in January 2011. These surveys were conducted in Peru and a companion study in 12 ports (~500 surveys) by partner NGOs Equilibrio Azul and Pacifico Laud was also completed in Ecuador and Chile to allow for a regional assessment of small scale fisheries and marine fauna bycatch.</p> <p>Detailed analyses of the data are underway with one manuscript regarding sea turtle bycatch nearing submission to a peer-reviewed journal. Data from this assessment was also used in preparation of a report on the vulnerability of the pink-footed shearwater to fisheries interactions in Ecuador, Peru and Chile.</p>
<p>Activity 2.2 Spatial ecology database established</p>		<p>A spatially explicit database was established that manages fisheries and fauna capture information as well as satellite tracking data. Three additional database were also prepared over the course of the project:</p> <ol style="list-style-type: none"> <li>1. A database to manage radio communications and bycatch data gathered through a HF-Radio program</li> <li>2. An updated database to manage purse-seine and net bycatch information.</li> <li>3. A database to manage rapid assessment survey responses with fishermen, including linked maps of fishing grounds.</li> </ol> <p>Taken together, these robust, reliable data management systems will help ensure the longevity of activities beyond the project life and will facilitate dissemination of project results.</p>
<p>Activity 2.3 Fisheries observer programme underway</p>		<p>Onboard observers have been operating in five ports: Mancora, San Jose, Constante, Salaverry and Ilo. Observers began operating in Year 1 of the</p>

	<p>project, ahead of schedule, and this effort has been augmented since. The programs in Salaverry and Ilo are part of a long term monitoring project and a third port, San Jose has been added to this long-term initiative. Shore-based observers are also operating in the ports of Salaverry, San Jose and Mancora. IMARPE staff in the ports of Salaverry, San Jose and Mancora assisted in establishing the onboard observer program and continue to assist with the network in Salaverry and San Jose.</p> <p>545 fishing trips from 9 ports of 5 fishing methods have been monitored over the course of the Darwin-SAFI project. This represents one of the most important small-scale fisheries data sets anywhere in the world.</p>
<p>Activity 2.4 Marine Vertebrate monitoring underway</p>	<p>Marine vertebrate monitoring is underway at all the observer programme ports mentioned above (Activity 2.3) with additional wide-area monitoring made possible through a real-time HF radio communication program with at-sea fishing vessels. The HF radio program has also been expanded to include a northern Peru base-station to enhance communications with fishing vessels in that region and Ecuador.</p> <p>Marine vertebrate monitoring by observers consists primarily of documenting interactions by species, location, fishery, and fate of the animal. In addition to this extensive monitoring effort the Darwin-SAFI project also conducted more discreet assessments, including:</p> <p>Waved albatross satellite tracking, Salaverry, northern Peru.</p> <p>Waved albatross and pink-footed shearwater at-sea abundance surveys, Salaverry and San Jose, northern Peru.</p> <p>Leatherback turtle satellite tracking, Salaverry and San Jose, northern Peru.</p> <p>Hawksbill turtle satellite tracking, Constante, northern Peru.</p> <p>Small cetacean acoustic monitoring, Salaverry and San Jose, northern Peru, Pucallpa, Amazon.</p> <p>Seabird, sea turtle and marine mammal stranding monitoring, Ite beach, southern Peru.</p> <p>Humboldt penguin colony monitoring, Punta Coles, southern Peru.</p> <p>Green turtle haematology and biochemistry, Constante, northern Peru.</p>
<p>Activity 2.6 Scientific papers</p>	<p>13 papers and 3 book chapters have been published with 1 additional paper in submission and four more currently planned or in manuscript form.</p>

<p>Activity 2.7 Project summary report prepared, presented to stakeholders and decisionmakers</p>	<p>We have presented the results of this project to stakeholders during workshops in Constante, Salaverry, Mancora, Ilo and San Jose. Summary reports have been prepared for IMARPE, MINAM, FIUPAP and SERNANP who also continue to receive regular updates of continuing project activities.</p>
<p><b>Output 3.</b> Increased awareness of the marine environment</p>	<p>• Website; newsletters; press releases; Workshops; Lectures; Darwin conference</p> <p>Progress generally good and indicators appropriate.</p>
<p>Activity 3.1 Website established</p>	<p>A Darwin SAFI project webpage is located at the Peru lead partner ProDelphinus website. The project's Facebook webpage continues to be the main venue for project announcements, updates and photo sharing. The page now has close to 7,000 followers. A full update of the PD website is now also underway.</p> <p>Additionally, PD has developed an android app (boVEDA) that will soon be released and that is designed to promote sustainable fisheries and that contains content for fishermen, restaurants and consumers.</p>
<p>Activity 3.2 Production of Darwin Newsletters</p>	<p>The four newsletters were produced as scheduled and were regularly distributed at fishing ports along the entire Peru coast, as well as being posted to the ProDelphinus Facebook page and blog. The newsletter was used as a means to disseminate information on project progress, the availability of bycatch mitigation measures and the project contact information.</p> <p>In addition to the newsletter, the project also produced a multitude of other Darwin-branded educational materials (e.g. species guides, safe handling guides, species information pamphlets, conservation themed t-shirts, wallet calendars, key chains, etc.) over the course of the project to promote raised awareness of marine conservation and bycatch mitigation.</p>
<p>Activity 3.3 Press releases in Peru and UK</p>	<p>Press releases around key events in Peru typically resulted in better than expected TV and radio coverage and features in the national press (Print: <i>El Comercio, Etiqueta Verde, Propuesta, El Correo, Peru Shimpo, Asia Sur</i>; Radio: <i>Radio Filarmonia, Radio Bethel, BBC Radio 4 Woman's Hour</i>; Television: <i>Cinco Minutos, Bethel</i>).</p> <p>Media activity in the UK and internationally came from a major project-related publication related to sea turtle bycatch and efforts to promote development of a market for sustainably caught fish products in Peru.</p>

<p>Activity 3.4 Darwin Conference</p>	<p>The Darwin Conference was held in Piura in November 2013 and was attended by 22 people, including representatives from IMARPE, SERNANP, Regional government of Piura, Nature and Culture International, staff and students of Universidad de Piura. The conference included presentations of main project findings as well as distribution of outreach materials. The Conference also provided an excellent forum for interchange between stakeholders and has helped facilitate continued collaborations in many of the primary project themes and locations.</p>
<p><b>Output 4.</b> Bycatch mitigation experiments and implementation</p>	<ul style="list-style-type: none"> <li>• Animals released</li> <li>• Declines in capture rates, both absolute and catch per unit effort</li> <li>• Reduced severity of injury</li> <li>• Number of fishers agreeing to change fishing techniques/employ mitigation</li> </ul>
<p>Activity 4.1 Bycatch mitigation trials and implementation</p>	<p>Bycatch mitigation trials and implementation occurred on several fronts and typically ran ahead of schedule. These are among the few trials anywhere in the world of mitigation technologies with small-scale fisheries or as means to reduce seabird and sea turtle interactions in net fisheries. Principal results under this activity were the following:</p> <p>Trials of acoustic alarms (pingers) were completed and published in the journal <i>Oryx</i>. A ~40% decline in small cetacean bycatch was observed. Based upon the success of this work the project has begun implementing the use of pingers on a wider scale and has distributed pingers to fishermen at numerous ports along the coast. ProDelphinus continues to work with Cornwall, UK based company Fishtek to purchase and distribute pingers and develop pingers for the Peru market.</p> <p>Experimental trials of LED lights to reduce sea turtle bycatch were completed in Constante and showed a ~60% decline in sea turtle bycatch as well as declines in seabird and seahorse bycatch. A second phase of this trial is planned for the driftnet fishery as are plans to implement the use of lights in Constante.</p> <p>One year of trials of alterations to net depth have also been completed with preliminary findings of reduced sea turtle and small cetacean bycatch. A second year of trials is currently underway.</p>



		<p>In addition to the above trials, distribution of net cutters and de-hookers (mitigation methods for seabirds, sea turtles and other marine life) have continued implementation and has been received favourably by fishermen who regularly request additional equipment.</p> <p>Mitigation trials and implementation are fostered by collaboration with the the association of small-scale fishermen 'Pescadores Amigos de la Naturaleza' which was established with Darwin-SAFI assistance and support.</p>
<p><b>Output 5.</b> Project monitoring</p>	<ul style="list-style-type: none"> <li>• Darwin reporting.</li> <li>• Steering group meetings.</li> </ul>	<p>Progress generally good and indicators appropriate.</p>
<p>Activity 5.1 Darwin reporting</p>		<p>All reporting so far was undertaken in a timely manner and well received by DI indicating project has progressed satisfactorily.</p>
<p>Activity 5.2 Steering Group meetings</p>		<p>Steering group meetings were undertaken during each field visit by UK staff and followed up with e-mail correspondence and Skype in between.</p>

## Annex 2 Project's full logframe, including indicators, means of verification and assumptions

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p><b>Goal:</b></p> <p>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.</p>			
<p><b>Sub-Goal:</b></p> <p>The marine biodiversity of Peru is preserved for future sustainable use</p>	<ul style="list-style-type: none"> <li>• Artisanal fisheries methods and bycatch accurately assessed</li> <li>• Bycatch mitigations identified and implemented for threatened taxa and fisheries observed</li> <li>• programmes show reduced levels of marine vertebrate bycatch.</li> <li>• Increasing populations of key marine taxa</li> </ul>	<ul style="list-style-type: none"> <li>• Data from Peruvian fisheries ministries and non-governmental monitoring programmes</li> <li>• Monitoring by Peruvian Navy and IMARPE, Spatially referenced fishing and bycatch data</li> <li>• Data from governmental and non-governmental monitoring programmes</li> </ul>	
<p><b>Purpose</b></p> <p>Improved national and local capabilities applied to the sustainable and equitable management of marine biodiversity of Peru</p>	<ul style="list-style-type: none"> <li>• Sustainable artisanal fisheries initiative effectively enacted</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring continued</li> <li>• Reports and publications by partner organisations</li> </ul>	<ul style="list-style-type: none"> <li>• Peruvian partner organisations incorporate new knowledge into future strategies and workplans</li> <li>• Continued political stability</li> </ul>
<p><b>Outputs</b> (add or delete rows as necessary)</p> <p>1. Partners trained in monitoring, research and database use</p>	<ul style="list-style-type: none"> <li>• Training workshops</li> <li>• Training of Darwin Research Fellow and other local partners</li> <li>• Training of Darwin Graduate Trainee to MSc</li> <li>• Darwin Staff to international conferences</li> </ul>	<ul style="list-style-type: none"> <li>• Workshop Reports</li> <li>• Functioning fisheries observer programme and bycatch data</li> <li>• MSc thesis</li> </ul>	<ul style="list-style-type: none"> <li>• Trained individuals remain in employment by partner organisations</li> </ul>
<p>2. Increased knowledge of the marine biodiversity of Peru to</p>	<ul style="list-style-type: none"> <li>• Current assessment of artisanal fisheries and</li> </ul>	<ul style="list-style-type: none"> <li>• Outputs provided to Darwin; included on project website and</li> </ul>	<ul style="list-style-type: none"> <li>• Partners provide and share data</li> </ul>

inform decision makers	associated bycatch <ul style="list-style-type: none"> <li>• Sustainable Artisanal Fisheries Initiative</li> <li>• Species and fisheries effort maps</li> <li>• Darwin conference</li> <li>• Scientific Papers</li> </ul>	reports	
3. Increased awareness of the marine environment	<ul style="list-style-type: none"> <li>• Website; newsletters; press releases; Workshops; Lectures; Darwin conference</li> </ul>	<ul style="list-style-type: none"> <li>• Web hits</li> <li>• Circulation of Darwin Newsletter</li> <li>• Media Items</li> <li>• Conference outputs</li> <li>• Number workshops held and attendance levels</li> <li>• Number of fishers collaborating in fieldwork</li> </ul>	
4. Bycatch mitigation experiments and implementation	<ul style="list-style-type: none"> <li>• Animals released</li> <li>• Declines in capture rates, both absolute and catch per unit effort</li> <li>• Reduced severity of injury</li> <li>• Number of fishers agreeing to change fishing techniques/employ mitigation</li> </ul>	<ul style="list-style-type: none"> <li>• Reports and publications</li> <li>• Number of fishers employing the techniques</li> </ul>	<ul style="list-style-type: none"> <li>• Effective, appropriate measures can be defined for the fisheries and species</li> </ul>
5. Project monitoring	<ul style="list-style-type: none"> <li>• Darwin reporting.</li> <li>• Steering group meetings.</li> </ul>	<ul style="list-style-type: none"> <li>• Reports to Darwin Initiative.</li> <li>• Minutes of meetings.</li> </ul>	

**Activities** (details in workplan)

- 1.1 Workshops (1. Visioning; 2. Fisheries observers; 3. Spatial ecology; 4. Bycatch mitigation; 5. Conservation workshops; Dates per workplan)
- 1.2 Darwin Graduate Trainee identified
- 1.3 Darwin-IMARPE Fellow identified
- 1.4 Conference attendance Darwin staff
  
- 2.1 Artisanal fisheries assessment completed
- 2.2 Spatial ecology database established
- 2.3 Fisheries observer programme underway
- 2.4 Marine Vertebrate monitoring underway
- 2.6 Scientific papers
- 2.7 Project summary report prepared, presented to stakeholders and decisionmakers
  
- 3.1 Website established
- 3.2 Production of Darwin Newsletters
- 3.3 Press releases in Peru and UK
- 3.3 Darwin Seminars for key stakeholders
- 3.4 Darwin Conference
  
- 4.1 Bycatch mitigation trials and implementation
  
- 5.1 Darwin reporting
- 5.2 Steering Group meetings

## 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	15	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	15	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	0	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.

<b>Article No./Title</b>	<b>Project %</b>	<b>Article Description</b>
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 (e.g. 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)
<b>Training Measures</b>		
1a	Number of people to submit PhD thesis	2 (200%)
1b	Number of PhD qualifications obtained	2 (200%)
2	Number of Masters qualifications obtained	3 (300%)
3	Number of other qualifications obtained	6 (200%)
4a	Number of undergraduate students receiving training	26 (>150%)
4b	Number of training weeks provided to undergraduate students	250 (>1000%)
4c	Number of postgraduate students receiving training (not 1-3 above)	11 (>1000%)
4d	Number of training weeks for postgraduate students	75 (150%)
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification( i.e. not categories 1-4 above)	4 (100%)
6a	Number of people receiving other forms of short-term education/training (i.e. not categories 1-5 above)	4237 (>500%)
6b	Number of training weeks not leading to formal qualification	26 (>300%)
7	Number of types of training materials produced for use by host country(s)	28 (>500%)
<b>Research Measures</b>		
8	Number of weeks spent by UK project staff on project work in host country(s)	67 (>250%)
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.	17 (>400%)
11a	Number of papers published or accepted for publication in peer reviewed journals	12 (300%)
11b	Number of papers published or accepted for publication elsewhere	15 (>300%)
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country	6 (200%)
12b	Number of computer-based databases enhanced (containing species/genetic information) and handed over to host country	3 (100%)

<b>Code</b>	<b>Description</b>	<b>Totals (plus additional detail as required)</b>
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)	
<b>Dissemination Measures</b>		
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	7 (>150%)
14b	Number of conferences/seminars/ workshops attended at which findings from Darwin project work will be presented/ disseminated.	24 (>1000%)
15a	Number of national press releases or publicity articles in host country(s)	10 (200%)
15b	Number of local press releases or publicity articles in host country(s)	12 (200%)
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)	3500 (350%)
16c	Estimated circulation of each newsletter in the UK	1100 (>400%)
17a	Number of dissemination networks established	4 (400%)
17b	Number of dissemination networks enhanced or extended	4 (400%)
18a	Number of national TV programmes/features in host country(s)	5 (250%)
18b	Number of national TV programme/features in the UK	
18c	Number of local TV programme/features in host country	2 (none planned)
18d	Number of local TV programme features in the UK	
19a	Number of national radio interviews/features in host country(s)	2 (100%)
19b	Number of national radio interviews/features in the UK	1 (none planned)
19c	Number of local radio interviews/features in host country (s)	12 (400%)
19d	Number of local radio interviews/features in the UK	3 (300%)



Code	Description	Totals (plus additional detail as required)
<b>Physical Measures</b>		
20	Estimated value (£s) of physical assets handed over to host country(s)	£36,490 (>100%)
21	Number of permanent educational/training/research facilities or organisation established	3 (None planned)
22	Number of permanent field plots established	7 (>100%)
23	Value of additional resources raised for project (See Section 8.2 above)	
<b>Other Measures used by the project and not currently including in DI standard measures</b>		

## Annex 5 Publications

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (e.g. contact address, website)	Cost £
Journal	Doherty, P.D. et al. <i>In review</i> . Big catch, little sharks: Peruvian small-scale longline fisheries likely to be unsustainable. <i>Ecology &amp; Evolution</i> .	Wiley-Blackwell	Publisher's website	NA
Journal	Velez-Zauzo, X. et al. <i>In press</i> . What genetic barcoding reveals about the shark fishery in Peru. <i>Fisheries Research</i> .	Elsevier	Publisher's website	NA
Journal	Garcia-Godos, I. et al. 2013. Entanglements of Large Cetaceans in Peru: Few Records but High Risk. <i>Pacific Science</i> 67(4): 523-532.	University of Hawaii Press	Publishers website	NA
Journal	Mangel, J.C. et al. 2013. Using pingers to reduce small cetacean bycatch in the small-scale driftnet fishery in Peru. <i>Oryx</i> 47(4): 595-606.	Cambridge Journals	Publishers website	NA
Book	Lewis, R. et al. 2013. <i>Fisheries bycatch of Marine turtles: Lessons learned from decades of Research and Conservation</i> . Ch 12 in <u>The Biology of Sea Turtles</u> (Vol 3), Wyneken, K. & Lohman K. (eds.).	CRC Press	Publishers website	NA
Journal	Alfaro-Shigueto, J. et al. 2012. Trading information for conservation: a novel use of radio broadcasting to reduce sea turtle bycatch. <i>Oryx</i> 46(3): 332-339.	Cambridge Journals	Publishers website	NA
Journal	Cossios, E.D. et al. 2012. The order Carnivora (Mammalia) in Peru: State of knowledge and research priorities for its conservation. <i>Rev. Peru Biol.</i> 19(1): 17-26.	Universidad Nacional Mayor de San Marcos, Lima, Peru	Publishers website	NA
Book	Seminoff, J.A. et al. 2012. <i>Biology and conservation of sea turtles in the Eastern Pacific Ocean: A general overview</i> . Pp. 11-29 in <u>Sea turtles of the Eastern Pacific: Advances in Research and Conservation</u> . J. Seminoff & B. Wallace (eds.).	University of Arizona Press	Publishers website	NA

Book	Alfaro-Shigueto, J. & J.C. Mangel. 2011. <i>Sea Turtle Conservation in Peru: Limitations and Efforts</i> . Ch 15 in <i>Conservation of Pacific Sea Turtles</i> . Dutton, P., D. Squires & M. Ahmed (eds.).	University of Hawaii Press	Publishers website	NA
Journal	Alfaro-Shigueto, J. et al. 2011. New record of the marine otter <i>Lontra felina</i> (Molina, 1782) north to its current distribution. <i>Ecologia Aplicada</i> 10(2): 87-91.	La Molina University, Lima, Peru	Publisher's website	NA
Journal	Alfaro-Shigueto, J. et al. 2011. Small scale fisheries of Peru: a major sink for marine turtles in the Pacific. <i>Journal of Applied Ecology</i> 48: 1432-1440.	British Ecological Society	Publisher's website	NA
Journal	Benavides, M. et al. 2011. Southern hemisphere phylogeography of the copper shark ( <i>Carcharhinus brachyurus</i> ). <i>Marine and Freshwater Research</i> 62: 861-869	CSIRO Publishing	Publisher's website	NA
Journal	Mangel, J.C. et al. 2011. Latitudinal variation in diet and patterns of human interaction in the marine otter. <i>Marine Mammal Science</i> 27(2): E14-E25.	Wiley-Blackwell	Publisher's website	NA
Journal	Mangel, J.C. et al. 2011. Post-capture movements of loggerhead turtles in the southeastern Pacific Ocean assessed by satellite tracking. <i>Marine Ecology Progress Series</i> 433: 261-272.	Inter-Research	Publisher's website	NA
Journal	Alfaro-Shigueto, J. et al. 2010. Hawksbill turtles in Peruvian coastal fisheries. <i>Marine Turtle Newsletter</i> 129: 19-21.	Seaturtle.org	Publisher's website	NA
Journal	Alfaro-Shigueto, J. et al. 2010. Where small scale can have a large impact: Structure and characterization of small-scale fisheries in Peru. <i>Fisheries Research</i> 106: 8-17.	Elsevier	Publisher's website	NA
Journal	Hidalgo-Aranzamendi, N., J. et al. 2010. New records of broad-billed prions ( <i>Pachyptila vittata</i> ) in southern Peru. <i>Notornis</i> 57: 40-43.	Ornithological Society of New Zealand	Publisher's website	NA

## Annex 6 Darwin Contacts

<b>Ref No</b>	18-001
<b>Project Title</b>	Darwin Sustainable Artisanal Fisheries Initiative (Peru)
<b>Project Leader Details</b>	
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<b>Partner 2 etc.</b>	
Name	Dr. Jeffrey C. Mangel
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