

Important note:

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

Submission Deadline: 30 April 2011

1. Darwin Project Information

Project Reference	18-001
Project Title	Darwin Sustainable Artisanal Fisheries Initiative (Peru)
Host Country/ies	Peru
UK contract holder institution	University of Exeter
Host country partner institutions	Pro Delphinus (PD)
Other partner institutions	Instituto del Mar del Peru Federación de Integración y Unificación de Pescadores Artesanales del peru (FIUPAP) Ministerio del Ambiente (MINAM)
Darwin Grant Value	£299,966
Start/end dates of project	October 2010 / September 2013
Reporting period (eg Apr 2010 – Mar 2011) and number (eg Annual Report 1, 2, 3)	April 2011 – March 2012, Annual Report 2
Project Leader name	Dr. Brendan Godley
Project website	Pro Delphinus Facebook page & www.prodelphinus.org
Report authors, main contributors and date	Joanna Alfaro Shigueto, Jeffrey C. Mangel, Brendan J. Godley, Annette C. Broderick, 30 April 2012

2. Project Background

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.



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

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.

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.

3. Project Partnerships

Project Partnerships: As planned, the lead in-country partner for the Darwin Sustainable Artisanal Fisheries Initiative (Peru), or Darwin-SAFI, is the marine research NGO Pro Delphinus (PD; Principle contact is Joanna Alfaro-Shigueto who is the Darwin Research Fellow as well as president and Chief Scientist of Pro Delphinus). PD facilitates contacts with government agencies and other partners and leads coordination and implementation of all project activities in Peru, including research, training and outreach. Further partner organisations in the Darwin-SAFI include: (1) Federación de Integración y Unificación de Pescadores Artesanales del Peru (FIUPAP) which assists 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. We have made significant progress through bycatch research and mitigation trials that will help Peru meet its international obligations with regard to marine conservation.

Our relationship with project partners is maintained through periods of in-country field work and by an email circulation list, e-mails and telephone. Formal meetings with partners are held during periods of in-country fieldwork when project staff are present.

Additional Unforeseen Collaboration: As noted in our Year 1 annual report, the Darwin-SAFI project is now collaborating with the Ecuadoran NGO Equilibrio Azul and the Chilean NGO Pacifico Laud to develop a regional perspective of small-scale fisheries and marine fauna bycatch. Within Peru, the project is now also collaborating with the NGO Nature and Culture International to enhance regional marine research and conservation capacity in northern Peru.

During Year 2 we have strengthened these relationships and also developed linkages with additional organizations. The project now also collaborates with the regional fishing organization CEDEPESCA (Centre for Development and Sustainable Fisheries) to promote World Ocean Network (WON) activities in South America, Billabong and Peru-based NGOs Life-Out-Of-Plastic (LOOP), Amo la Mar (a consortium of NGOs, private agencies and persons working to promote marine conservation in Peru), Centro de Ornithologia y Biodiversidad (CORBIDI) and Nauticamp to raise awareness among the general public regarding marine conservation, the industrial purse-seine fishing company TASA to train fishers in marine fauna identification and safe release and Birdlife International's Albatross Task Force to enhance small-scale fishery monitoring in northern Peru. We have also developed partnerships with Universidad de Piura, Universidad Científica, Universidad Alas Peruanas and University of Puerto Rico-Rio Piedras to facilitate data analysis, promote student involvement in the project and to train students for careers in marine research and conservation. The project now also collaborates with UGEL Sechura, the Ministry of Education office in northern Peru, to increase the environmental teaching capacity of teachers in the region's 118 elementary and high schools. The project has now also begun collaborating with PROMAR, a Chilean NGO working in northern Chile, to exchange materials toward promoting the conservation of shared turtle populations. At the end of the second year, partnerships are demonstrably strong, with significant progress having been made across all main project areas.

4. Project Progress

4.1 Progress in carrying out project activities

Output 1. Partners trained in monitoring, research and database use.

1.1 Workshops

1.1.1 Visioning

The primary work under this item was completed in Year 1 as a means to guide subsequent work on the project. However, as new relationships with institutions have been developed (e.g. TASA, CEDEPESCA, LOOP, universities) we consult with project partners to determine how these relationships can best be incorporated towards meeting project goals. Workshops with government agencies SERNANP and AGRORURAL were also held during Year 2 to present progress on the Darwin SAFI project and to receive their input and recommendations toward enhancing project effectiveness.

1.1.2 Fisheries observers

Workshops for fisheries observers during Year 2 were held in Lima, Piura and Mancora and augment the on-going fishery monitoring commenced during Year 1. Peru lead partner Pro Delphinus further expanded its observer network by training a total of 12 national and international students and volunteers in onboard observer data collection protocols and survey techniques. There continues to be a high level of interest from national undergraduates wanting to participate with Pro Delphinus at the Darwin SAFI project. The project also took on an undergraduate student to carry out a research project with marine turtles. Five undergraduate student volunteers from University of Piura were also trained in field survey methods, fisheries monitoring and data entry.

Field guides and manuals produced during this reporting period included (Table 1, Item 10)

- Onboard observer forms for demersal longline fishery
- Seahorse ID and measurement guide
- Poster guide to marine top predators of Peru

1.1.3 Spatial ecology

A spatial ecology workshop was held in Lima in June 2011 focusing on seabird tracking and data analysis. Training in spatial ecology was given JAS and JCM during visits to University of Exeter in September 2011 and February 2012.

1.1.4 Bycatch mitigation

Multiple bycatch mitigation workshops have been held with fishermen in ports along the Peru coast which served to raise awareness of available technologies and as opportunities to provide equipment to interested fishermen. More than 30 fishermen attended workshops in four ports. Through a new partnership, PD also initiated workshops with the industrial purse-seine fishery company (TASA) and provided training to 114 fishermen and company officials about the status of local marine vertebrates and how to reduce their bycatch. PD also expanded on their work in Peru to collaborate with the Chilean organization, PROMAR, to provide a workshop for fishermen in the port of Iquique in northern Chile on regional efforts for the green turtle population that is shared by the two countries.

1.1.5 Conservation workshops

Conservation workshops during Year 2 were broadly organized into two categories, stakeholder workshops and general public awareness-raising. Six stakeholder workshops with 40 repeat participants were held in northern Peru around topics of seabird conservation. These workshops benefitted from the assistance of collaborating organizations University of Piura and Peruvian NGOs, Corbidi and NCI. Topics covered

included seabird biology, conservation and identification, data collection methodology, regional issues and relevant laws.

General public awareness raising activities involved approximately 820 participants from schools in southern and northern Peru and Lima. Marine conservation talks were usually given with supplementary material, such as pamphlets, posters and drawing sheets, puppet shows and creation and dedication of wall murals. Project staff also took part in public environmental awareness events, such as World Ocean Day, WWF's Earth Hour and the 'Dia de la Gaviota'. Additionally, we collaborated with the NGOs Amo la Mar, Billabong, Loop and Nauticamp to promote awareness of marine issues on beaches along the coast.

1.2 Darwin Graduate Trainees

Darwin graduate students JAS and JCM completed their PhDs in March 2012 and visited University of Exeter at Cornwall in September 2011 and February 2012 to receive additional project training including spatial analyses and bycatch data processing. Natalia Ortiz is more than half way to completing her MSc at the University of Exeter (completion date August 2012). Discussions are also underway with the IMARPE Paracas Laboratory to identify an additional graduate trainee and we hope that this person will be selected within the next few months.

1.3 Darwin-IMARPE Fellow identified

One possible candidate has been listed by IMARPE, but is not yet determined. It is likely a candidate will be proposed by this agency in the next few months.

1.4 Conference attendance Darwin staff

Five international conferences have been attended:

- 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.
- 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.
- In November 2011, JAS and JCM attended the 19th Annual 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.
- 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 and bringing together experts in the topic from around the world.
- In March 2012, JCM attended the annual meeting of the Birdlife International-Albatross Task Force, held in Santos, Brazil.
- 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 project.
- 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.

At the national level, Darwin SAFI project staff attended seven meetings and conferences with government departments, national science institutions and NGOs to share research findings on marine otters, sea turtles, seabirds and marine vertebrate interactions with fisheries, and to help in the preparation of national biodiversity action plans.

Output 2. Increased knowledge of the marine biodiversity of Peru to inform decision makers.

2.1 Artisanal fisheries assessment completed

This task was completed in Year 1. Detailed analyses of the data are underway with one manuscript regarding sea turtle bycatch nearing submission to a peer reviewed journal and additional analyses underway for seabird and small cetacean bycatch data resulting from the assessment.

2.2 Spatial ecology database established

This database was established in Year 1 and we continue to use it to manage the bycatch data coming in to the project.

2.3 Fisheries observer programme underway

Onboard observers are currently placed in four ports: Mancora, Constante, Salaverry and Ilo. The programs in Salaverry and Ilo are part of a long term monitoring project. Shore-based observers are now also operating in the ports of San Jose and Mancora. IMARPE staff in the ports of Salaverry and Mancora have assisted in establishing the onboard observer program in Mancora and continue to assist with the network in Salaverry.

2.4 Marine vertebrate monitoring underway

Marine vertebrate monitoring is underway at all the observer programme ports mentioned above (Item 2.3) with additional wide-area monitoring made possible through a real-time HF radio communication program with at-sea fishing vessels. Weekly maps identifying high bycatch areas are being produced using the information reported by fishermen. The HF radio program has been particularly well received by fishermen and has led to numerous repeat communications as well as visits by fishermen to the Pro Delphinus Lima office and requests for additional information and mitigation equipment.

We continue to use C-POD acoustic monitoring devices (www.chelonia.co.uk) to monitor the presence and behaviour of small cetaceans in the gillnet fisheries sampled. Project staff and partners have also participated in monthly Humboldt penguin counts at Punta Guanera Coles. Fastloc GPS data loggers have been deployed on penguins at several nesting colonies and also upon fishing vessels operating in the same areas to examine potential overlaps in area usage. A marine otter census was also performed at two ports at the beginning of the year. Beach surveys were also performed to register the number of vertebrates stranded or used for human consumption.

2.6 Scientific papers

Three papers have been produced during project Year 2. Copies of these papers have been presented to the government offices at IMARPE, MINAM and SERNAMP. The paper in the Journal of Applied Ecology was the subject of press coverage in the UK and internationally (Annex 3).

2.7 Project summary report prepared, presented to stakeholders and decision makers.

We have presented the results of this project to stakeholders during workshops in Constante, Salaverry and Ilo. Summary reports are also being prepared for IMARPE, MINAM, FIUPAP and SERNANP.

Output 3. Increased awareness of the marine environment.

3.1 Website established

A Darwin SAFI project webpage was completed in early 2011 and is located at the Peru lead partner Pro Delphinus website. The project's Facebook webpage continues to be the main venue for project announcements, updates and photo sharing. PD's blog also gives regular updates on activities.

3.2 Production of Darwin Newsletters

The second newsletter was produced as scheduled in December 2011 and is regularly distributed at fishing ports along the entire Peru coast, as well as being posted to the Pro Delphinus 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.

In addition to the newsletter we have also produced other educational materials (Annex 3) to promote raised awareness of marine conservation and bycatch mitigation including a logbook for fishermen, marine otter brochure, and a Humboldt penguin themed pocket calendar. A seabird guide for fishermen is currently being developed as well as a marine activity guidebook for teachers.

3.3 Press releases in Peru and UK

In the past year there have been three Peru and one UK based press releases. These relate to project work on sea turtles and seabirds. Additionally, in Peru two radio reports and one report on television were broadcast regarding work undertaken as part of the Darwin SAFI project. The UK based release was particularly noteworthy and related to the Alfaro-Shigueto et al. 2011 publication of sea turtle bycatch rates and was also subject to a BBC radio interview, a journal podcast and was picked up by numerous local and international conservation blogs and websites.

Project staff and programs were also featured in two articles appearing in the State of the World's Turtles (SWOT) Report, Volume 7 and discussing the project's HF Radio Conservation program and the work of Darwin Fellow Joanna Alfaro-Shigueto. Pro Delphinus staff Nadia Balducci was also featured as a young entrepreneur working in marine conservation locally in the Peruvian monthly magazine *Asia Sur*.

We have also posted to YouTube videos in English and Spanish introducing the Darwin Sustainable Artisanal Fisheries Initiative. Links to the video are regularly included in all electronic communications.

3.4 Darwin Seminars for key stakeholders

Meetings with key Peruvian stakeholders (MINAM, FIUPAP, IMARPE) were held throughout 2011. Additionally, through the Darwin SAFI, we have equipped the Lima headquarters of FIUPAP with a computer, printer and scanner.

3.5 Darwin Conference

The conference, to be held in mid-2013, will serve as an opportunity to summarize project results and findings and to chart the way forward upon project completion.

Output 4. Bycatch mitigation experiments and implementation.

4.1 Bycatch mitigation trials and implementation

Bycatch mitigation trials that were expanded in year 1 with the help of the Darwin-SAFI are continuing. These include experimental trials of acoustic alarms (pingers) to reduce small cetacean bycatch in driftnets and experimental trials of LED lights to reduce sea turtle and seabird bycatch in bottom-set nets. While the pinger research continues, preliminary results were submitted as a manuscript to the journal *Oryx* and we are awaiting a response. Results of the LED light experiments on marine turtle bycatch are due to be reviewed for a Masters thesis at the start of project Year 3 and developed into a peer reviewed journal article. In addition to pinger and net light trials, distribution of weighted swivels and net cutters and dehookers (mitigation methods for seabirds, sea turtles and other marine life) has continued during Year 2 and has been received favourably by fishermen who regularly request additional equipment.

Output 5. Project monitoring.

5.1 Darwin reporting

This report demonstrates our progress to date.

5.2 Steering group meetings

In September 2011 and February 2012, Peru staff Joanna Alfaro-Shigueto and Jeffrey Mangel visited the University of Exeter and held extensive steering group meetings with UK based staff and further elaborated the work plan for the rest of the reporting year.

4.2 Progress towards project outputs

We are now 50% of the way through the project and are well on target to attain all project outputs, with 50% or more of target reached in 32 of 38 relevant standard output criteria.

4.3 Standard Measures

We have made excellent progress against standard reporting measures, being on target or ahead of schedule in all criteria.

Table 1 Project Standard Output Measures

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for reporting period	Total planned during the project
1A	Number of people to submit thesis for PhD qualification (in host country)	0	2				1	1
1B	Number of people to attain PhD qualification (in host country)	0	2				1	1
2	Number of people to attain Masters qualification (MSc, MPhil etc)	0	0				1	1
3	Number of people to attain other qualifications (ie. Not outputs 1 or 2 above)	0	2				1	3
4A	Number of undergraduate students to receive training	11	5				5	15
4B	Number of training weeks to be provided	80	24				5	7
4C	Number of postgraduate students to receive training	4	3				1	1
4D	Number of training weeks to be provided	16	21				8	50
5	Number of people to receive at least one year of training (which does not fall into categories 1-4 above)	0	2				1	4
6A	Number of people to receive other forms of education/training (which does not fall into categories 1-5 above)	479	974				200	500
6B	Number of training weeks to be provided	5	6				3	8
7	Number of (ie different types - not volume - of material produced) training materials to be produced for use by	4	7				3	5

	host country							
8	Number of weeks to be spent by UK project staff on project work in the host country	4	16				5	26
9	Number of species/habitat management plans (or action plans) to be produced for Governments, public authorities, or other implementing agencies in the host country	0	0				0	1
10	Number of individual field guides/manuals to be produced to assist work related to species identification, classification and recording	7	2				2	4
11A	Number of papers to be published in peer reviewed journals	3	3				1	4
11B	Number of papers to be submitted to peer reviewed journals	6	4				2	4
12A	Number of computer based databases to be established and handed over to host country	2	2				0	3
12B	Number of computer based databases to be enhanced and handed over to host country	1	1				1	3
14A	Number of conferences/seminars/workshops to be organised to present/disseminate findings	2	1				1	4
14B	Number of conferences/seminars/workshops attended at which findings from Darwin project work will be presented/disseminated.	4	7				2	2
15A	Number of national press releases in host country(ies)	5	3				2	5
15B	Number of local press releases in host country(ies)	5	3				2	6
15C	Number of national press releases in UK	1	1				1	2
15D	Number of local press releases in UK	1	1				1	2
16A	Number of newsletters to be produced	1	1				1	4
16B	Estimated circulation of each newsletter in the host country(ies)	1000	1000				500	1000

16C	Estimated circulation of each newsletter in the UK	250	500				100	250
17A	Number of dissemination networks to be established	1	1				0	1
17B	Number of dissemination networks to be enhanced/ extended	1	1				0	1
18A	Number of national TV programmes/features in host country(ies)	1	0				0	2
19A	Number of national radio interviews/features in host country(ies)	0	0				0	2
19C	Number of local radio interviews/features in host country(ies)	8	2				1	3
19D	Number of local radio interviews/features in UK	0	2				0	1
20	Estimated value (£'s) of physical assets to be handed over to host country(ies)	£16,190	SOME FOR THIS YEAR CHCK BUDGET					£36,490
21	Number of permanent educational/training/research facilities or organisations to be established and then continued after Darwin funding has ceased	1	0				0	
22	Number of permanent field plots to be established during the project and continued after Darwin funding has ceased	3	2				1	5
23	Value of resources raised from other sources (ie in addition to Darwin funding) for project work	£69,182						£300,960
New -Project specific measures								

Table 2 Publications

Type (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £
Journal	Alfaro-Shigueto, J., J. Valqui & J.C. Mangel. <i>In press</i> . New record of the marine otter <i>Lontra felina</i> (Molina, 1782) north to its	La Molina University, Lima, Peru	Publisher's website	Na

	current distribution. <i>Ecologia Aplicada</i> .			
Journal	Alfaro-Shigueto, J., J.C. Mangel, P.H. Dutton, J.A. Seminoff & B.J. Godley. <i>In press</i> . Trading information for conservation: a novel use of radio broadcasting to reduce sea turtle bycatch. <i>Oryx</i> .	Cambridge Journals	Publisher's website	Na
Journal	Alfaro-Shigueto, J., J.C. Mangel, F. Bernedo, P.H. Dutton, J.A. Seminoff & B.J. Godley. 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

4.4 Progress towards the project purpose and outcomes

We feel that at this stage we are making strong progress towards stated purposes and outcomes, and our purpose level assumptions still hold true.

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

It is too early to assess the full impact of the project but we feel our indicators for measuring outcomes remain entirely adequate toward monitoring project progress, and, subsequently, evaluating potential for bycatch reductions resulting from the project. We note, however, that preliminary results from the ongoing bycatch mitigation trials have all been positive and indicate that reductions in marine fauna bycatch are possible. Moreover, buy-in by fishermen to the goal of the Darwin SAFI project is evidenced by their participation in all project activities (e.g. work shops, mitigation trials). The project also continues to build broad partnerships with a network of agencies and institutions that will promote post-project implementation and continued progress.

5. Monitoring, evaluation and lessons

As articulated in the main bid, the progress of the project against key milestones and indicators is appraised by a Steering Group made up of partner organisation that will meet bi-annually. There is also regular communication among project partners, facilitated by the field presence of the key Darwin Staff. The key indicators show the progress of the project as catalysed by the launch of several ongoing initiatives. These include websites development, establishment of a spatial ecology database, a commencement of a Fishery Observer Programme and marine vertebrate monitoring and bycatch mitigation initiatives. All of these are clearly articulated and time stamped and have moved beyond the planning stages to varying levels of implementation.

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

There were no review comments to be addressed from our Year 1 report.

7. Other comments on progress not covered elsewhere

There have been no major enhancements or refinements to the project, nor any significant difficulties encountered. We do not foresee any major additional risks.

8. Sustainability

As detailed above, the project has made considerable inroads to creating a profile in-country. There is strong buy-in from partners for the project, demonstrated by the number of initiatives we have been able to get off the ground by the project's midway point. The exit strategy will be the formulation of a spatially explicit sustainable artisanal fisheries initiative which will act as a roadmap for further action in the waters off Peru and, indeed, regionally, as many of these marine resources and issues are found throughout the southeast Pacific. There is a stable project endpoint in that capacity and awareness will have been raised to an all-time high with the launch of the Darwin-SAFI. Sustainability will depend on the on-going commitment of the organisations that currently make up the consortium. This is highly likely given the sustained efforts made by all organisations to date, and given the representation of the key stakeholders in the project. That buy-in continues to grow and solidify as new relationships are formed with collaborating institutions and fishermen and as projects with existing partners are implemented and mature. There will be considerable legacy aspects to this project including greatly enhanced levels of training of local staff and project participants, training and educational materials, and a spatially explicit database.

9. Dissemination

Dissemination efforts initially targeted key stakeholders in fishing communities and government during the launch period of the project although media activity widened the impact. These efforts (including media outreach) continued in Year 2 but were also broadly expanded to include the general public and to raise awareness of marine conservation through multiple outreach activities. Repeated conservation workshops along the Peru coast also served to promote the project and its objectives. In the coming year we plan to sustain web, media and newsletter activity to continue promoting the profile of the project and will continue to hold regular project related workshops and talks with stakeholder groups and the general public.

10. Project Expenditure

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

<i>Item</i>	<i>Budget (please indicate which document you refer to if other than your project application or annual grant offer letter)</i>	<i>Expenditure</i>	<i>Variance/Comments</i>
Staff costs specified by individual			
Overhead costs			
Travel and subsistence			
Operating costs			
Capital items/equipment (specify)			
Others: Consultancy			
Others (please specify)- Peruvian Student Fees			
TOTAL			

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

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

Solid progress: As a result of strong partnerships and a tremendous commitment from local partners and UoE staff, the project has proceeded apace and significant inroads have been made in research, training, and outreach. We are exceptionally well placed to further strengthen the project in the next financial year.

Images: We have many excellent images of local partners involved with fieldwork that we would happily share. These include photos of staff conducting fishermen interviews and workshops, fishing vessels, marine fauna bycatch, and attachments of satellite transmitters to sea turtles. Please contact Darwin Research Fellow, Joanna Alfaro-Shigueto with any requests for specific images.

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2011-2012

Project summary	Measurable Indicators	Progress and Achievements April 2010 - March 2011	Actions required/planned for next period
<p>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</p> <p>⇒ 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</p>		Significant steps have been made towards project aims in the first half of this 3 year project.	
<p>Purpose Improved national and local capabilities applied to the sustainable and equitable management of marine biodiversity of Peru</p>	Sustainable artisanal fisheries initiative effectively enacted.	Training, research and involvement of key stakeholders are well underway.	<p><i>Fisheries observer programme continued and expanded.</i></p> <p><i>MSc underway.</i></p> <p><i>Additional research and mitigation trial outputs.</i></p>
<p>Output 1. Partners trained in monitoring, research and database use</p>	<ul style="list-style-type: none"> • Training workshops • Training of Darwin Research Fellow and other local partners • Training of Darwin Graduate Trainee to MSc • Darwin Staff to international conferences 	Progress generally good and indicators appropriate.	
Activity 1.1 Workshops (1. Visioning; 2. Fisheries observers; 3. Spatial ecology; 4. Bycatch mitigation; 5. Conservation workshops; Dates per workplan)		Visioning, Fisheries Observers, Spatial Ecology and Bycatch Mitigation workshops completed. Conservation workshops undertaken on a continuing basis.	
Activity 1.2 Darwin Graduate Trainee identified		One underway with possible additional under consideration.	
Activity 1.3 Darwin-IMARPE Fellow identified		Planned but awaiting IMARPE action.	
Activity 1.4 Conference attendance Darwin staff		Underway. Staff attended 7 international conferences and 7 national events.	
<p>Output 2. Increased knowledge of the marine biodiversity of Peru to inform decision makers</p>	<ul style="list-style-type: none"> • Current assessment of artisanal fisheries and associated bycatch • Sustainable Artisanal Fisheries Initiative • Species and fisheries effort maps • Darwin conference 	Progress generally good and indicators appropriate.	

	<ul style="list-style-type: none"> • Scientific Papers 	
Activity 2.1 Artisanal fisheries assessment completed		Completed
Activity 2.2 Spatial ecology database established		Completed
Activity 2.3 Fisheries observer programme underway		Underway
Activity 2.4 Marine Vertebrate monitoring underway		Underway
Activity 2.6 Scientific papers		Underway
Activity 2.7 Project summary report prepared, presented to stakeholders and decisionmakers		Planned
Output 3. Increased awareness of the marine environment	<ul style="list-style-type: none"> • Website; newsletters; press releases; Workshops; Lectures; Darwin conference 	Progress generally good and indicators appropriate.
Activity 3.1 Website established		Completed. With regular updates to the project Facebook page.
Activity 3.2 Production of Darwin Newsletters		Underway. Released in October 2010 and December 2011 with additional newsletters to be released as scheduled.
Activity 3.3 Press releases in Peru and UK		3 in Peru, 1 in UK
Activity 3.4 Darwin Seminars for key stakeholders		Underway. Seminars with key stakeholders held during 2011 and early 2012 with Year 3 seminar to occur as planned.
Activity 3.5 Darwin Conference		Planned
Output 4. Increased awareness of the marine environment	<ul style="list-style-type: none"> • Animals released • Declines in capture rates, both absolute and catch per unit effort • Reduced severity of injury • Number of fishers agreeing to change fishing techniques/employ mitigation 	Progress generally good and indicators appropriate.
Activity 4.1 Bycatch mitigation trials and implementation		Underway
Output 5. Project monitoring	<ul style="list-style-type: none"> • Darwin reporting. • Steering group meetings. 	Progress generally good and indicators appropriate.
Activity 5.1 Darwin reporting		Effectively draws strands of project together for appraisal.

Activity 5.2 Steering Group meetings

Excellent periodic format for project review.

Annex 2 Project's full current logframe

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Goal: Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources.			
Sub-Goal: The marine biodiversity of Peru is preserved for future sustainable use	<ul style="list-style-type: none"> • Artisanal fisheries methods and bycatch accurately assessed • Bycatch mitigations identified and implemented for threatened taxa and fisheries observed • programmes show reduced levels of marine vertebrate bycatch. • Increasing populations of key marine taxa 	<ul style="list-style-type: none"> • Data from Peruvian fisheries ministries and non-governmental monitoring programmes • Monitoring by Peruvian Navy and IMARPE, Spatially referenced fishing and bycatch 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 Peru	<ul style="list-style-type: none"> • Sustainable artisanal fisheries initiative effectively enacted 	<ul style="list-style-type: none"> • Monitoring continued • Reports and publications by partner organisations 	<ul style="list-style-type: none"> • Peruvian partner organisations incorporate new knowledge into future strategies and workplans • Continued political stability
Outputs (add or delete rows as necessary) 1. Partners trained in monitoring, research and database use	<ul style="list-style-type: none"> • Training workshops • Training of Darwin Research Fellow and other local partners • Training of Darwin Graduate Trainee to MSc • Darwin Staff to international conferences 	<ul style="list-style-type: none"> • Workshop Reports • Functioning fisheries observer programme and bycatch data • MSc thesis 	<ul style="list-style-type: none"> • Trained individuals remain in employment by partner organisations
2. Increased knowledge of the marine biodiversity of Peru to inform decision makers	<ul style="list-style-type: none"> • Current assessment of artisanal fisheries and associated bycatch • Sustainable Artisanal Fisheries Initiative • Species and fisheries effort maps • Darwin conference • Scientific Papers 	<ul style="list-style-type: none"> • Outputs provided to Darwin; included on project website and reports 	<ul style="list-style-type: none"> • Partners provide and share data
3. Increased awareness of the marine environment	<ul style="list-style-type: none"> • Website; newsletters; press releases; Workshops; Lectures; Darwin conference 	<ul style="list-style-type: none"> • Web hits • Circulation of Darwin Newsletter • Media Items • Conference outputs 	

		<ul style="list-style-type: none"> • Number workshops held and attendance levels • Number of fishers collaborating in fieldwork 	
4. Bycatch mitigation experiments and implementation	<ul style="list-style-type: none"> • Animals released • Declines in capture rates, both absolute and catch per unit effort • Reduced severity of injury • Number of fishers agreeing to change fishing techniques/employ mitigation 	<ul style="list-style-type: none"> • Reports and publications • Number of fishers employing the techniques 	<ul style="list-style-type: none"> • Effective, appropriate measures can be defined for the fisheries and species
5. Project monitoring	<ul style="list-style-type: none"> • Darwin reporting. • Steering group meetings. 	<ul style="list-style-type: none"> • Reports to Darwin Initiative. • Minutes of meetings. 	
<p>Activities (details in workplan)</p> <p>1.1 Workshops (1. Visioning; 2. Fisheries observers; 3. Spatial ecology; 4. Bycatch mitigation; 5. Conservation workshops; Dates per workplan)</p> <p>1.2 Darwin Graduate Trainee identified</p> <p>1.3 Darwin-IMARPE Fellow identified</p> <p>1.4 Conference attendance Darwin staff</p> <p>2.1 Artisanal fisheries assessment completed</p> <p>2.2 Spatial ecology database established</p> <p>2.3 Fisheries observer programme underway</p> <p>2.4 Marine Vertebrate monitoring underway</p> <p>2.6 Scientific papers</p> <p>2.7 Project summary report prepared, presented to stakeholders and decisionmakers</p> <p>3.1 Website established</p> <p>3.2 Production of Darwin Newsletters</p> <p>3.3 Press releases in Peru and UK</p> <p>3.4 Darwin Seminars for key stakeholders</p> <p>3.5 Darwin Conference</p> <p>4.1 Bycatch mitigation trials and implementation</p> <p>5.1 Darwin reporting</p> <p>5.2 Steering Group meetings</p>			

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

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

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

Darwin SAFI project associated educational materials produced, 2011-2012:

- **Poster ‘Top Predators of the Peruvian Sea’:** This poster were designed and produced in cooperation with TASA, a leading industrial fishery and anchovy fishmeal producer. TASA contacted Pro Delphinus in order to create a poster that shows the top predators of the Peruvian sea and that can be used by fishing crews to assist in species identification. The posters were also designed to be placed in TASA shore facilities to raise awareness of marine megafauna.

Additionally, these posters have been delivered to fishermen in artisanal ports along Peruvian coast during Pro Delphinus visits and talks and have been given to offices of various small-scale fisher organizations.



- **Key chains, buttons, bracelets:** These we produced as materials for use during project talks and workshops and also during Pro Delphinus participation in public events raising environmental awareness.



- **Fisher's notebook/calendar:** These were designed to allow fishermen to take notes of what they see during their trips. The notebook has a lunar calendar and first-aid tips both to maximize their utility to fishermen. Additionally, the notebook have information about minimal captured size and closure periods of some marine resources and information about the high frequency radio program operated by Pro Delphinus to communicate with fishers at sea.

TU CONSULTA CON LA ENFERMERA PRODELPHINUS

CONTINUA INDICACION
Mantén una dieta equilibrada y normal. Evita el consumo de alcohol y el uso de medicamentos sin el consentimiento de tu médico. No uses drogas.

¿TE PREOCUPAN ALGUNAS?
No olvides que el agua dulce puede ser un recurso limitado. Evita el uso de pesticidas y herbicidas. Evita el uso de plásticos. Evita el uso de productos químicos. Evita el uso de productos químicos.

UN LAGO DE PAPA, PROYECTO BARRIL NEGRO
El agua dulce es un recurso limitado. Evita el uso de pesticidas y herbicidas. Evita el uso de plásticos. Evita el uso de productos químicos. Evita el uso de productos químicos.

EL MEDIO AMBIENTE
El medio ambiente es un recurso limitado. Evita el uso de pesticidas y herbicidas. Evita el uso de plásticos. Evita el uso de productos químicos. Evita el uso de productos químicos.

CONTACTOS IMPORTANTES:
Proyecto Barril Negro, C.A.
Calle 100 N. No. 1000
Calle 100 N. No. 1000

El medio ambiente es un recurso limitado. Evita el uso de pesticidas y herbicidas. Evita el uso de plásticos. Evita el uso de productos químicos. Evita el uso de productos químicos.

Radio Lima
Si estás en la mar y necesitas información de temperatura, marea y vientos.

Contáctanos a Base Lima en las frecuencias:
• Norte: 6.265.2
• Sur: 10.695.0
• Móvil: 1217-1333
• Celular: 963-237-033

Además te guiamos en otros asuntos a pasajeros, turistas y comercios que se encuentran en la zona.

Diga Señora Ley

• Año del padre familia el 17 de enero del 2012. 963 288 3333 PRODELPHINUS
• Talla máxima del pez: 70cm de largo. 600-245-261-4906969
• Talla máxima de marlin: 180cm de largo. 2700hrs. 963-200-0821-PE
• Prohibido la captura o venta de tortugas y/o aves marinas. CO 834-2884-AC
• Prohibido la captura o venta de tiburones marinos. Ley 76-33381

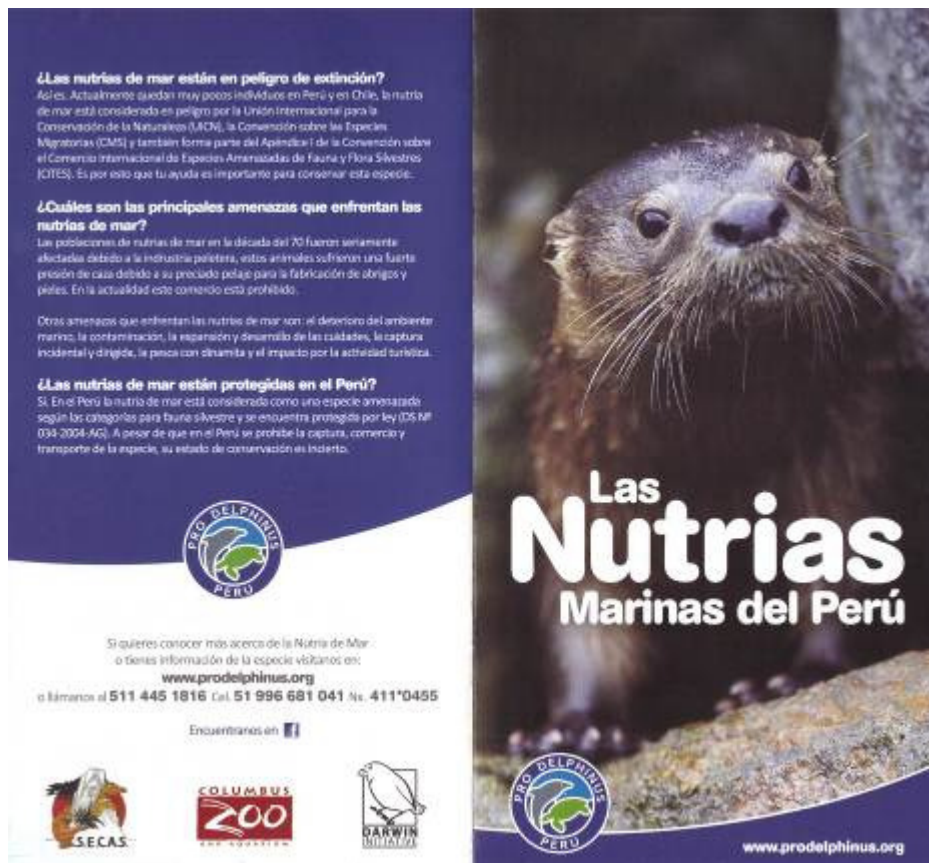
Calendario Lunar 2012

Enero	Febrero	MARZO
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Abril	Mayo	Junio
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Julio	Agosto	Septiembre
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Octubre	Noviembre	Diciembre
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

- Credit card sized lunar calendars with Humboldt Penguins and fisheries regulations: These were designed to be distributed among coastal communities, especially to fishermen who use the lunar calendar as a guide and therefore are more likely to keep the cards with them. The calendars also contain information about minimum capture size regulations and closure periods to help raise awareness of these regulations among small-scale fishers.



- Marine otter educational brochure: Designed for distribution to coastal communities to raise awareness of the presence and endangered status of the marine otter.



Seahorse information and observation flyer: Due to the lack of information about this threatened species this flyer was created to inform people along the northern Peru coast about this species, its conservation status and what to do if they are incidentally captured while fishing.

Los Caballitos de mar

Nombre científico: Hippocampus ingens

En el mar peruano habitan los caballitos de mar. En nuestro país se tiene muy poca información sobre este ellos, y sus números son bastante bajos, por lo que se le considera una especie amenazada.

Datos curiosos

- Las parejas se mantienen fieles. Es el macho es el que "quanda preñado".
- Las crías nacen luego de 50 a 60 días. En algunos casos nacen hasta 400 crías.
- Son animales que se mueven muy lentamente, y son altamente fieles a su territorio.
- En los últimos años algunas de sus poblaciones se han reducido al 50%.

La Resolución Ministerial 306-2004-PRODUCE, indica que no se puede capturar, transportar ni vender los caballitos de mar. Bajo sanción por Ley 25077 y el Reglamento de la Ley General de Pesca.

Cómo ayudar si te los encuentras en tu aparejo de pesca, o en el mar o playa. Antes de devolverlos procura tomar información básica (lugar donde lo encontraste, fecha, cantidad, tenían huevos o no).

Esta información será de gran ayuda a nuestro trabajo. A la vez ayudarles a la conservación de estos animales en nuestro país.

Mientras tomas estos datos sumerge el caballito ya que al ser un pez necesita respirar bajo el agua.

OJO: No compres artesanías hechas con caballitos de mar. Tu ayuda es valiosa para nosotros, aquí te explicamos que tipo de información nos interesa. Envíanos esta información a los contactos en este folleto.

Fecha: _____

Condición: (Vivo o muerto) _____

Largo cabeza (cm): _____

Altura (cm): _____

Sexo: _____

Lugar: _____

- Darwin SAFI Responsible Fishers Bulletin 2: This bulletin is used to inform people along the Peru coast about the Darwin Initiative, its results and achievements. It is distributed regularly during Pro Delphinus visits to different artisanal ports and activities along the coast.

BOLETÍN PESCADORES RESPONSABLES

Segunda Edición: Diciembre 2011

Iniciativa Darwin: Pesca artesanal sostenible

La Iniciativa Darwin es un gran proyecto en el cual participa ProDelphinus, una ONG Peruana con base en Lima, con apoyo de Inglaterra. Este proyecto se inició en el 2010 y pretende trabajar directamente con pescadores artesanales y sus comunidades con el fin de incentivar una pesca amigable con el medio ambiente marino, es decir, una pesquería sostenible.

La Iniciativa Darwin se lleva a cabo a lo largo de toda la costa del Perú. Se realizan charlas de educación ambiental en diferentes puertos para los pescadores y en varias comunidades pesqueras para niños y jóvenes. Además, se trabaja con Pescadores Artesanales comprometidos con el mar, en buscar alternativas que ayuden a que su pesca sea sostenible.

1 **Lanzas en red** para evitar la captura de tortugas.

2 **Peso con clavavallas** para reducir captura de pejerotas.

3 **Alarma o pliegue** para evitar captura de chanchos marinos.

Hasta el momento se han probado con éxito lanzas y alarmas acústicas para evitar que tortugas y chanchos marinos se enrolen en el aparejo, haciendo que se pierda tiempo durante la faena y dañando el aparejo. También se les han entregado pesos con clavavallas para evitar que pejerotas y otras aves marinas se engancharan en el anzuelo y se ahoguen.

Estos instrumentos ayudan a los animales pero también ayudan a tener una pesca artesanal eficiente y amigable con el ambiente.

Calendario Lunar 2012

● Luna llena ● Nueva ● Creciente ● Menguante

Enero		Febrero		Marzo		Abril		Mayo		Junio			
Día	Horario	Día	Horario	Día	Horario	Día	Horario	Día	Horario	Día	Horario	Día	Horario
1	18:00	1	18:00	1	18:00	1	18:00	1	18:00	1	18:00	1	18:00

[Busca información de temperatura y vientos en la red? Conéctate en "Bosco" (Peruana) 1096]

TIPS de la enfermera: ¿QUÉ HACER EN CASO DE QUEMADURAS?

- 1 **Enfría el área** con agua 10 o 15 minutos, no utilices hielo. Luego enjuágala con jabón y cubre la herida con algo limpio.
- 2 **Si la quemadura es muy grave no coloques nada** sobre ella y ubica a un médico lo más pronto posible.
- 3 **Si te sale una ampolla, no te la reventes.** Podrías causar una infección.

Si necesitas información de temperaturas cuando estas en la mar:

Contáctate desde tu embarcación con nuestra base en Lima mediante las frecuencias que figuran abajo. Nosotros te brindaremos información sobre Vientos, Mareas, Temperatura del mar y Presión de los productos.

También te indicaremos cómo estar dados a los aspectos propiamente como defensas y chanchos marinos, tortugas y aves marinas.

Norte 8.281.2

Sur 10.695.0

Escribe a nao@prodelfinios.org o llama al 01 445 1816, Cel. 996 681 043, fax. 411 9455. Si estás interesado en recibir más información sobre nuestro proyecto, ¡Síguenos también en el Facebook!

- Poster to raise awareness of the legal size limits for target dolphinfish and shark species.

EL TAMAÑO SÍ IMPORTA

Las **TALLAS MÍNIMAS DE CAPTURA** y las **VEDAS** de pesca son establecidas con el fin de permitir que peces y mariscos lleguen a reproducirse, asegurando su permanencia en el tiempo y garantizando nuestro alimento en un futuro.

Tú como consumidor, comprador o pescador, estás involucrado en el cumplimiento de estas normas **¡Tú puedes hacer la diferencia!**

Cuando compres o consumas productos marinos, elige en forma responsable, respetando las tallas mínimas y vedas. Así contribuyes con la conservación de nuestro mar y fomentas la **Pesca sostenible** en el Perú.

¿SABÍAS QUE...?
Los principales enemigos para los stocks marinos son:

- (1) la sobrepesca,
- (2) la captura de juveniles
- y
- (3) la captura de especies no objetivo.

Aquí algunos datos para tener en cuenta:

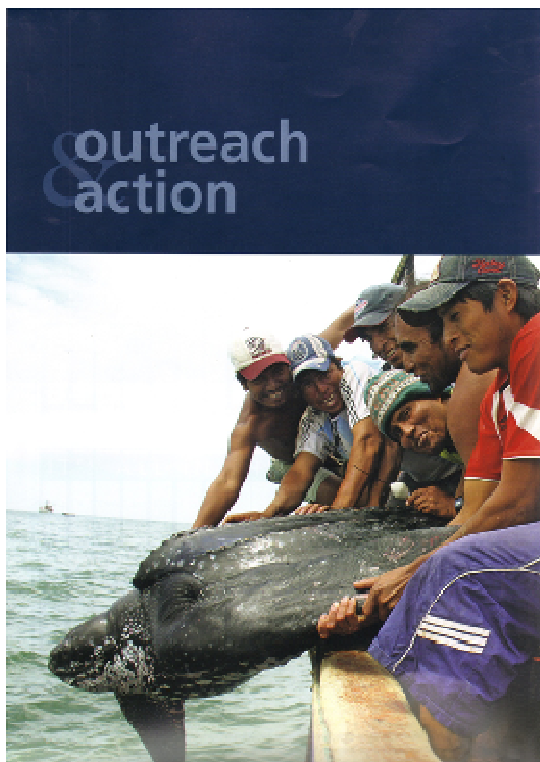
- La talla mínima de captura del perico: 70cm de largo (RM 249-2011-PRODUCE)
- La talla mínima de captura del tiburón azul: 160cm y del mako: 170cm (RM 2009-2001-PE)
- La veda del pulpo es hasta 17 de Enero del 2012 (RM 288-2011-PRODUCE)

PRODELPHINUS
Por la conservación de nuestro mar

www.prodelphinus.org
 Síguenos en Facebook
nadia@prodelphinus.org - 4451816 - 996681041

Darwin SAFI project press coverage, 2011-2012:

State of the World's Sea Turtles (SWOT) Report, 2012, Vol 7. Contained articles on the HF Radio Conservation Project and Darwin Fellow Joanna Alfaro-Shigueto.



Two-Way Radios Save Turtles and Help Peruvian Fishermen

By JOHANNA ALFARO-SHIGUETO and JENNIFER C. MARSHALL

PERUVIAN small-scale fisheries capture many thousands of small cetaceans, marine turtles, and seabirds every year. Sixty of those species, such as the humpback whale and leatherback sea turtle, are listed as Endangered by the International Union for Conservation of Nature. Despite the cultural importance they do, such fishery operations harm the backbones of Peru's fishing sector and are the main source of income for more than 200,000 coastal families.

In a High Frequency (HF) Radio Program, ProDelphinus—a Peruvian non-profit organization, came out of the box to make communication with fishermen easier so they could receive the important messages (depend on number factors) of the general long-term fishery sector stability. In using low-cost, widely available HF radio, project personnel distributed out to fishermen across a number geographic areas to help them share their catch logs, bycatch, and other data, which were then used to help them make better decisions on when to fish, where to fish, and when to stop fishing. Fishermen are also provided with real-time information on sea temperatures, currents, and other data, so they can adjust their operations to avoid areas that are not safe and benefit their catch.

ProDelphinus ... uses real-time, two-way radio communication with fishermen at sea to help reduce the incidental capture (bycatch) of marine fauna and to promote long-term fishery sustainability.

The fishermen who partner with ProDelphinus are helping voluntarily and proactively to reduce their bycatch rates, maintain the genetic resources of our large marine species, and protect our marine fauna. During the first year of ProDelphinus' HF Radio Program, fishermen reported and subsequently shared almost 15,000 HF messages, with 60% of them related to bycatch. With messages like that, fishermen can make better decisions on when to fish, where to fish, and when to stop fishing, so they can avoid areas that are not safe and benefit their catch.

ProDelphinus also helps fishermen to identify their needs and share them with the rest of the fishing community. They provide technical assistance to help them in making decisions about their gear, such as how to use, maintain, and repair their HF radios. ProDelphinus HF Radio Program has helped fishermen with gear by providing them with information on how to use their HF radios and how to maintain them. ProDelphinus also provides information on how to use their HF radios and how to maintain them. ProDelphinus also provides information on how to use their HF radios and how to maintain them.



Seeing the Big Picture LEATHERBACK MIGRATIONS IN THE PACIFIC

By SCOTT R. BENSON

In the Pacific Ocean, leatherback turtles routinely make epic journeys of tens of thousands of miles between tropical breeding areas and frigid-water feeding areas. A newly completed, multi-year satellite tracking study provides the best picture yet of the jaw-dropping migratory abilities of these animals.

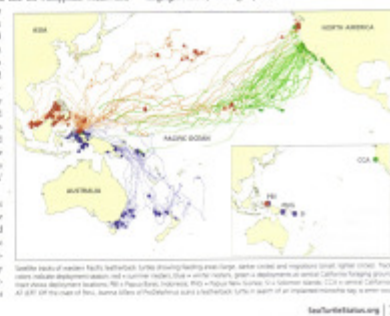
Leatherbacks that feed in the central North Pacific Ocean and off the West Coast of the United States also see year-round in several western Pacific Island nations. In contrast, the leatherback data across the rest of the Pacific, a large-scale research program was undertaken to study western Pacific leatherback movements, high-use areas, and habitat associations by tracking leatherbacks with satellite devices during both their sea-to-land and land-to-sea migrations. This program conducted a massive deployment of more than 180 satellite transmitters over the course of nearly a decade in nesting and foraging leatherback sites to yield sophisticated statistical modeling to provide location data and to interpret movements and behavior patterns for each turtle. When all the data came together, several startling discoveries came into focus.

One of the biggest surprises was the sheer separation of migratory destinations by nesting areas. Leatherbacks that nested during summer (indicated by the red lines on the map) nested into large marine ecosystems (LMEs) of the temperate North Pacific Ocean, including areas of open ocean in the central Pacific, as well as into coastal areas off the United States, into the tropical waters of the South China Sea, and around Malaysia and the Philippines. Meanwhile, leatherbacks that nested during winter (indicated by the blue lines on the map) nested into temperate and tropical LMEs of the Southern Hemisphere, around southeastern Australia and New Zealand, and into tropical Indonesian seas. Foraging behavior (indicated by the colored dots on the map) occurred in temperate and tropical waters and in numerous pelagic and coastal regions that showed a wide range of oceanographic features known to aggregate leatherback foraging prey—fishes.

To make no mistake, the winter nesting ground—the California Current LME—received a 18- to 22-month, year-long migration of up to 11,000 kilometers (7,000 miles) and consistently tracked multiple years of migration between high-latitude nesting

breeding grounds and low-latitude western tropical Pacific wintering areas without returning to their western Pacific nesting locations (green lines). These turtles nested from feeding areas in the United States. In contrast, tropical foraging destinations were tracked within 3 to 7 months and appeared to support year-round foraging. This difference between time- and energy-spent during their sea-to-land migrations (to distant temperate foraging areas and to their tropical foraging areas) could result in differences in biological rates such as body size and reproductive output among nesting females of the western Pacific population.

What do these results mean for conservation? The variation in movements and foraging strategies that leatherbacks show actually underscores the importance of oceanwide and cross-border management (see "Bottle Neck a Pacific Oceanwide as Much as Single Site," this issue). As their Pacific populations show, leatherbacks are indifferent to these seas, national borders, and other geopolitical boundaries, making their effective marine conservation for conservation partnerships throughout the Pacific. We should follow their lead and create conservation strategies that reflect their wily-ranging, boundary-crossing ways.



An article about Darwin SAFI staff and Pro Delphinus employee Nadia Balducci appeared in the Peru monthly magazine Asia Sur in 2011.



ELLA LIMPIA LOS

Nadia Balducci investiga y trabaja con investigadores de la OASD (Pro Delphinus). Hace un año el Jardín Botánico de la Universidad de Trujillo...

Por Carlos Folle M. / Fotos: Fernando Cordeiro

MA RES

Conoció a Nadia Balducci cuando él era un estudiante de biología de la Universidad de Trujillo. En esa época ella estaba estudiando para ser bióloga y él se dedicaba a investigar sobre los delfines en la Universidad Agraria. Ha trabajado con ella durante años y guarda un recuerdo muy especial, con el que continúa. Desde hace diez años, Nadia es investigadora asociada de la OASD (Pro Delphinus) y sigue trabajando en la conservación de los delfines en la zona de la bahía de San Blas.

Se trata de un trabajo muy especial. Una de las principales tareas de Nadia es el monitoreo de la captura incidental de animales marinos durante las operaciones de pesca de la zona. Para ello se reportan a la OASD los animales que se encuentran en las redes de los pescadores. Nadia también realiza actividades de monitoreo de la salud de los animales que se encuentran en las redes de los pescadores. Hace algunos años, se hizo un estudio de la salud de los animales que se encuentran en las redes de los pescadores. Nadia también realiza actividades de monitoreo de la salud de los animales que se encuentran en las redes de los pescadores.

Esperamos que esta sea una experiencia para ella. Se trata de un trabajo muy especial. Una de las principales tareas de Nadia es el monitoreo de la captura incidental de animales marinos durante las operaciones de pesca de la zona. Para ello se reportan a la OASD los animales que se encuentran en las redes de los pescadores. Nadia también realiza actividades de monitoreo de la salud de los animales que se encuentran en las redes de los pescadores.

A series of web postings and press releases regarding the Journal of Applied Ecology study findings on sea turtle bycatch in Peruvian small-scale fisheries.

Item 1: Science Daily

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Study Shows Small-Scale Fisheries' Impact On Marine Life

ScienceDaily (July 18, 2011) — Small-scale fisheries could pose a more serious threat to marine life than previously thought. Research led by the University of Exeter, published in the British Ecological Society's *Journal of Applied Ecology*, shows that tens of thousands of turtles from across the Pacific are being captured through the activities of small-scale fisheries.



Peruvian fishermen release a caught sea turtle. (Credit: Photo by Jeffrey Mengel)

See Also:

- Plants & Animals**
 - Fish
 - Fisheries
- Earth & Climate**
 - Oceanography
 - Ecology
- Science & Society**
 - Ocean Policy
 - Environmental Policies
- Reference**
 - Sea turtle
 - Marine conservation
 - Fishery
 - Pollock

Focusing on fisheries in Peru, the study suggests that thousands of sea turtles originating from nesting beaches as far away as Australia, Costa Rica, Mexico and the Galapagos, are likely to be captured each year as bycatch while they forage in Peru's waters. 'Bycatch' is the term used to describe fish or other sea animals being caught unintentionally by fisheries and is usually associated with large-scale industrial fishing, such as trawling and longlining.

This study shows the effect of small-scale nets and longlines on marine turtle bycatch. Some are kept for consumption and while the majority are released alive, they are often injured as a result of becoming entangled in fishing gear.

Senior author Dr Brendan Godley of the University of Exeter said: "We have known for a long time that, along with sharks, marine mammals and seabirds, marine turtles often become bycatch as a result large-scale fishing. It is only recently that we have begun to realise that small-scale fisheries may also have a significant impact on marine life. However, we were very surprised when our study revealed just how large an impact small-scale fisheries have on sea turtles."

The Pacific waters around Peru serve as important foraging areas for five species of marine turtle, including loggerhead, green, leatherback, olive ridley and hawksbill turtles. As part of a broad international collaboration to evaluate fisheries impacts, the researchers monitored four key Peruvian fisheries to observe fishing techniques and record the number of turtles caught. The team believes these data are vital for developing effective conservation strategies to reverse the declines of populations of marine turtles and other vulnerable species.

Fishing is a growing industry in Peru and the country is now home to more than 100 ports, nearly 10,000 fishing vessels and 37,000 people working in fisheries. The industry provides an increasingly important role as an employer in Peru. The research team suggests that changes to fishing practices, such as introducing circle hooks and dehookers to line fishing and using net illumination, could help reduce sea turtle bycatch.

University of Exeter Darwin Scholar and lead author Joanna Afonso said: "Coastal communities in developing countries, such as those in Peru, rely heavily on fishing for their food and livelihoods. In fact, these fisheries are among Peru's main employers. Therefore it is important to find solutions that can ensure the continuation of Peru's fisheries. INARPE, a Peruvian government research body, will help implement these solutions in Peru's small-scale fisheries. We have already started working with local people in Peru to try and tackle to the problem of turtle bycatch."

"The findings of this study tells us that acting locally to reduce bycatch in small-scale artisanal fisheries will be essential to

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Small-scale Fisheries Impact Marine Life

Small-scale fisheries could pose a more serious threat to marine life than previously thought. Research led by the University of Exeter, published today (19 July) in the British Ecological Society's Journal of Applied Ecology, shows that tens of thousands of turtles from across the Pacific are being captured through the activities of small-scale fisheries.

Focusing on fisheries in Peru, the study suggests that thousands of sea turtles originating from nesting beaches as far away as Australia, Costa Rica, Mexico and the Galapagos, are likely to be captured each year as bycatch while they forage in Peru's waters. 'Bycatch' is the term used to describe fish or other sea animals being caught unintentionally by fisheries and is usually associated with large-scale industrial fishing, such as trawling and longlining.

This study shows the effect of small-scale nets and longlines on marine turtle bycatch. Some are kept for consumption and while the majority are released alive, they are often injured as a result of becoming tangled in fishing gear.

Senior author Dr Brendan Godley of the University of Exeter said: "We have known for a long time that, along with sharks, marine mammals and seabirds, marine turtles often become bycatch as a result large-scale fishing. It is only recently that we have begun to realize that small-scale fisheries may also have a significant impact on marine life. However, we were very surprised when our study revealed just how large an impact small-scale fisheries have on sea turtles."

The Pacific waters around Peru serve as important foraging areas for five species of marine turtle, including loggerhead, green, leatherback, olive ridley and hawksbill turtles. As part of a broad international collaboration to evaluate fisheries impacts, the researchers monitored four key Peruvian fisheries to observe fishing techniques and record the number of turtles caught. The team believes these data are vital for developing effective conservation strategies to reverse the declines of populations of marine turtles and other vulnerable species.

Fishing is a growing industry in Peru and the country is now home to more than 100 ports, nearly 10,000 fishing vessels and 37,000 people working in fisheries. The industry provides an increasingly important role as an employer in Peru. The research team suggests that changes to fishing practices, such as introducing circle hooks and dehookers to line fishing and using net illumination, could help reduce sea turtle bycatch.

University of Exeter Darwin Scholar and lead author Joanna Alfaro said: "Coastal communities in developing countries, such as those I work with in Peru, rely heavily on fishing for their food and livelihoods. In fact, these fisheries are among Peru's main employers. Therefore it is important to find solutions that can ensure the continuation of Peru's fisheries. IMARPE, a Peruvian government research body, will help implement these solutions in Peru's small-scale fisheries. We have already started working with local people in Peru to try and tackle the problem of turtle bycatch."

"The findings of this study tells us that acting locally to reduce bycatch in small-scale artisanal fisheries will be essential to succeeding globally in the international effort to prevent further declines in marine biodiversity" said Dr Peter Dutton, a leading sea turtle scientist with the US National Marine Fisheries Service who, along with co-author Dr Jeffrey Seminoff, is working together with Peruvian and other international partners to implement recovery plans for endangered sea turtles in the Pacific.

This research was funded through Defra's Darwin Initiative and the US National Marine Fisheries Service.



CORNWALL

20 July 2011 Last updated at 12:49 GMT

Tremough scientists' fears over Pacific Ocean turtles

Sea turtles are coming under increasing threat from small-scale fishery practices in the Pacific Ocean, Cornwall scientists claim.

Findings produced on Tremough Campus in Penryn, suggest many turtles are being unintentionally landed as "bycatch".

The study focused on a number of fisheries operating out of Peru.

Research team reveals threat to Pacific turtles

Wednesday, July 20, 2011



Exeter Express and Echo
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SMALL-SCALE fisheries could pose a more serious threat to marine life than previously thought.

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Study shows small-scale fisheries' impact on marine life

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IMAGE: These are fishing boats in Peru.

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...

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See a video of the researchers discussing the projects on the University of Exeter's YouTube channel.



Daily updated news for the whole Fishing, Seafood and Processing industries.



Small-scale fisheries may have a significant impact on marine life. (Photo: YouTube/universityofexeter)

Small-scale fisheries a hefty threat to marine turtles: study



UNITED KINGDOM
Wednesday, July 20, 2011, 22:30 (GMT + 9)

New research by the University of Exeter shows that small-scale fisheries could be threatening marine life more drastically than previously thought. The findings were published this week in the *British Ecological Society's Journal of Applied Ecology* and demonstrate that tens of thousands of turtles from across the Pacific Ocean end up as the bycatch of small-scale fisheries.

...

Much of Peru's population is employed by the fishing industry.

"It is important to find solutions that can ensure the sustainability of Peru's fisheries," University of Exeter Darwin Scholar and lead author Joanna Alfaro said. "IMARPE, a Peruvian government research body, will help implement these solutions in Peru's small-scale fisheries."

Alfaro said that the researchers have already started working with locals in Peru to try and deal with the issue of turtle bycatch.

"The findings of this study tells us that acting locally to reduce bycatch in small-scale artisanal fisheries will be essential to succeeding globally in the international effort to prevent further declines in marine biodiversity," said Dr Peter Dutton, a leading sea turtle scientist with the US National Marine Fisheries Service (NMFS) who, along with co-author Dr Jeffrey Seminoff, is working together with Peruvian and other international partners to execute recovery plans for endangered sea turtles in the Pacific.



A turtle caught by chance is being returned to the sea. (Photo: Jeffrey Mangel, University of Exeter)

Related articles:

- [NOAA will consider new rules to curb sea turtle deaths](#)
- [WWF launches competition to find best bycatch reducing fishing gear](#)

By Natalia Real
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www.fis.com

Al rescate de las tortugas marinas en Sechura

RALPH SARAGA

Natalia Ortiz Escobar adora a las tortugas tanto como a su profesión. Es bachiller en Biología y desde hace unos meses trabaja en la ONG Pro Delphinus, en un proyecto para la pesca artesanal sostenible. Aunque es de Lima, pasa mayor tiempo en el mar de Sechura, en Piura. Allí investiga las tortugas marinas y la forma cómo protegerlas de algunos malos pescadores.

Los pescadores de Sechura, quienes apoyan a Ortiz y un grupo de biólogos de Pro Delphinus, sostienen que ha



PROTECCIÓN. La ONG consiguió medio millón de dólares de financiamiento para este proyecto luego de ganar un concurso internacional.

“Es común que muchos pescadores se lleven tortugas. Secomen su carne y toman su sangre”

disminuido la población de tortugas en la bahía. Quien recomienda las caletas de Constante, Paichique o Matacaballo puede ver tortugas tiradas en la playa o capanarones que se confunden con los restos de otras aves. “Eso cierto –indica Ortiz– hemos comprobado que es una práctica común de muchos

pescadores llevar a sus casas tortugas cuando no hay pesca. Secomen su carne y toman su sangre”.

Ante ese deprimente panorama, Ortiz decidió implementar un mecanismo de pesca que evite la captura de tortugas marinas. Ese proyecto está también su tesis para obtener su título de licenciada en Biología, que espera concluir en mayo. Se trata de colocar unas luces en las redes de pescar. “La idea es mitigar la captura incidental de tortugas, y que estas alverías luces puedan huir. Los resultados hasta el momento han sido positivos, pero necesitamos

terminar la investigación para hacer un análisis certero, con cifras”, dijo.

Nadia Balducci Cordano es su compañera de viaje y de trabajo. Ella sostiene que la iniciativa de Ortiz es parte del proyecto de Pro Delphinus que busca educar a la población y a los pescadores en materia ambiental y de biodiversidad.

“Sechura acoge a las tortugas que vienen desde Galápagos, otra parte del mundo porque es una zona bastante rica en forraje, en alimento para ellas. De allí la importancia de que la gente que vive en la bahía tome conciencia de la importancia de proteger el mar, de no contaminar, de limpiar la playa y proteger las especies marinas”, indicó.

Darwin SAFI project associated blog post, 2011-2012:

CEDEPESCSA, June 2011

PERÚ: Día Mundial del Océano en Pucusama

Este año para celebrar el Día Mundial del Océano, ProDelphinus realizó un pasacalle junto con el Colegio Miguel Grau ubicado en el Puerto de Pucusana al sur de Lima, capital del Perú.

Con la participación de aproximadamente 300 niños de primaria y más de 30 adultos se logró llamar la atención de todo el pueblo pesquero. Esta vez fueron los niños los que le mostraron a toda la población la importancia del océano y su preocupación por el estado en el que se encuentra.



En cada salón los niños pusieron a trabajar su imaginación y diseñaron sus propios carteles expresando sus sentimientos hacia el mar. Todo el colegio estaba preparado para este día, la banda se alistó y los más chiquitos decidieron disfrazarse para hacer la actividad más divertida.

Luego de atraer la atención de todo Pucusana los mejores salones fueron premiados, no sin antes haberles dado a todos los participantes un regalito como reconocimiento por su entusiasmo y con la intención de querer que sigan aprendiendo sobre el mar y los seres vivos que dependen de él. Finalmente, el día concluyó con la realización de un mural espectacular en el colegio, para seguir difundiendo la protección del océano.



Durante este día ProDelphinus también contó con la participación de muchos de sus voluntarios e inclusive con artistas y deportistas de importancia nacional e internacional como **Raf, Jivam, Mariano Palacios** y **Cesar Bauer**.

¡A todos ellos y al Colegio Miguel Grau, profesores, alumnos, padres y madres de familia, les agradecemos por toda la ayuda y apoyo en este día!

Contacto: Natalia Ortiz - E-mail: natalita_o@hotmail.com

Bauer // SIC 2011 //

Llega una nota de prensa desde Firbas, copiamos aquí:

"Jóvenes: La nueva Ola para el Cambio", es el tema que La Red Mundial del Océano (WON) asignó para la celebración del Día Mundial del Océano (WOD) de este año. Así, la ONG ProDelphinus junto con el colegio Miguel Grau de Pucusana, celebraron este 8 de Junio, el Día Mundial del Océano. Entre las actividades estuvieron las charlas de educación ambiental, un pasacalle y concurso de disfraces en el que participaron todos los alumnos del plantel. El día finalizó con la realización de un mural con motivos marinos en una de las paredes del centro educativo. "Todas las actividades dieron como resultado un día inolvidable y empapado de buenas energías marinas" dijo Natalia Ortiz de ProDelphinus.



Entre los participantes estuvo el campeón mundial del bodyboard Cesar Bauer, quien con mucho entusiasmo alentó a los alumnos durante su recorrido por el pueblo pesquero de Pucusana. "Es muy importante concientizar a la gente desde muy pequeños sobre la importancia que tiene el cuidado de los océanos, sobre todo para nosotros los atletas, que el deporte está ligado 100% al mar. Todos queremos que el océano se mantenga limpio, es nuestro hogar y el planeta depende de él", dijo el campeón.