

Darwin Initiative Annual Report

Important note:

To be completed with reference to the Reporting Guidance Notes for Project Leaders – it is expected that this report will be about 10 pages in length – Submission deadline 30 April 2007

Darwin Project Information

Project Ref Number	14-005
Project Title	Conservation of Pakistan's Marine Cetacean Biodiversity and Pelagic Environment
Country(ies)	Pakistan
UK Contract Holder Institution	University Marine Biological Station Millport (University of London)
UK Partner Institution(s)	University Marine Biological Station Millport (University of London)
Host country Partner Institution(s)	1) Centre for Excellence in Marine Biology (CEMB) at Karachi University 2) WWF-Pakistan
Darwin Grant Value	£167308
Start/End dates of Project	01 October 2005 / 31 September 2008
Reporting period (1 Apr 200x to 31 Mar 200y) and annual report number (1,2,3..)	01April 2006 to 31 March 2007: Annual Report 2
Project Leader Name	Dr. Mauvis Gore
Project website	http://www.gla.ac.uk/centres/marinestation/index.html
Author(s), date	Dr. Mauvis Gore, Dr. P Jamal Siddiqui, Dr. Ejaz Ahmad, 30 April 2007

1. Project Background

As summarised in the previous Annual Report, prior to the mounting of this DI project several sources of information suggested that significant, previously unstudied populations of over 20 species of whale and dolphin occurred within Pakistani waters of the NE Indian Ocean. Almost nothing had been published on the occurrence of marine cetaceans in Pakistan. However, recent work by the Oman Whale & Dolphin Group (OWDRG, with which we are associated) had demonstrated the occurrence of significant populations of cetaceans on the other side of the Arabian Sea and Gulf of Oman, suggesting that the same species should occur in Pakistan. More recently a scientific publication presented data on illegal Soviet whaling in the region during the 1960s supported this view, as had informal accounts provided to us by Pakistani fishermen. It thus seemed likely that Pakistani waters might harbour important cetacean populations, whose significance is increased by the International Whaling Commission recognition of the Indian Ocean as a Sanctuary, within which populations are protected from whaling. Thus there has been an urgent need both to determine the status of different species of cetacean within Pakistani waters (Fig. 1), and to promote their conservation and sustainable management.

Meanwhile, Pakistan's marine environment has been subject to increasing pressure from both the exploitation of natural resources and from various forms of pollution. The oil spill off of Karachi in July 2003 demonstrated the vulnerability of the Pakistani coast to oil pollution,

especially since the adjacent Western Indian Ocean carries over 50% of the world's crude oil sea trade and over 30% of total petroleum products. At the same time, expanding coastal fishing communities are exploiting the marine environment to the full, with the country continuing to increase both its fish exports and the number of international trawlers permitted to fish in Pakistani waters. Thus cetacean populations in the region are threatened, both indirectly by the removal of components of the food chain on which they depend for food, and directly by impacts such as pollution, ship strikes and entanglement in fishing gear. The loss of cetacean populations in the area would represent not only a decline in biodiversity, but also the loss of resources that could be exploited sustainably, e.g. for ecotourism by the local fishing community. Staff at both WWF-Pakistan (WWF-P) and the Centre for Excellence in Marine Biology, of Karachi University (KU) in Pakistan, recognised the need for urgent action to gain information on the country's cetacean populations and the pelagic ecosystem that supports them. Thus the project was mounted to support these agencies in determining the status of Pakistan's marine cetacean populations, in appraising the general health of the pelagic ecosystem on which these populations depend, and in promoting public awareness of the scope for managing these species sustainably.



Fig.1. Map showing the coastline of Pakistan, with the Hub River marking the border between the coastal provinces Sindh and Balochistan. The green lines indicate areas where boat, beach and community surveys have been carried out by this DI Project, and it can be seen that much of the coastline has now been covered.

2. Project Partnerships

Project Partnerships

We continue to work closely with the two lead partner organisations, WWF-Pakistan (WWF-P) (partner Dr. Ahmad) and the Centre for Excellence in Marine Biology (CEMB) at Karachi University (KU) (partner Dr. Siddiqui). The project team, Cetacean Conservation Pakistan (CCP), includes two full-time project officers (POs) based at WWF-P, and two full-time research officers (ROs) based at CEMB. We have been working increasingly closely with WWF-P, and the POs have been focused on raising awareness particularly in fisher communities, and conducting community and beach surveys. WWF-P is also responsible for the launch and initial running of the national cetacean conservation group, named the "Pakistan Whale & Dolphin Group". The WWF-P has provided some office facilities, but the POs have based themselves at CEMB during the stay of Project Officer in Pakistan, providing daily collaboration during this time. However, the UK staff visit the WWF-P office in Karachi on at least a weekly basis for contact and communication with our partners there. Through CEMB, the ROs work on beach and boat surveys, updating and managing the databases and analysis. Dr. Siddiqui's lab at

CEMB provides the main office and lab facilities for the project, used full-time by the two ROs and by the UK team members on a daily basis during their period in Karachi. When based in the UK, UMBSM staff Drs. Gore and Ormond have regular email and telephone contact with the Pakistani partners and team for update and collaboration on the programme.

WWF-P, as well as CEMB, has been very helpful in acquiring supplementary funding for the project work and in developing contacts for further help with the project's aims. Some difficulties have been experienced linked to differences in priorities between academic and conservation programmes. These are being resolved through regular meetings with key staff at KU, WWF-Pakistan and UMBSM. Difficulties have also been experienced where the central University of London has apparently lacked experience with the administration of this type of overseas grant, as in fund transfer and communication.

Other Pakistani partners include Qadeer Ali of KU and Syed Ali Hasnain of WWF-P and other UK partners include UMBSM associates, Ross Culloch (now an independent consultant on marine cetaceans) and Dr. Chris Parsons (now moved to George Mason University, Washington DC, USA). They have provided additional sources of expertise to the project. Both have also taught on the Pakistan Marine Mammal Course initiated by the project and organised by Dr. Siddiqui at the CEMB.

Other Collaborations

Through the WWF-P and their Director General, Ali Habib, we have established relations with the recently launched Pakistan Wetland's Programme (PWP/Ministry of Environment, National Programme Manager Richard Garstang) and had significant input into recommendations for the first marine national park in Pakistan, centred on Haft Talar/Astola Island in Balochistan. This will also be, in effect, the first marine protected area for Pakistan. Our project has provided the first systematic data on marine cetacean species in the region. The result has been that the Prime Minister of Pakistan, Mr Shaukat Aziz, through the Minister of State for Environment, Malik Amin Aslam Khan (who joined us in person for two days of fieldwork), has approved the drawing up of the necessary legislation for the park ([http://www.ncs-nsds.gov.pk/pages/Newsletter\(NCS-RC\)_March.pdf](http://www.ncs-nsds.gov.pk/pages/Newsletter(NCS-RC)_March.pdf)). Our DI Project has played an important part in this achievement.

Oliver Taylor of the Oman Whale and Dolphin Research Group (OWDRG) visited Pakistan during the year and plans for a return visit by Pakistani staff to Oman are in hand. We have also developed links with the Pakistani conservation group, Save Wildlife and Nature (SWAN, President Ghazanfar Ali Langah), who has assisted us in raising awareness of the need for cetacean monitoring and conservation in Pakistan through meetings with colleges and key stakeholders in Sindh and Punjab. We have also visited the freshwater blind river dolphin project run by the Sindh Wildlife Dept. (Hussain Bux Bhaagat, Deputy Conservator Wildlife) in collaboration with WWF-Pakistan. This was to compare problems and solutions in cetacean conservation. We have also been in contact with Sri Lanka through Anouk Ilangakoon who works there on cetacean conservation. Initial plans for a regional workshop on monitoring and conservation of marine cetaceans have been discussed with her, but are awaiting funding.

As described in the previous Annual Report, the partnership basis has expanded to include associate partners who are represented on our Project Advisory Panel (PAP). The PAP includes representatives of key organisations involved with marine management issues in Pakistan. These organisations/institutions had not worked jointly before and bringing them together has been of crucial importance in advancing conservation issues in Pakistan. The organisations have been assisting us in various ways. As mentioned above, we visited the freshwater cetacean project run by the Sindh Wildlife Dept. The Marine Fisheries Dept. (Director Planning Moazzam Khan and Deputy Director Training Zafar Imam) have provided additional training in navigation for the CCP team members to assist in the practical navigation essential in conducting boat surveys. We continued collaboration with a member of the Zoological Survey Dept (Field Officer Mehrban Ali) and established a new one with the PWP (Technical Officer Tahir Ehsan). The Navy (Cdr. Liaquat Ali) continued to help with logistics in obtaining permits to visit restricted areas near the coast and at sea. We established closer links with the IUCN through their base at Gwadar (Abdul Rahim Baloch) in Balochistan. Through the

Marine Mammal Course organised by CEMB, we have provided expertise to a new lecturer from the Zoology Dept of KU (Dr. Farooq).

We also held discussions with the Dean (Prof. Dr. Amjad) and Vice Chancellor (Brig. Siraj ud Din) of Lasbela University in Balochistan with a view to giving some lectures on cetacean biology and conservation at their university. The National Institute of Oceanography (Director General Dr. Rabbani & staff Dr. Kidwai) has shown interest in assisting us by collecting offshore cetacean data and we have provided research staff with protocols and guides to aid them. We have continued to work very closely with the Pakistan Wetland's Programme and they have provided considerable funds and services in kind (including technical advice, use of vehicles, accommodation and food, hire of a large boat and use of a RIB, satellite phone and oceanographic equipment), that have allowed us to strengthen the monitoring, survey and training in our projects.

CBD focal point

As outlined in the project proposal, our project supports Pakistan's implementation of Articles 6 - 5%, 7 - 10%, 8 - 10%, 10 - 10%, 12 - 5%, 13 - 5%, and 18 - 5%, with emphasis on Biodiversity & Tourism: 5%, Ecosystems Approach: 10%, Marine & Coastal Biodiversity 20%, Protected Areas: 5%, Public Education & Awareness: 5%, and Sustainable Use & Biodiversity: 5%. Prior to the start of this project, little was known of the status of Pakistan's marine cetaceans, but two species are considered endangered and one vulnerable. Through extensive survey work near and offshore of most of the Pakistan coast (see Fig. 1), the project is determining seasonal occurrence and abundance, identifying local threats, and providing key information for the development of species action plans to promote *in situ* conservation. The project is assessing the habitat and the pelagic ecosystem, and promoting their sustainable use and biodiversity, including developing whale-watching as an alternative use. It is also promoting public awareness of Pakistan's cetacean population and has taken the first steps in establishing, through WWF-P, a national cetacean conservation group called "Pakistan Whale and Dolphin Group". The project is liaising with CBD focal points in the Ministry of the Environment through the department responsible (Zoological Survey Dept.) and the Ministry's CBD working party, which includes project counterparts from both WWF-P and KU.

The Pakistan National Conservation Strategy identifies 14 core programme areas among which are "6. Protecting Water Bodies & Sustaining Fisheries" and "7. Conservation of Biodiversity". The former includes (#24) a recommendation for alternative employment for fishers, and the latter recommendations (#30 & #34) to develop new National Parks and to protect endangered species, under which cetaceans fall. Policies for Coastal & Marine Resources recommended by the strategy include "filling information gaps on coastal resources & resource use", and "developing alternative employment for coastal communities". Similarly the Pakistan Biodiversity Action Plan identifies requirements for identification & monitoring, *in situ* conservation, sustainable use, research and training, and public education & awareness, each of which the present project is designed to assist. WWF-P itself has now prioritised marine conservation, especially of threatened species within the Indus Ecoregion (#156) and North Arabian Sea Ecoregion (#232).

3. Project progress

3.1 Progress in carrying out project activities (See Table 1)

Our most important achievement for the long term, and gained well ahead of plan, may prove to be our significant input into the PWP proposal for a Pakistan marine national park in the area around Haft Talar/Astola Island. Following a meeting with the Minister of State for the Environment, the Prime Minister of Pakistan has recommended that steps be taken towards the designation of a marine national park.

As a result of the further experience gained during this past year, the Pakistani CCP team members now carry out survey work independently and help to train others. A programme has been discussed and established with them for work during the coming summer months by boat,

along the beaches and in fisher communities. DI project training/exchange of experience has also continued to include staff and students from a variety of institutes, as noted above.

A reduction in availability of access to computer facilities in the last year slowed data input and hence an analysis of the databases. A solution has been found by providing from project funding dedicated computer facilities for the team members; this should result in enabling analyses necessary for the reports and scientific papers to be prepared.

The Marine Mammal Course developed at the UMBSM by the UK partners has been successfully organised in Pakistan by our Pakistani partner at CEMB Dr. Siddiqui, and taught by the UK team with some input from the Pakistani team members. This is a first step to the course being entirely Pakistani run and taught.

A national cetacean conservation group has been initiated and a senior industrial figure, Khalid Mehmood, has agreed to become the chair. He has offered funds for a full-time salaried position to run the group, which WWF-P has been helping to publicise. This group's membership will broaden the base for raising awareness of Pakistan's cetaceans, their pelagic habitat and conservation issues.

Fisher communities have been visited by the POs who have carried out surveys and held discussions throughout Sindh and in part of the much larger Balochistan coast, opening dialogue with stakeholders, and collecting and providing information on cetaceans. Furthermore, plans have been finalised for the POs to run fisher workshops in both coastal provinces this summer.

3.2 Progress towards Project Outputs (See Table 1)

Output description

The first Pakistan Marine Mammal Module was organised for January, 2007 by our partner, Dr. Siddiqui, with support from Qadeer Ali, at KU and taught by the UMBSM staff with some Pakistani input from the CCP team. Fifty undergraduate, graduate and professionals attended the week long course, including two field trips (boat and beach based). The lecture material has been provided to CEMB for future courses to be held there.

Training of the ROs and POs had continued during the year and they have reached a standard allowing them to undertake independent work in the field and to help train others in fieldwork.

Research Outputs

UK staff have spent considerable time in Pakistan (29 compared to the 20 weeks planned) in the last year, and Pakistani CCP team members are trained and can now undertake significant field work independently. A significant proportion of time has also been spent by the UK team working on the project or in contact with the Pakistani team and collaborators once back in the UK.

Surveys (see Fig. 1) have been conducted along most of the coast of Pakistan, in creeks, inshore, and out to 113 km offshore and to date include:

Boat based 32 surveys (a survey=1 day) over 272 hrs and 3374 km

Beach based 12 surveys (a survey=1 region) (area not yet estimated)

Community based 13 communities (a survey=1 fisher community) with 71 interviews

We now have a good understanding of the distribution of the most common species, which include bottlenose dolphins, spinner dolphins, humpback dolphins, finless porpoise and the less common species Risso's dolphin, sperm and humpback whales.

In addition to the planned fisher reporting scheme identification cards, that is i) a card with drawings and names, we have also ii) printed and circulated a booklet with photos, names and description of the most likely cetacean species to be found, iii) similarly printed simple reporting sheets for sightings and iv) set up a system for repaying phone calls reporting sightings. This has allowed literate and illiterate fishers, and community members, to participate.

Our first scientific publication was ahead of schedule and drafts of two more have been prepared. Computer based databases have been designed and developed, with the responsibility for data input and management by an RO. Databases include i) cetacean sightings, ii) supporting seabird and environmental factors, iii) plankton sampling, iv) fisher community surveys, v) cetacean beach casts, and vi) relevant literature. A database of the zooplankton samples will be established when results are forthcoming. However, all phytoplankton samples from 2005-6 have been analysed and a large number of species identified. Cetacean skeletal remains are being curated for a reference collection and one is planned for zooplankton.

Dissemination Outputs

Plans for two Fisher Workshops to take place this summer have been finalised. The date was postponed from this spring on discussion with fishers for the most suitable timeframe. Representatives of the Sindh and Balochistan fisher communities are being invited to attend the workshops, 25 fishers each respectively.

During this period, high press interest has partly obviated the need for regular press releases. The media output in Pakistan is focused largely on television, newspapers and electronic media rather than radio, so emphasis has shifted to the former, although a DI WWF-P partner was interviewed by BBC World Service on the topic of the CCP work. GeoTV has interviewed the CCP team three times and AJJ TV once. The main newspapers (English and Urdu) have interviewed the CCP team and attempts are being made to include coverage in Sindhi as well. Some examples of press output are attached to the report. A lack of response to cetacean press releases in the UK has suggested that it is not cost effective to pursue the British press.

News has been incorporated in WWF-P's "Panda Post" and on their website, but circulation could not be estimated for this output. A newsletter is expected to be an output from the new national cetacean conservation group, the Pakistan Whale and Dolphin Group.

Two networks have been established as planned through i) the fisher reporting scheme and ii) the national cetacean conservation group.

Physical Outputs

The facility for research into and teaching of cetacean biology and conservation has been established at the CEMB, KU, headed by one of our partners, Dr. Siddiqui. His laboratory now possesses or can access much of the required facilities and equipment, and he has run from there the Marine Mammal Course developed by the UMBSM DI project staff. See also Point 3.4.

Financial Outputs

Additional funds (approximately £12,791 plus approximately £23,000 in kind) have been provided directly or in kind by:

- i) Pakistan Wetland Programme who provided technical advice, accommodation & food, part boat hire, use of a RIB, and vehicle transport during the survey of Haft Talar/Astola Island, and further vehicle transport for two months and accommodation for two weeks in Karachi.
- ii) Ocean Park Conservation Foundation (OPCF) who provided funding to teach and train two university students from China. This included assistance with boat hire and vehicle transport for fieldwork.
- iii) British Council-HEC Link who provided funds for airfare and part-subsistence for two UK staff during visits to Pakistan.
- iv) Rufford Small Grants who provided funds for a small camera and part-financing for transport, printing, and venue hire for the Fisher Workshops.
- v) WWF-Pakistan & OPCF part-funded a 3-day boat survey.

3.3 Standard Output Measures

Table 1 Project Standard Output Measures

Code No.	Description	Year 1 Total	Year2 Total	Year 3 Total	Year 4 Total	TOTAL
Established codes						
4A & C	Pakistani undergraduates & graduates at Marine Mammal Module, Karachi University		50			
4B & D	Duration of training		49hrs			
6A	Pakistani Project Officers		2			
6B	Duration of training		20wks			
7	Package to teach Marine Mammal Course		1 package			
8	UK staff		4 @ 29 wks			
10	Fisher reporting scheme identification i) cards and ii) booklet		1 of each type			
11A	Journal Marine Biological Association		1			
11B	Draft		1			
12A	i) cetacean, zooplankton, seabird and environmental parameters; ii) fisher & other reports		2			
13A	i) zooplankton, ii) cetacean skeletal and other remains		2			
14A	i) Fisher workshops ii) talks/material for schools & universities		i) 2 in planning for June 2007 ii) 3			
14B	Attendance Coastal Zone Management workshop		50			
15A	National press releases in Pakistan		3			
15B	Local press releases in Pakistan		1			
15C	National press in UK		0			
16A	Newsletters to be produced		1			
16B	Estimated circulation		100			
17A	Dissemination networks		1			

	established					
18A	Pakistani national tv programmes		2			
19A	Pakistani national radio programmes		Superseded by television			
21	Permanent educational facility		1: MMC			
23	Value of resources raised from PWP, British Council-HEC link, Rufford Small Grants, WWF-P, OPCF		£35,791			
New - Project specific measures	Marine Protected Area proposed around Haft Talar/Astola Island		1			

Table 2 Publications

Type *	Detail	Publishers	Available from	Cost £
(eg journals, manual, CDs)	(title, author, year)	(name, city)	(eg contact address, website)	(if applicable)
Peer reviewed scientific journal	* Sperm whale, <i>Physeter macrocephalus</i> , stranding on the Pakistani coast. Gore, Ahmad, Ali, Culloch, Hameed, Hasnain, Hussain, Kiani, Shaik, Siddiqui, Ormond (2007)	Journal Marine Biological Association UK 87: 363-364	CCP Team, c/o CEMB (KU) & WWF-Pakistan	
Annual Report	* CCP for general public		CCP Team, c/o CEMB (KU) & WWF-Pakistan	
Guide	* Pakistan's Cetacean Species Identification Card		CCP Team, c/o CEMB (KU) & WWF-Pakistan	
Guide	* Pakistan's Cetacean Species Identification Booklet		CCP Team, c/o CEMB (KU) & WWF-Pakistan	
Awareness leaflets	*** DI Project & CCP: in i) English, ii) Urdu & iii) Sindhi		CCP Team, c/o CEMB (KU) & WWF-Pakistan	
Awareness stickers	*DI Project & CCP		CCP Team, c/o CEMB (KU) & WWF-Pakistan	

* **samples attached to report**

3.4 Progress towards the project purpose and outcomes (See Annex 1)

The project purposes are given in Annex 1. We have had significant input, through the government's programme "Pakistan Wetland's Programme", by providing data on cetaceans and their pelagic habitat, with the goal of establishing a marine national park in this key area. This has helped towards the Prime Minister of Pakistan supporting the recommendations made, and is a key step towards reducing threats to cetaceans.

Conservation and research projects have been established in WWF-P and KU. An active ongoing conservation project has been established in WWF-P involving not only the two POs but a wide range of other staff, from the Director-General to drivers, in offices in Karachi, Islamabad and Lahore. The DI Project is seen as a key element within the WWF-P's marine programme. Similarly, within the CEMB, cetacean research work has become a principal field of research within Dr. Siddiqui's lab, and one of the most conspicuous activities within the institution.

A national cetacean group, the Pakistan Whale & Dolphin Group, has been initiated with a senior figure from industry as chair. The chair has offered to finance a full-time position for an executive manager for the group and help to raise awareness across a wide scope of Pakistani society. We have had a visit from a member, Oliver Taylor, of the neighbouring cetacean conservation group, the Oman Whale and Dolphin Research Group. He worked with us for 3 weeks, during which he observed and discussed methods and results from our two groups.

We have been working with the fishing community and will be holding workshops for representatives this summer. Involvement by the fishers in sustainable cetacean tourism will be initiated at these meetings.

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

This DI project report describes the outcomes of only the first 18 months of a 36 month project. Thus we are only halfway through the project and its impact on biodiversity cannot be assessed as yet. Preliminary results suggest that our focus on fishers and communities should help to reduce potential cetacean death, and raising awareness in these guardians of the coast and seas is also likely to have an impact. In the coming year, whale watching as a business will be promoted among fishers to support cetacean aware attitudes. The establishment of a Marine Protected Area, and much increased awareness among stakeholders of the protected status of Pakistan's cetaceans should limit conventional and unintentional impacts to cetacean diversity. This should encourage sustainable use of cetaceans and their pelagic environment.

4. Monitoring, evaluation and lessons

Methods to monitor and evaluate the project this year have been covered in sections 3.1-3.4.

In terms of lessons learned, differences in institutional cultures whereby one culture allows for quick decision making and action, while another assigns priorities by different criteria and undertakes actions at a different pace, have been experienced during the project. This is related to the type of institution and their goals which do not reach their endpoint in the same manner. The DI Project involves people from dissimilar institutes, providing a challenge for teamwork, and it has at times been difficult to sustain consensus.

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

1. Discussion of the first Darwin Review

The DI Project partners noted that the previous review was very complimentary concerning the project's innovation in creating a Project Advisory Panel (PAP), and record of involving government authorities at the onset and delegating responsibilities to them. The partners discussed the few weak points noted in the review. The consensus was that the reviewer had

not fully appreciated the achievements that had been made in a **6 month** period between the launch of the project and the preparation of the first annual report. It might well be that it was not obvious from the protocol where to add the information felt lacking by the reviewer.

We had established additional links within Karachi University, with the i) Marine Reference Collection & Resource Centre, ii) Zoology and iii) Geography Depts, as well as CEMB. We have held positive discussions with a new university in Balochistan, iv) Lasbella University, and with v) Shah Abdul Latif University, vi) Jinnah Women's College, and vii) AP Kinnaird College for Ladies, each of which has requested that we provide material on marine cetacean biology and conservation for their institutions. We have also established contact with a further key research institute viii) National Institute for Oceanography in Karachi.

We have established links with our neighbouring Oman Whale and Dolphin Research Group. This group has undergone significant organisational changes, linked to some members moving elsewhere, and is not so active at present. Nonetheless, we have had a member, Oliver Taylor, visit and work with us in the field and lab to look at our methods and to establish a link, and arrangements have been made for CCP team members to visit the OWDRG this summer. We have targeted areas in the region for potential contact with groups with similar interests as the CCP. A new contact in Sri Lanka, Anouk Ilangakoon, has confirmed our investigations that there are no other similar conservation groups in the neighbouring region.

We have made great strides in disseminating information in talks, leaflets, stickers, species guides and visits to communities. We have also been collecting field data under challenging conditions and have made very good progress. The data were not of sufficient quantity to analyse sensibly at the time of the previous report and difficulty with computing facilities has slowed data input in the last year.

The project has had significant success in raising additional funds and support in kind. For example, the PWP collaboration is a 6 year programme with 4 years to run after the DI funding is finished. One research student has enrolled in a doctoral programme and has an HEC grant to cover his expenses. The Zoology Dept. is planning to incorporate the Marine Mammal Course that we have designed and organised into their curricula, and this will be a hugely significant legacy. The DI grant influenced WWF-Pakistan to initiate their Marine Programme, again a very significant step for Pakistan. The DI Project has also influenced the British Council to award very recently a new DELPHE grant to CEMB at Karachi University. This grant will complement the work of the DI grant.

We have been collecting data on marine cetaceans under demanding conditions and yet have achieved very good results. The output has been higher than that proposed originally to the DI, as we have taken advantage of opportunities that were not expected. For example, the facilitation, assistance and support of the Pakistan Navy, and the finding of an almost entire sperm whale skeleton on the beach, from which we have our first publication. The need for NOCs ('no objection certificates') for quite minor considerations, such as carrying a camera through Karachi Harbour, has proved challenging, though solutions have generally been found.

6. Other comments on progress not covered elsewhere

In moving towards our goal of understanding the species, numbers and habitats of Pakistan's marine cetaceans, we have found that the most numerous species that we have observed offshore have been very large schools of spinner dolphins and to a lesser extent Risso's dolphins. Closer to shore, the most common species observed have been bottlenose dolphins and finless porpoises, with humpback dolphins closer in. We have observed humpback whales in one coastal area only, and a sperm and fin whale through beaching. The level of observation by the Pakistani CCP team members in the last year has increased significantly and they are now able to spot cetaceans to a similar level as the UK team members. The POs training through WWF-P on community work has provided them with good skills in conducting community surveys. The DI team continued close collaboration with both PWP and OPCF

("Survey of Small Cetacean on Karachi Coast" with implementation by WWF-P), providing survey methodologies and input to our collaborative surveys.

7. Sustainability

When raising awareness about Pakistan's cetaceans, their habitat and environment, the CCP team take time to ensure the level of knowledge of biodiversity before discussing issues with the public. The fishers have a sense of biodiversity through their experience with the sea, but for the public, explaining the food chain for cetaceans brings an understanding of why a stable ecosystem is necessary and what such systems entail.

Exit strategy

Considerable progress has been made on all the steps intended to promote project sustainability through 1) WWF-P, a large, highly proactive NGO with 7 regional offices, many field offices and over 300 staff, committed to a long-term role in promoting conservation & management of Pakistan's cetacean population directly, within which the WWF-P POs are expected to continue in post, 2) KU, which will continue to offer the Marine Mammal Module in their degree programme, so training future biologists and stimulating public interest and awareness, and where, it is anticipated, the ROs will be appointed as academic staff, likely to continue research and conservation activities on cetaceans, 3) the national cetacean conservation group, 4) the SAPs and other policies developed through the project, which influences the work of the responsible government agencies (Marine Fisheries and Zoological Survey Departments), and 5) the Project Advisory Panel, which specifically addresses issues of impact and legacy. Within our collaboration with Pakistan Wetland's Programme, the Prime Minister has recommended the first marine national park for Pakistan, a major goal for this DI project.

8. Dissemination

We have initiated a new national cetacean conservation group which, with a wide membership base, will be an excellent conduit for dissemination of information and action to be taken for conservation and management of cetacean biodiversity in the region and the pelagic resources on which they depend.

Fisher workshops are planned for this summer for fishers from the coastal communities in Sindh and Balochistan. Informative T-shirts with the more common cetacean species have already been printed for distribution at the workshops. The participants are expected to relate the information from the workshops to their communities and to act as spokespersons.

Pakistani academic institutions have also been targeted through discussions with i) Lasbela University, and talks given to ii) Shah Abdul Latif University, iii) AP Kinnaird College for Ladies, iv) Jinnah Womens' College, v) JM Boys & Girls School English Medium, as well as informative material and help with vi) Al Murtaza school for their "Nature Carnival" (theme: cetaceans) as well as talks given to visiting academic groups at the WWF-P Wetland's Centre at Sandspit.

Collaboration has been established with Karachi University's i) MRCRC, ii) Geography & iii) Zoology Depts, as well as iv) CEMB, and the v) UK's Aberdeen University.

Meetings to exchange ideas and information with Pakistan NGOs have included the i) Director General WWF-Pakistan, ii) IUCN Gwadar office, iii) Save Wildlife And Nature, iv) Conservation Science Society Pakistan, v) Oman Whale & Dolphin Group, and vi) the Sri Lankan IUCN SSP Cetacean Specialist Group.

The DI Project team has been working with government departments, institutes and programmes, including i) Minister of State for Environment Malik Amin Aslam Khan and the National Programme Manager Pakistan Wetland's Programme, ii) Director General National Institute of Oceanography, iii) Director Planning and Deputy Director Training in Marine Fisheries Dept., and iv) Sindh Wildlife Dept.

We have also met with representative of Clough Engineering & Integrated Solutions (oil engineering consultants) to discuss potential problems and solutions related to cetaceans and the oil industry at sea, and who provided contacts in the oil industry.

The Pakistan Game Fish Association has contacted us and offered data on cetaceans from their members.

9. Project Expenditure

Table 3 Project expenditure during the reporting period (Defra Financial Year 01 April to 31 March)

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

Members of this DI Project have worked closely with the Ministry of Environment’s “Pakistan Wetland’s Programme” on a Marine National Park recommendation for the area around Haft Talar/Astola Island, made to the Minister of State for Environment and subsequently recommended by the Prime Minister of Pakistan. This is well ahead of plan and is of great significance in the potential for conservation and management of Pakistan’s cetaceans and their pelagic environment. The great extent of our survey work and findings has been very rewarding in providing information for this recommendation, aided by the commitment and high level of activity of the CCP team members. Further, we have had high levels of interest and support generated across a very wide range of governmental and non-governmental organisations. The number of organisations and individuals who have responded positively when we have contacted them or who have on their own initiative sought us out to propose collaboration has far exceeded our most optimistic expectations. The DI has provided the platform for this important work to be undertaken.

[I agree for ECTF and the Darwin Secretariat to publish the content of this section](#) Yes

Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2006/07

Project summary	Measurable Indicators	Progress and Achievements April 2006 - March 2007	Actions required/planned for next period
<p>Goal: <i>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</i></p> <p><i>The conservation of biological diversity,</i></p> <p><i>The sustainable use of its components, and</i></p> <p><i>The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</i></p>			<p><i>(do not fill not applicable)</i></p>
<p>Purpose Conservation & management of whale & dolphin biodiversity in the NE Indian Ocean (Pakistan), and of the pelagic resources on which they depend, through research, protective measures, capacity building and DI-badged public awareness and participation programmes.</p>	<p>At least 1 cetacean hotspot to be established as a Marine Protected Area (MPA). Steps taken to reduce threats to cetaceans. Conservation & research projects established in KU and WWF-P. National cetacean group established. Fishers and others participating in sustainable use initiatives.</p>	<p>This period has been very productive, the highlight being the Minister of State for Environment taking up our recommendation through PWP for a marine national park centred around Haft Talar/Astola Island. This step will help to reduce threats by providing a protected area for cetaceans. The DI Project team are working with govt. depts & institutes, NGOs, academic institutes and local communities, raising awareness of Pakistan's cetaceans, their pelagic habitat, threats and solutions for their conservation.</p> <p>A national cetacean group has been initiated and will support this work by taking it to a wider audience in Pakistan.</p>	<p>DI Project team members to build closer links with OWDRG (Oman), Fisher Workshops to be held, whale-watching business to be promoted, Marine Mammal Course to be run with both UK & Pakistani staff in 2008, recommendations for cetacean conservation to be drafted & circulated for discussion, 2nd scientific paper to be submitted and third in early draft form. A schedule of boat, beach and community surveys has been agreed by the partners, POs & ROs for the next 8 months to continue to collect data according to plan.</p>
<p>Output 1. Regular monitoring of cetaceans & pelagic environment established with two partner institutions</p>	<p>3 annual reports for the public & 3 scientific articles published & distributed (after 3 yrs) Database running</p>	<p>1st annual report & a scientific article published & distributed (enclosed). Database constructed & input continuing. Monitoring continues to be related to security situation on coasts & weather conditions.</p>	

Activity 1.1 Boat surveys	32 boat-based surveys & monitoring (272 hr, 3374 km) of cetaceans and pelagic marine habitat have now been conducted along Sindh & Balochistan coasts, including one offshore in 2000m contour. Boat surveys inshore will continue during this summer, in locations where protected from summer monsoon.	
Activity 1.2 Beach surveys	12 beach-based surveys have now been conducted along Sindh & Balochistan coasts and will continue this summer.	
Activity 1.3 Training	Carried out for identification of cetacean species from beach casts. Training continued for team members and also for staff of Zoological Survey Dept. and Pakistan Wetland Programme. Will continue in November 2007	
Activity 1.4 Lab work	The phytoplankton samples have been analysed, while some work has begun on the zooplankton samples. Training and work on cetacean beach casts has begun and will continue once database is up to date.	
Activity 1.5 Stakeholder liaison	Meetings conducted with fishers in their communities, on the beach by their boats and on board, and will be continued over summer. Liaison begun with Pakistan Game Fish Association. See also Activity 1.7	
Activity 1.6 Reporting	2 nd annual report to be prepared, draft of two more scientific articles prepared. Data input slowed due to restricted access to computer facilities which has in turn slowed data analysis necessary for article. Computer facilities being improved.	
Activity 1.7 Other: Community surveys	13 community surveys (71 interviewees) have now been conducted in Sindh & Baloch fisher communities and will continue during summer. Opportunistic surveys conducted on board vessels and in Balochistan.	
Output 2. Understanding of threats to cetacean populations.	Specific reports and scientific article published.	Ongoing work as analyses of data needed to prepare report and article
Activity 1.1 Boat surveys	32 boat-based surveys have now been conducted & provided information on the species and numbers of cetaceans in the pelagic marine environment of Pakistan and the areas found	
Activity 1.2 Beach surveys	7 beach-based surveys have now been conducted & provided information on cetacean species, locations where stranded/beached, age and possible reason for mortality	
Activity 1.6 Reporting	The annual reports for the public, scientific publication, talks and press coverage cover aspects of why cetacean conservation in Pakistan might be necessary	
Activity 1.7 Other: Community surveys	The 12 community based surveys have now been conducted. They focus on obtaining information on the views of fishers and provide an opportunity for dialogue on how these views might benefit or harm cetacean conservation.	
Activity 1.4 Lab work	Plankton samples provide information on the productivity of the pelagic marine environment and information from the skeletons recovered during beach surveys provide information on age and species of cetaceans to add to location and possible mortality.	

Output 3. Recommendations for establishment of MPAs and other protective actions.	Specific report published and distributed.	Working in collaboration with Ministry of Environment directly with their 'Pakistan Wetland Programme', an area centred on Haft Talar/Astola Island was recommended for establishing an MPA. This has now been supported by the Prime Minister of Pakistan
Activity 1.5 Stakeholder liaison		Activity 1.7 relates how the fisher community are actively consulted and the new national cetacean conservation group will provide a wider base for stakeholder liaison.
Activity 1.6 Reporting		As mentioned above, the material published, and press and media coverage provide information on the status of Pakistan's cetaceans
Activity 1.6 Networking		Contact with the OWDRG and our Sri Lankan contact has provided a link with neighbouring regions for exchanging information on possible recommendations
Activity 3.1 Government Liaison		Liaised with relevant government depts, institutions & programmes: Zoological Survey Dept (Dept responsible for CBD), Marine Fisheries Dept., Sindh Wildlife Dept, Forestry & Wildlife Dept of Balochistan, National Institute of Oceanography, Pakistan Wetland Programme and with Minister of State for Environment,
Activity 3.2 Workshop		Plans have been finalised for fisher workshops in Sindh (Karachi) and Balochistan (Gwadar). The date was moved to this summer from winter accommodate the fishers' field season.
Activity 3.3 Publicity		Press releases have been prepared and released by the DI Project team, KU's press dept. and the WWF-P media officer. The CCP team has given interviews to the main national newspapers (Dawn, The Nation, The News, Faroozan) and to GeoTV and DI WWF-P partner gave an interview to BBC World Service.
Output 4. Training of Pakistani academics and project officers.	At least 6 Pakistani personnel attend UMBSM courses.	Training has gone very well and involved more people than originally proposed. ROs and POs trained are now able to help train others and are able to carry out most field work without supervision and are making strides in lab and desk work.
Activity 4.1 Teaching		To date, 6 Pakistani personnel (2 research officers, 2 academic staff, 2 project officers) have attended the Marine Mammal Course at UMBSM and a Navy representative on the PAP attended the Coastal Zone Management Course at UMBSM. Funding is being sought to bring 2 more to attend the MMC this summer and to send CCP team members to Oman to meet with the neighbouring Oman Whale & Dolphin Research Group to build contact and to exchange information.
Activity 1.3 Training		To date, 6 DI Project team members have been trained in field, lab and theoretical methods, 1 Zoological Survey Dept., 1 Pakistan Wetland Programme and 2 Ocean Park Conservation Foundation funded students from China have had shorter training courses focused largely on fieldwork.
Output 5. Cetacean biology teaching established Karachi University.	Annual module attended by total of 80+ students.	Partner Dr. Siddiqui lead the Marine Mammal Course and felt that a limited and specific audience should attend the first course. It was very well received by the students and interest has been expressed widely for the course to continue at

		KU, and material on cetacean biology & conservation at other universities (Lasbela, Shah Abdul Latif) & colleges (Kinnaird, Jinnah Womens') in Pakistan, and to include a wide audience.
Activity 4.1 Teaching		50 students participated in the Marine Mammal Course (MMC) run at Karachi University in January 2007 and included undergraduate, graduate students, NGO and govt. dept. staff
Activity 3.3 Publicity		The MMC was publicised through invitation to specific institutions by Dr. Siddiqui
Activity 1.1 Boat surveys		A number of MMC students were taken on a boat survey to show them field techniques and cetacean habitat
Activity 1.2 Beach surveys		All MMC students were taken on a beach survey and stranding/rescue exercise
Output 6. National cetacean conservation group established.	Membership of at least <u>100</u> . Regular newsletter.	The group, Pakistan Whale & Dolphin Group (PWDG), was initiated 11 th Feb 2007. It is initially being organised and run by WWF-P, who have great experience and expertise in this area. A chairperson has been found and who accepted the role, as well as suggesting a structure for the group. He has offered to have his company pay for an executive officer to help organise and run the group on a full-time basis.
Activity 6.1 Networking		WWF-P, CCP and the chair have been networking with contacts to draw attention to and interest in the group. A full launch of the PWDG is planned for later in the year.
Activity 3.3 Publicity		WWF-P and CCP have prepared & distributed press releases about the PWDG. A dedicated website is under consideration.
Output 7. Awareness by stakeholders (e.g. fishers) of potential for sustainable use.	Fishers cetacean reporting scheme and whale-watching business launched.	The fisher cetacean reporting scheme has begun, supplementing the survey data taken. The whale-watching business scheme will be investigated in the coming year, as per timetable originally proposed.
Activity 1.5 Stakeholder liaison		POs have been visiting fisher communities to build up rapport with the fishers and community members. Reports have begun to arrive from these communities, supplementing the data from CCP surveys.
Activity 3.3 Publicity		Fisher communities are each visited by POs, while publicity will be considered for the whale-watching business.

Annex 2 Project's full current logframe

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Purpose</p> <p>Conservation & management of whale & dolphin biodiversity in the NE Indian Ocean (Pakistan), and of the pelagic resources on which they depend, through research, protective measures, capacity building and DI-badged public awareness and participation programmes.</p>	<p>At least 1 cetacean hotspot to be established as a Marine Protected Area (MPA).</p> <p>Steps taken to reduce threats to cetaceans.</p> <p>Conservation & research projects established in KU and WWF-P.</p> <p>National cetacean <u>group</u> established.</p> <p>Fishers and others participating in sustainable use initiatives.</p>	<p>Proposals for MPAs and other protective actions published.</p> <p>Correspondence with ministries concerning implementation.</p> <p>Researchers and project officers in post, and publishing papers and reports.</p> <p>Cetacean group with membership of at least <u>100</u>.</p> <p>Fishers set up 1+ whale-watching business, and attend workshops.</p>	<p>Cetacean populations are not affected by impacts beyond the control of the conservation programme, such as by-catch mortality outside Pakistani waters.</p> <p>The effects of economic factors do not exceed the benefits of increased public and official support for cetacean conservation.</p>
<p>Outputs</p> <p>Regular monitoring of cetaceans & pelagic environment established with two partner institutions.</p>	<p>3 annual reports & 3 scientific articles published & distributed.</p> <p>Database running.</p>	<p>Reports, articles and database copied to DI.</p>	<p>Security situation on coast continues to be acceptable.</p> <p>Weather conditions not atypical.</p>
<p>Understanding of threats to cetacean populations.</p>	<p>Specific reports and scientific article published.</p>	<p>Reports and article copied to DI</p>	<p>Reasonable progress with survey work.</p>

Recommendations for establishment of MPAs and other protective actions.	Specific report published and distributed.	Report available. Correspondence with relevant Pakistani agencies.	Reasonable progress with survey work.
Training of Pakistani academics and project officers.	At least <u>6</u> Pakistani personnel attend UMBSM courses.	Course registration documentation.	None
Cetacean biology teaching established Karachi University.	Annual module attended by total of <u>80+</u> students.	KU academic records.	Expected interest among students.
National cetacean conservation group established.	Membership of at least <u>100</u> . Regular newsletter.	Group records and newsletters copied to DI.	None
Awareness by stakeholders (e.g. fishers) of potential for sustainable use.	Fishers cetacean reporting scheme and whale-watching business launched.	Publicity material. Reports of data. Workshop proceedings.	Expected interest among fishers.

Annex 3 onwards – supplementary material (optional)

Checklist for submission

	Check
Is the report less than 5MB? If so, please email to Darwin-Projects@ectf-ed.org.uk putting the project number in the Subject line.	Y
Is your report more than 5MB? If so, please advise Darwin-Projects@ectf-ed.org.uk that the report will be send by post on CD, putting the project number in the Subject line.	N
Do you have hard copies of material you want to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number.	Y
Have you completed the Project Expenditure table?	Y
Do not include claim forms or communications for Defra with this report.	