



## **Darwin Initiative Overseas Territories Challenge Fund Final Report**

Darwin Ref Number	EIDCF019
Darwin Project Title	Inshore Cetaceans of the Falkland Islands
Country (ies)	Falkland Islands
Award holding Organisation	Falklands Conservation
Partner Organisations	Austral Biodiversity / Sea Mammal Research Unit
Grant Value	£24,950
Start/end date	April 2014
Author(s), date	Grant Munro, 15 <sup>th</sup> August 2014

### **1. Challenge Fund Background**

Current knowledge on the inshore occurrence and distribution of cetaceans in the Falkland Islands is extremely limited and no dedicated survey has been undertaken in inshore waters. Sei whale, Commerson's dolphin and Peale's dolphin are known to occur. National and international species action plans for these IUCN, CITES & CMS listed species recognise that the lack of information on which to base assessments and management decisions is a major threat to conservation.

In order to obtain an estimate of the population of inshore cetaceans in the Falklands and their distribution an island-wide transect survey is required. However the design of such a survey, to give a statistically robust estimate, requires that some basic parameters on cetacean occurrence and observation distances be known to feed into the design algorithms. Without any level of previous survey these key parameters could not be estimated and hence the scale and resolution of required survey, necessary to obtain a robust estimate, could not be determined.

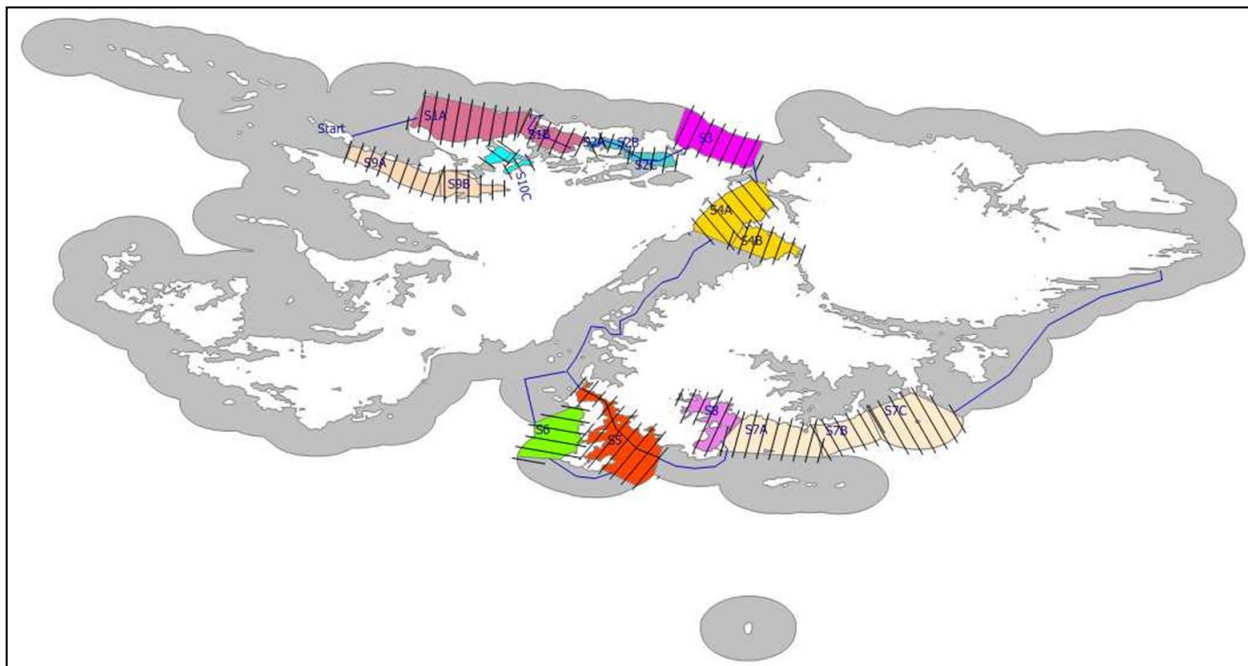
The primary objective of the Darwin Challenge Award was to establish basic survey parameters and feasibility so as to allow accurate design and planning of a more extensive island-wide survey. The priority and first step in the design process was to conduct a basic pilot survey to define cetacean encounter rates, variability in encounter rates between survey transect lines and effective survey width along the transect lines for each species. These parameters would then be utilised to design a more extensive and statistically robust island-wide survey.

The aims of the project were to:

- Design a 10-day transect survey to evaluate encounter rates, variability, & reactive movement of animals, in order to feed data into the design of a full island-wide survey.
- Undertake the 10-day inshore transect survey for cetaceans from a suitable vessel
- Test feasibility of photo-identification and focal studies during the pilot survey
- Analyse the results of the 10-day pilot survey and output design statistics
- Design and cost a full island-wide survey utilising data obtained from the pilot survey
- Undertake acoustic monitoring at 2 sites to suggest seasonality in occurrence
- Submit full funding application based upon results

The geographical extent of the project was defined within the first stage design of the pilot project and established the following areas of the Falkland Islands for survey (Figure 1).

Figure 1: Defined survey areas for the pilot cetacean survey in the Falkland Islands to sample a range of coastal habitats and varying levels of coastal exposure, utilising a 10-km coastal buffer.



## 2. Challenge Fund Activities

The activities undertaken are detailed for each project aim.

### ***Design a pilot transect survey to evaluate design parameters across a range of habitats.***

A literature review was undertaken to assess data relevant to cetacean survey in the extant environment of the Falkland Islands incorporating review of;

- cetacean survey design to assess the best method of survey appropriate to the Falklands
- existing cetacean data sources for the Falklands to determine the range of species and their expected occurrence and distribution (even if anecdotal) to ensure that the distinct habitats where occurrence was known were sampled.
- surveys of similar species in South America to provide a best estimate of survey parameters (encounter rates, etc.) so that the pilot survey could best match expected densities and had the greatest chance of providing the statistical outputs required.

Additional funding was provided through SMRU, Scottish Oceans Institute, a partner to the project, so that the project officer (Iris Thomsen) could attend a 2 week summer course on transect sampling design and analysis using “Distance” software. The course was hosted by the Centre for Research into Ecological & Environmental Modelling (CREEM), St. Andrews University.

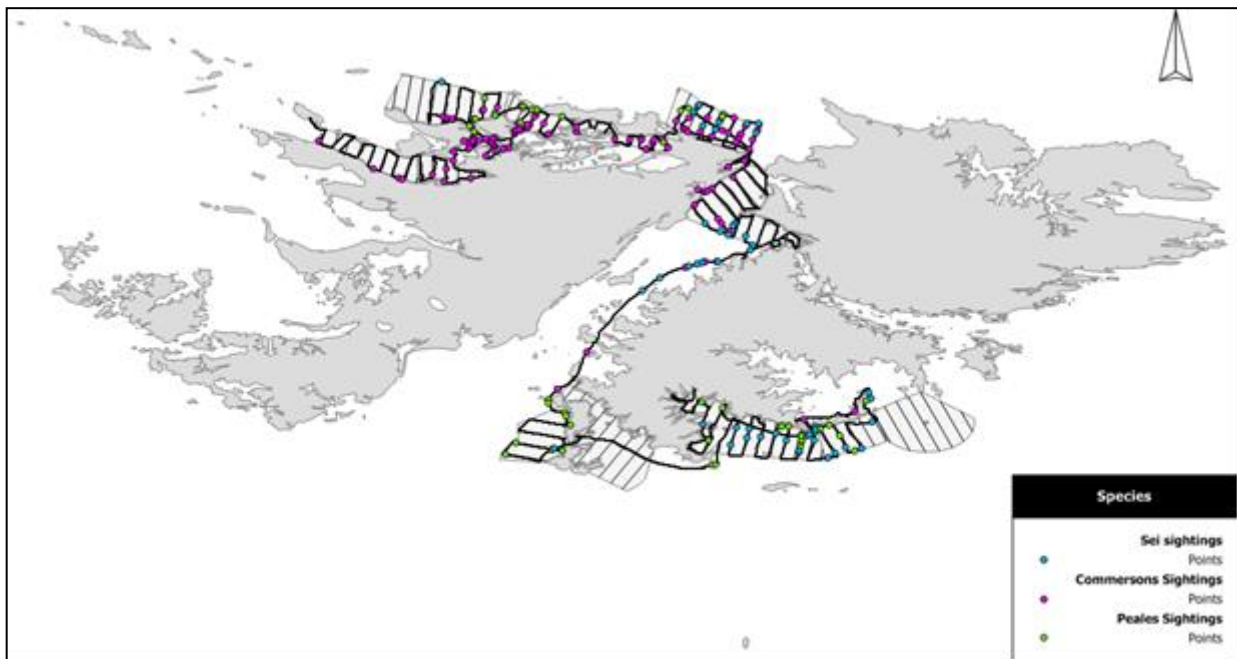
Pilot survey design was undertaken 1<sup>st</sup> June 2013 – 30<sup>th</sup> August 2013. Report is submitted.

### ***Undertake a 10-day inshore transect survey for cetaceans***

The 10-day pilot survey was carried out from the 25<sup>th</sup> February – 7<sup>th</sup> March 2014, with a further 2 days for the vessel to return. On average each day had 9.5 hours of observed effort and a total of 70 transects, with an on-effort transect/transit length of 683km, were completed.

A total of 414 Commerson’s dolphins (110 encounters), 147 Peale’s dolphins (43 encounters) and 77 Sei whales (47 encounters) were observed. The location of effort and sightings is given in Figure 2. A full report and analysis of results is provided.

Figure 2: The location of effort and cetacean sightings during the Falklands Pilot Cetacean Survey, 26/02/2014 – 07/03/2014. The original planned transect lines are underlayered and provided for excess effort so that daily survey blocks could be chosen to match extant weather conditions.



As the first time that a dedicated cetacean survey has been undertaken in the Falklands training support and oversight was provided by Dr.S.Heinrich (SMRU, St. Andrews University) who attended the survey in a volunteer capacity. This attendance also allowed for consultation with local stakeholders in progressing a full Darwin application.

Training in survey methodology was provided to all participants and vessel crew prior to the survey and over the initial 3 days of survey effort. This training and subsequent survey experience provides a valuable skill legacy that may be utilised for future survey and projects. Of the 9 personnel it may be considered that 6 are permanent residents of the Falkland Islands, 1 a project partner, and only 2 short-term residents that may not be available for a future project.

The local vessel “Condor” was utilised for the survey and both vessel master and mate are now familiar with the needs and execution of cetacean survey.

Cetacean identification flip cards were designed for the survey and have been distributed to a number of local vessels, volunteers and companies.

The pilot survey provided the quality of data required to input into a full survey design. In addition it highlighted a range of operational and survey issues and was a valuable learning experience. Future surveys will benefit from the experiences gained.

***Test feasibility of photo-identification and focal studies during the pilot survey***

Digital photography was taken during cetacean sightings. Images have been archived and the ability to identify individual animals through photo-identification assessed. Commerson’s dolphins are considered highly distinct with coloration, body scars and fin notches. Peale’s dolphins and Sei whales also exhibited distinguishing features or fin shape and it is considered that a sufficient proportion of animals would be identifiable to permit future photo-ID and mark-recapture studies within a focal study area.

***Analyse the results of the 10-day pilot survey and output design statistics***

***Design and cost a full island-wide survey utilising data obtained from the pilot survey***

Analysis of pilot survey results and design of an island-wide survey were undertaken between 8<sup>th</sup> March – 11<sup>th</sup> July 2014.

Encounter rates, encounter rate variance and effective survey strip width from the pilot survey were inputted into design algorithms to be utilised for the island-wide survey. A number of sampling strata designs and levels of sub-sampling were trialled to optimise survey coverage and efficiency.

The final design was generated to provide a coefficient of variation of density of circa. 0.10 which is considered very good within cetacean survey. In order to achieve this level of confidence, an on-effort survey duration of 42 days would be required. This would relate to a vessel charter period of 60 days. The full survey design is provided in the attached report.

Provisional costing for a 60 day survey gives an estimate of £85,000 - £165,000 for survey alone (range dependent upon vessel used)

### ***Undertake acoustic monitoring at 2 sites to suggest seasonality in occurrence***

The rationale for acoustic monitoring was to assess whether there was a seasonal component to dolphin occurrence, and therefore whether a repeat island-wide survey was required to look at large scale changes in distribution between summer and winter, and should be included within programme planning.

Initial results would suggest that there is a seasonal component however given the required 60-day duration of an island-wide survey it is not considered viable logistically or financially to undertake a second comparative winter survey. Rather the success of photo-ID trials, small-scale repeatable transects and the identification of wider geographical “hotspots” with both inshore and near-shore components, during the pilot survey would favour the extension of focal area studies. Such studies would additionally allow stock units and structure, population within a defined area, habitat utilisation and genetics to be investigated along with studies of seasonal distribution.

### ***Submit full funding application based upon results***

Covered below.

### ***Problems encountered and lessons learnt***

The project was extended for a year due to a delay in the commencement of the project. This resulted from an initial intention as a pilot project to use existing personnel between extant work commitments to undertake the project work. Due to increases in work-load due to environmental assessment of hydrocarbon exploration this proved not to be realistic. The employment of a dedicated officer to undertake survey design and analysis permitted the progression of the project.

Whilst aims have been met the project was under-resourced and relied heavily upon volunteer resources. Even so the project ended over-budget and over-spend was privately financed by Austral Biodiversity. As a pilot project there was a tendency to try and achieve too much within existing resources in order that the project could be initiated and proceed. It is essential in the future that even pilot projects should be realistically resourced.

## **3. Outcome & Impact of Challenge Fund**

### ***Legacy***

Whilst the need for an inshore cetacean survey has been previously identified within FI species action plans the ability to progress a project and fill baseline data gaps has been hampered by the lack of basic statistical data to set the scale and resolution of survey required. It was therefore previously impossible to develop a programme and seek funding without knowing if a 30, 60 or 90 day survey was required and therefore whether the aims of a project could be met. The current project has provided initial data and set the scale of any future survey such that detailed, realistic and achievable programme planning can be undertaken.

Cetacean survey requires multiple observers and has relatively high personnel requirements. Training has been provided to a number of volunteers and staff members. The pilot project

leaves a legacy of trained observers that will hopefully contribute to a growing volunteer base than can contribute to awareness of the inshore cetaceans and to future survey work.

Identification resources developed for the survey have been provided to tourism providers and the islands passenger ferry and it is hoped that this will contribute to raising knowledge and awareness. This was not an original aim of the project but during the course of the survey the chartered vessels crew a tourist lodge operator had requested copies of the resource and distribution was expanded.

### ***Project Planning***

The pilot project has been pivotal in determining the needs and aims of a larger project. Cetacean research, due to the need for multiple observers and vessel charter, is relatively expensive and resource intensive. In order to commit such resources and remove project risk it is essential that the scale of any project is set correctly and that the underlying aims can be met at that scale. The pilot project has provided the data that will allow the scale of survey to be correctly set and give confidence that robust population data would be obtained.

The pilot project has also highlighted a number of survey issues such as the attraction of both Commerson's and Peale's dolphins to the survey vessel. This can be corrected for by survey methodology but has both cost and personnel implications. Advance knowledge of the issue will allow it to be addressed and accounted for.

Knowledge gained from the pilot survey has highlighted the value of combining focal area studies alongside the island-wide survey. This will allow a wider range of biological data to be gathered which is essential in understanding the conservation risks and overlap with anthropogenic activities. The pilot study has identified potential geographic areas where such focal study could be performed, with the known occurrence of both species and access to both sheltered and more open exposed coastline habitats.

The visit of the UK partner to the Falkland Islands (primarily to provide survey training) allowed them to meet all local stakeholders and to openly discuss project aims and scope as determined by the Overseas Territory. This was considered to be efficient and will ensure that assistance and partnership will meet the aims of the Falkland Islands. Potential synergies and value-added projects that could more fully utilise project data were identified.

Darwin project planning is relatively advanced and provisional costs have been determined. However absence from the islands of key personnel both within the government and NGO sectors needed to confirm institutional commitments was not conducive to submitting a funding application in the current round and final application of a full project will be made within the 2015 rounds.

### **4. Lessons**

A number of practical lessons regarding the execution of boat-based surveys and observer management within the Falklands were learnt and these will be built into the programme planning and contingency planning.

In more general terms the issue of resourcing of pilot projects within existing staff commitments, as already detailed, did lead to initial problems. A component arose from extenuating circumstances and the need to conduct EIA for oil development that had not been foreseen when original application was made. However, part was from a strong desire amongst all parties to initiate a cetacean project that had been identified for a number of years but had not been progressed. This desire to present an attractive project within budget in a research field that is resource intensive possibly led to an over-commitment of volunteer resources and a lack of contingency margin. The aims of the project were met but it is cautionary that pilot projects should remain achievable and sufficiently resourced.

## 5. Project Expenditure

Item	Budget for whole project*	Actual Expenditure	Variance** as a %	Comments
Travel Costs				
Subsistence costs				
Overhead costs				
Operating Costs				
Capital Costs				
Other				
Salaries (by individual)				
Iris Thomsen				Additional £1541 met by ABC
<b>TOTAL</b>	24950.00	24950.28	0.0	

\* please indicate which document you refer to if other than your project application or annual grant offer letter

\*\* please explain any variance of +/- >10%

**Travel Costs:** The survey was initially intended to commence on East Falkland at a point accessible from the road network. Pre-survey vessel commitments prevented the vessel arriving and to avoid a delay and loss of time the entire survey crew had to take internal national flights to Carcass Island (x7 un-budgeted return flights). The attendance of Dr Sonja Heinrich was considered essential to provide initial training and oversight on the survey. Time and travel was self-funded from UK to Punta Arenas, Chile. The connecting international flight from Punta Arenas to the Falklands was met by the project. This slight additional cost was considered beneficial and cost effective to the success of the project.

**Subsistence Costs:** A minor amount and necessitated due to over-runs in other account headings.

**Overhead Costs:** On budget

**Operating Costs:** Upon completion of the survey a severe gale (Gale Force 9) prevented the return of the charter vessel to its home port. The vessel took 2 days against strong winds and an extended route to utilise the lee of islands to return home. As a result 12 days of vessel charter were invoiced instead of 10 days giving a 20% over-run in budget.

**Capital Costs:** On budget

**Salary Costs:** Given over-runs in other account heads due to extenuating circumstances (flights and charter) the salary costs were utilised to balance against the budget. In reality an additional £1,541 was provided outside of budget by Austral Biodiversity. All personnel on the survey worked in a voluntary capacity and no permanent staff costs were invoiced or attributed to the project.

## 6. Other comments not covered elsewhere

## Darwin Challenge Fund Reporting Guidelines

All Darwin projects are required to report on the work they have undertaken with Darwin funds and this offers you the opportunity to report on your achievements and lessons learnt and on any other issues you would like to raise. Your report should show how you have progressed against the activities outlined in your application, or clearly explain any changes and the reasons why these changes were necessary.

You are expected to prepare the report in conjunction with your partners and you are expected to submit a Final Report within 1 month of completion of the agreed dates for the award (max 6 pages excluding annexes).

We will acknowledge and read all reports submitted, but will only contact you about your report if there are specific concerns.

If you have any additional queries about reporting, please feel free to email or call on 0131 440 5181.

### *Checklist for submission*

	Check
<b>Is the report less than 5MB?</b> If so, please email to <a href="mailto:Darwin-Projects@ltsi.co.uk">Darwin-Projects@ltsi.co.uk</a> putting the project reference number in the Subject line.	Yes
<b>Is your report more than 5MB?</b> If so, please advise <a href="mailto:Darwin-Projects@ltsi.co.uk">Darwin-Projects@ltsi.co.uk</a> that the report will be sent by post on CD, putting the project reference number in the Subject line.	No
<b>Have you included means of verification?</b> You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Yes
<b>Do you have hard copies of material you want to submit with the report?</b> If so, please make this clear in the covering email and ensure all material is marked with the project number.	No
Have you involved your partners in preparation of the report and named the main contributors	Yes
Have you completed the Project Expenditure table fully?	Yes
Do not include claim forms or other communications with this report.	