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, excluding annexes

Submission Deadline: 30 April

Darwin Project Information

Project Reference	DPLUS009
Project Title	Antarctic and Sub-Antarctic Marine Protected Areas: using penguin tracking data to identify candidate areas
Host Countries	BAT, SGSSI
Contract Holder Institution	British Antarctic Survey
Partner institutions	BirdLife International and Scientific Committee for Antarctic Research
Darwin Grant Value	£142,176
Start/end dates of project	1 July 2013 to 31 March 2015
Reporting period (eg Apr 2013 – Mar 2014) and number (eg Annual Report 1, 2, 3)	1 July 2013 to 31 March 2014, Annual Report 1
Project Leader name	Philip Trathan
Project website	
Report author(s) and date	Philip Trathan, Ben Lascelles, 30 April 2014

1.   Project Rationale

Despite the UK's pioneering and leadership role within the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), (plus for the South Georgia and South Sandwich Islands MPA), in establishing the first MPA in the Antarctic Treaty area, CCAMLR's development of a representative network of MPAs has stalled (largely due to the complex politics relating to the Ross Sea and East Antarctica). To enable progress in the key area of West Antarctica, UK (BAT) proposes a fully consultative marine spatial planning approach for marine managed areas (including candidate MPAs) in the Scotia and Weddell Seas. Arguably the most critical data for delineating key habitats in coastal and inshore areas will be information from penguin foraging. These data urgently need compiling and analysing in a customised database, interoperable with BirdLife's Global Procellariiform Tracking Database (internationally recognised for its role in bycatch management by RFMOs – especially tuna commissions – and the main global data input for pelagic marine species to the CBD's process to define Ecologically or Biologically Significant marine Areas (EBSAs) in need of protection). A penguin database will allow analyses to provide a suite of candidate sites whose protection and management will be fundamental and high priority for regional MPAs within BAT (and CCAMLR). The same process would provide input for revising coastal/inshore protection for penguins within the SGSSI MPA; with future application to the UKOTs of Falkland Islands and Tristan/Gough.

The creation of a regional database of penguin tracking data and analysis/modelling will: a) define candidate sites/areas for special protection within a region-wide input to the CCAMLR MPA process; b) underpin new marine spatial planning to generate MPAs for BAT; c) identify

key penguin coastal/inshore foraging areas within the SGSSI MPA; d) allow easy and rapid future delineation of candidate MPAs for the Falkland Islands and Tristan/Gough, including via interoperability with a longstanding analogue database for pelagic seabirds; e) allow future addition of marine mammal data; f) provide pioneer Antarctic candidate input to the CBD EBSA process.
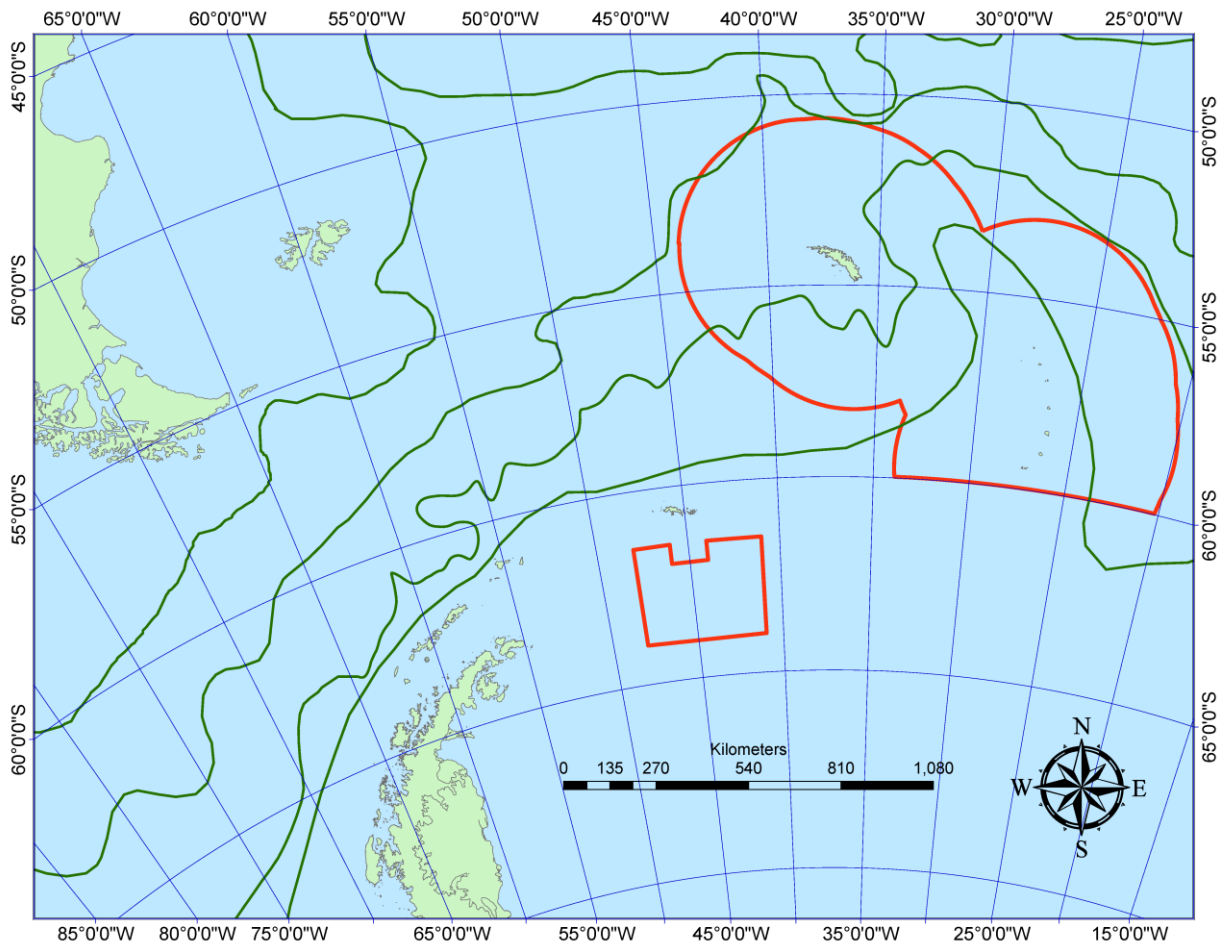

Figure 1. The South Orkney Islands Southern Shelf MPA and the South Georgia and South Sandwich Islands MPA, both shown in red; with the Antarctic Circumpolar Current (ACC) fronts shown in green: south to north, Southern ACC Boundary, Southern ACC Front, Polar Front, Sub-Antarctic Front. Currently no MPAs have been designated close to the Antarctic Peninsula or close to the South Orkney Islands. No MPAs have been designated for the Falkland Islands.

2.   Project Partnerships

The principal legal instrument with authority to designate MPAs in the Antarctic is the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR). Through engagement with the CCAMLR Scientific Committee and its Working Groups, we have sought support from CCAMLR scientists holding penguin tracking data. The response so far has been very positive, particularly from USA colleagues who hold considerable amounts of penguin tracking data for the Antarctic Peninsula region. The PI (Phil Trathan) is visiting the key USA group of CCAMLR scientists between April 28 and May 2 2014 to strengthen this link. Other CCAMLR scientists from other Member countries also hold data, but the USA will be a critical partner and source of data.

Evidence for CCAMLR's commitment to this project comes from the support expressed at the CCAMLR Working Group on Ecosystem Monitoring and Management held last year in Germany. At that meeting it was agreed that a CCAMLR representative should sit on the penguin tracking database steering committee.

The principal means of designating MPAs around the Falkland Islands is through the Falkland Islands Government. A Darwin project has recently been agreed that will examine how best to

designate MPAs in Falkland waters. The PI of that project is Paul Brickle (SAERI). The PI (Phil Trathan) of our project is a project partner on that Darwin grant, as is BirdLife International.

Both these links will be key to the further implementation of MPAs in the Antarctic, the Scotia Sea and around the Falkland Islands.

3. Project Progress

The project started on 1 July 2013. Since that time we have made progress as planned in the project proposal.

3.1 Progress in carrying out project activities

Output 1: Collate all existing penguin tracking data into a centralised database

1.1 An international steering committee was established in August/September 2013 to help coordinate data input for the proposed penguin tracking database. This steering committee comprises individuals from BAS, BirdLife, SCAR, CCAMLR, the Royal Society for the protection of Birds (RSPB), and scientists from Europe, North America, South America, Southern Africa, Asia, Australia and New Zealand.

1.2 A thorough review of the existing BirdLife tracking database structure has been undertaken, and a new database design has been developed that will allow penguin tracks to be stored in a manner that is compatible with existing data in BirdLife's Global Procellariiform Tracking Database. The new design has been advertised for development and 7 different tenders were received. After close scrutiny of all tenders, it was agreed to contract the Marine Geospatial Ecology Lab (MGEL) at, Duke University, USA run by Prof Pat Halpin to develop the new database structure and functionality. Prof Halpin has extensive experience of these sorts of database, for example managing the OBIS database resulting from the Census of Marine Life, which holds around 4 million records. Once the database is completed a web design company may be contracted to add the finishing touches to the front end.

1.3 Initial engagement with the penguin research community took place at the Scientific Committee for Antarctic Research (SCAR) Biology Symposium which was held in Barcelona, Spain, July 16 to 19, 2013. PN Trathan (BAS) presented a paper outlining the benefits of the project for enhancing the management of areas in the Antarctic and Sub-Antarctic; this was well received and many researchers offered their support.

Subsequently, PN Trathan, B Lascelles (BirdLife), C Small (RSPB) and M Hindell (SCAR) convened a tracking workshop at the 8th International Penguin Conference (IPC8) which was held in Bristol, UK, September 2 to 6, 2013. In addition, B Lascelles presented a plenary paper to the IPC8 Conference, outlining the benefits of the project for enhancing the management of areas in the Antarctic and Sub-Antarctic. Approximately 60 penguin researchers attended the workshop and many researchers (more than 20, from 10 different countries) indicated their willingness to contribute tracking data to the international database (more than 1500 tracks of 14 different species were promised).

Further, B Lascelles also presented the plans for expansion of the BirdLife seabird tracking database to include penguins at the 12th International Seabird Group Conference, held in Oxford, UK, March 21 to 23, 2014.

1.4 An extensive literature review has been undertaken by BirdLife to compile a metadata summary of published penguin tracking data. This found eighty penguin tracking studies, covering almost all (16/18) species and more than 2500 individual bird tracks. This database was also completed with information collected directly from penguin researchers during the workshop held in the IPC8; 14 of these datasets were tagged as priorities for this Darwin+ project, and data-owners will be contacted soon to be invited to submit their data.

1.5 Following the IPC8 workshop some researchers have already submitted data for inclusion in the new database. The first submission was for African penguins tracked from Dassen and Bird Islands submitted by BirdLife South Africa. Though not central to our core project, this shows the universal appeal of this database and its future potential for much wider application.

Output 2: Analyse all available tracking data to define candidate foraging sites and moulting areas for special protection

The analyse of all available tracking data to define candidate sites for special protection will be undertaken once the new database is populated with data from contributing scientists. Preliminary analyses have already been undertaken for some of the datasets already submitted and initial testing of BirdLife marine IBA approaches have proved positive.
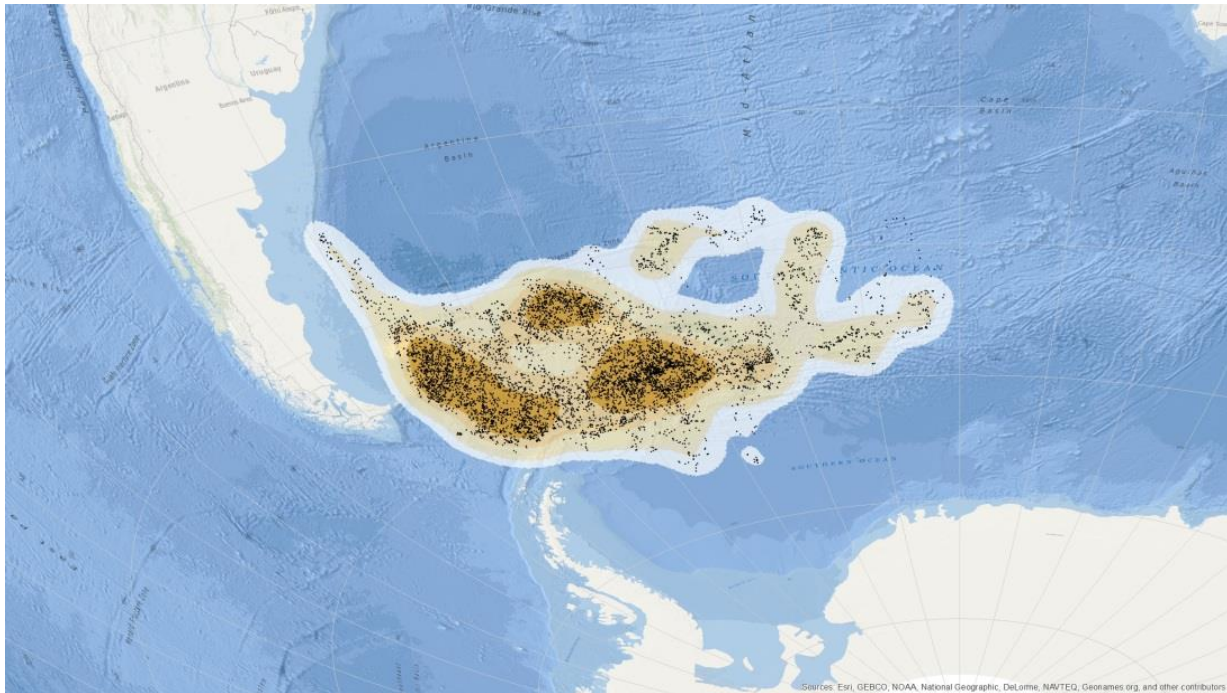

Figure 2. Main foraging areas (derived from Kernel density estimation) of macaroni penguins breeding at Bird Island, South Georgia (data provided by BAS). White-orange gradient correspond to increasing utilization of the areas by the penguins (black dots represent the original positions derived from the tracking devices).

Output 3: Underpin new Marine Spatial Planning processes in CCAMLR

Initial engagement with CCAMLR took place at the CCAMLR Working Group on Ecosystem Monitoring and Management which was held in Bremerhaven, Germany, July 1 to 10, 2013. PN Trathan tabled a paper outlining the benefits of the project for enhancing the management of areas in the Antarctic and Sub-Antarctic; this was well received and WG-EMM nominated an individual to sit on the project international steering committee (see Question 2 above). Once the database is implemented, analytical outputs will be sent to CCAMLR and to other relevant bodies. The CBD Secretariat has also been made aware of the penguin database development, and has been flagged as a key input to any potential future EBSA process in the region.

3.2 Progress towards project outputs

Progress towards project outputs is proceeding as planned.

Output 1: Collate all existing penguin tracking data into a centralised database

Steps to engage with the penguin research community have been successful (see Question 3.1 above). The tracking database structure has been defined and implementation is about to start.

To date we have received several data submissions, collected using PTT (Platform Terminal Transmitter) or Geolocator devices attached to 166 individuals of four species. These datasets are as follows:

- African penguin (*Spheniscus demersus*) – Bird and Dassen islands, South Africa – Dr. Ross Wanless (BirdLife International and Percy FitzPatrick Institute of African Ornithology);
- Royal penguin (*Eudyptes schlegeli*) – Macquarie Island, Australia – Dr. Mark Hindell (University of Tasmania, Institute for Marine and Antarctic Studies);

- Macaroni penguin (*Eudyptes chrysolophus*) – Heard Island, Australia – Dr. Mark Hindell (University of Tasmania, Institute for Marine and Antarctic Studies) and South Georgia, UKOT – BAS (British Antarctic Survey);
- Northern rockhopper penguin (*Eudyptes moseleyi*) – Gough Island, UKOT – RSPB (Royal Society for the Protection of Birds).

Output 2: Analyse all available tracking data to define candidate foraging sites and moulting areas for special protection

This can only be achieved once the database is populated with all relevant penguin tracking data. Preliminary analyses have already been undertaken (see Question 3.1 above).

Output 3: Underpin new Marine Spatial Planning processes in CCAMLR and CEP

This can only be achieved once the database is populated with all relevant penguin tracking data and analyses have been undertaken to define the sites to input to MSP processes (see Question 3.1 above).

3.3   Progress towards the project Purpose/Outcome

The development of MPAs in the Antarctic is now very much more difficult that when the project was originally established. Certain Member nations within CCAMLR have been slow to agree to the implementation of any new MPA designations. The political climate is more difficult, primarily because of the desires of some fishing nations to minimise the size and scale of MPAs. For example, there is now a strong desire by some CCAMLR Members to introduce 'sun set clauses' into the designation of MPAs, whereby they automatically lapse after a relatively short time period (of order ~2 to ~20 to ~25 years). Also, that intensive research and monitoring programmes should be implemented by proponent Members.

These and other limitations mean that progress remains very slow. Nevertheless, the only means by which future MPAs will be designated is through robust evidenced-based proposals. This means that the penguin tracking database and associated analyses will become even more important in developing candidate sites/areas for special protection within the CCAMLR MPA process.

3.4   Goal/ Impact: achievement of positive impact on biodiversity and poverty alleviation

This project will contribute towards Marine Spatial Planning (MSP) in the Antarctic and Sub-Antarctic. MSP is a process that allows users of the ocean to work together to make informed and coordinated decisions about how to use marine resources. The intended result of MSP is a more sustainable approach to ocean use – ensuring that marine resources and ecosystem goods and services are utilised, but within clear environmental limits to ensure ecosystems remain healthy and biodiversity is conserved. The projects stakeholders are therefore diverse and include CCAMLR and fishing companies, Antarctic tourist operators, SCAR and individual scientists, Non-Governmental Organisations and conservation lobby groups, and regional Governments, including UKOTs. Including this range of stakeholders at an early stage should ensure effective communication of results to all user groups, build buy in to the projects goals and facilitate the change in practices that might be needed to achieve conservation goals.

Balancing conservation of biodiversity and rational use (harvesting) is set to become an ever-more critical topic in the coming decades as ensuring adequate food security for a growing human population has the potential to impact negatively upon biodiversity. As the Antarctic krill fishery could, in the future, contribute >7% of currently notified marine fishery landings, ensuring harvesting and conservation are properly balanced is critical.

4.   Project support to the Conventions (CBD, CMS and/or CITES)

The penguin tracking database will enable us to determine where and when penguins forage. BirdLife have developed a set of GIS techniques to identify which areas of the ocean are used most frequently by tracked seabirds. By applying further statistical techniques these analyses report whether these areas are representative for all birds in the originating population and therefore can be deemed important for the population as a whole.

Identifying such areas (as part of this project, and in the future) will allow us to delineate marine Important Bird Areas (IBAs); BirdLife have developed a standardised set of data-driven criteria to identified IBAs, and these have proved a useful tool to focus conservation action. These approaches have proved valuable when presenting data to marine decision makers and managers as they address many of the concerns that can be raised when using tracking datasets to inform MSP approaches. In some cases marine IBAs have formed a shadow list for potential Marine Protected Areas, such as for the designation of Special Protection Areas in Spain and Greece under the EU Bird's Directive.

Marine IBAs already have strong links with other international policy mechanisms including CBD EBSAs. BirdLife have contributed marine IBA and tracking data to all CBD EBSA workshops convened to date, resulting in over 600 marine IBAs being used to describe the EBSAs agreed at these workshops.

The CBD has not yet scheduled an EBSA workshop for the Antarctic; however, discussions are ongoing and the CBD is aware that the penguin tracking database should form a key contribution.

5. Project support to poverty alleviation

There are no direct links to poverty alleviation for this project, but it will make a key contribution to the sustainable development of the Antarctic krill fishery (see Question 3.4 above).

6. Monitoring, evaluation and lessons

The key metric for monitoring and evaluation at this stage in the project is the level of engagement with the penguin research community (see Question 3.1 above). The next metric after the database is functional will be the contribution of data. We have already received tracks from 4 species; African, macaroni and royal penguin) and believe we should be able to add a further 1500 tracks from 6 species (Adélie, chinstrap, gentoo, macaroni, rockhopper and king penguin) to the database during the course of the project. In future reports we will evaluate progress against this target.

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

Not applicable, this is the first full report.

8. Other comments on progress not covered elsewhere

The tender process to find an institute or company suitable for implementing the penguin tracking database (see Question 3.1 above) took longer than anticipated, however we believe that this will not impede or delay future progress.

The difficulties with political engagement (see Question 3.3 above) may mean that successful engagement will require effort beyond the duration of this project.

9. Sustainability

In Questions 3.3 and 8 we identify the difficult political climate now prevalent in CCAMLR with regard to the designation of MPAs. Despite this, the CAMLR Commission has agreed to designate MPAs and many Members are actively developing proposals to create meaningful MPAs around the Antarctic and in the Sub-Antarctic. Currently, there are existing (stalled) proposals for the Ross Sea (New Zealand and the USA) and for East Antarctica (Australia, France and the EU). New proposals are also under development for the Antarctic Peninsula (led by Chile and Argentina), the Weddell Sea (led by Germany), the South Orkney Islands (led by the UK) and the Del Cano Rise (led by France). All of these proposals will benefit from this project, particularly the critical data needed for delineating key habitats in coastal and inshore areas and enhanced understanding about penguin foraging. Those proposals in the Antarctic Peninsula, the Weddell Sea and at the South Orkney Islands will critically rely upon such data.

BirdLife have managed the Global Procellariiform Tracking Database for the past 10 years. Throughout this period the system has been supported through BirdLife core funds, and where possible through additional money from external agencies and foundations. The penguin tracking database will require similar maintenance considerations, and BirdLife have already

agreed to make the commitment that they will maintain the penguin system in an analogous manner into the future.

During the initial database development period, all efforts will be made to future-proof the system and ensure minimal day-to-day maintenance and management is required, therefore keeping future costs to a minimum. Computer software routines for data submission, standardisation and request will be developed so that data are processed automatically within the database.

The analytical methods and computer routines will be published as part of the project's submission to CCAMLR and also in the peer-reviewed scientific literature. The routines themselves will also be made available as open-source code so localised systems can be established in the supporting UKOTs, with the offer to make them available to other UKOTs as appropriate. This will allow updates to be readily undertaken by responsible bodies as new data become available, and for the impacts of conservation measures to be monitored as new tracking data describing penguin foraging effort and location are collected.

10.   Darwin Identity

The support of Darwin was highlighted at all meetings where we engaged with the penguin research community (see Question 3.1). Wherever possible the Darwin logo was prominent in our talks and presentations.

11.   Project Expenditure

Table 1   project expenditure <u>during the reporting period</u> (1 April 2013 – 31 March 2014)

Project spend since last annual report	2013/14 Grant (£)	2013/14 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)				
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items (see below)				
Others (see below)				
TOTAL	**£48,512**	**£48,480**		

12.   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 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)

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2013-2014

Project summary	Measurable Indicators	Progress and Achievements April 2013 - March 2014	Actions required/planned for next period
Goal/Impact Tracking data are logistically and financially expensive to collect, and are seldom accessible to researchers other than those in the data originators group. Despite this, many researchers wish their data to be more freely available. Therefore, developing a database system is an important step for making data available whilst maintaining ownership rights for data originator. Rigorous scientific analysis is critical for identifying important habitats; however, links between the original data and any derived analytical product must be maintained and is essential for end user buy-in. The penguin tracking database will therefore engage both scientists and policymakers so that penguin habitats may be protected.		We are still in the development phase of the project; anticipated impacts for preserving biodiversity will only materialise once analyses and outputs have been produced in the later parts of the project.	
Purpose/Outcome The creation of a regional database of penguin tracking data and analysis/modelling that will: a) define candidate sites/areas for special protection within a region-wide input to the CCAMLR MPA process; b) underpin new marine spatial planning to generate MPAs for BAT; c) identify key penguin coastal/inshore foraging areas within the SGSSI MPA; d) allow easy and rapid future delineation of candidate MPAs for the Falkland Islands and Tristan/Gough, including via interoperability with a longstanding analogue database for pelagic seabirds; e) allow future addition of marine mammal data; f) provide pioneer Antarctic candidate input to the CBD global marine MPA (EBSA) process	See below.	We have successfully engaged with the penguin research community and have developed the design for a new tracking database compatible with BirdLife's existing Global Procellariiform Tracking Database.	Implement newly designed database. Develop web-based front end. Populate database with penguin tracking data.

Output 1. Collate all existing penguin tracking data into a centralised database.	1500 tracks added to database from Adélie, chinstrap, gentoo, macaroni, rockhopper and king penguins.	Successful engagement at CCAMLR, at SCAR and at the International Penguin Conference (see Question 3.1). Successful workshop held with the promise of data from penguin scientists.
Activity 1.1. Initiate workshop at the 8th International Penguin Conference in Bristol, October 2013 to discuss data sharing. Develop meta-data list of all penguin tracking data collected to date.		Activity completed successfully.
Activity 1.2. Develop a PostGreSQL relational database capable of integrating available penguin tracking data, this will be enabled with analytical tools to standardise formats and make data comparable.		Database design completed; implementation started.
Activity 1.3. Collaborate with penguin researchers and data originators to collate tracking datasets into the database system. Work with them to ensure data ownership is protected.		Activity on-going.
Output 2. Analyse all available tracking data to define candidate foraging sites and moulting areas for special protection.	Tracking analyses will be developed and applied to all datasets made available in output 1. Candidate sites will be identified for each dataset but the number and extent of these will be moderated by reference to the actual behavioural ecology present in the data. It is therefore not feasible to estimate numbers or target area coverage at present. When feasible, we will consult with regional experts and species specialists to ensure ecological coherence for sites.	Initial analyses undertaken to explore potential data requirements and output products.
Activity 2.1. Data will be amalgamated into groups representing each unique combination of species, population and breeding stage and the BirdLife computer routines for the GPTD will be reviewed and applied to each individually.		Future work.
Activity 2.2. Develop habitat modelling analyses to predict habitat preferences in order to better understand the drivers of each species distribution (i.e. whether it is located in relation to static ecosystem features or dynamic oceanographic features). Determine whether boundaries of candidate sites are locally and regionally representative.		Future work.
Activity 2.3. Consult through the project steering committee made up of species and regional experts to understand any gaps in the process.		Future work.

Output 3. Underpin new Marine Spatial Planning processes in CCAMLR to generate new MPAs within BAT, and through the Antarctic Treaty Committee for Environmental Protection to generate new Antarctic Specially Managed Areas and new Antarctic Specially Protected Areas within BAT.	Tracking data will be integrated to provide analytical outputs and identified core foraging areas, as appropriate to the CCAMLR MPA process and the CEP ASMA and ASPA process for all datasets available following output 1. Inputs to CCAMLR and CEP will be delivered through the respective UK delegations, led by the FCO Polar Regions Department.	Future work.
Activity 3.1. Engage with BAT and SGSSI to identify UK policy requirements.		Future work.
Activity 3.2. Develop scientific papers for delivery to CCAMLR and CEP via the appropriate UK delegation.		Future work.
Activity 3.3. Engage internationally within CCAMLR/CEP to explain the conservation imperatives within the UK delegation papers and to advocate appropriate conservation measures.		Future work.

Annex 2 Project's full current logframe

Activity		No of Months	Year 1 – 2013/14				Year 2 – 2014/15				Year 3 – 2015/16			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Output 1	Collate all existing penguin tracking data into a centralised database.	31		X	X	X	X	X						
1.1	Initiate discussions at the SCAR Biology meeting in Barcelona and the International Penguin Conference in Bristol to explore data sharing. Develop meta-data list of all penguin tracking data collected to date.	1		X										
1.2	Develop a PostGreSQL relational database capable of integrating available penguin tracking data, this will be enabled with analytical tools to standardise formats and make data comparable.	9			X	X	X							
1.3	Collaborate with penguin researchers and data originators to collate tracking datasets into the database system. Work with them to ensure data ownership is protected.	9				X	X	X						
Output 2	Analyse all available tracking data to define candidate foraging sites and moulting areas for special protection.	22					X	X	X	X	X			
2.1	Data will be amalgamated into groups representing each unique combination of species, population and breeding stage and the BirdLife computer routines for the GPTD will be reviewed and applied to each individually.	9					X	X	X					
2.2	Develop habitat modelling analyses to predict habitat preferences in order to better understand the drivers of each species distribution (i.e. whether it is located in relation to static ecosystem features or dynamic oceanographic features). Determine whether boundaries of candidate sites are locally and regionally representative.	12						X	X	X	X			
2.3	Consult through the project steering committee made up of species and regional experts to understand any gaps in the process.	1									X			
Output 3	Underpin new Marine Spatial Planning processes in CCAMLR and CEP.	14		X	X	X	X	X	X	X	X	X	X	
3.1	Engage with BAT and SGSSI to identify UK policy requirements.	2	X				X				X			
3.2	Develop scientific papers for delivery to CCAMLR and CEP via the appropriate UK delegation.	6	X	X			X	X			X	X		
3.3	Engage internationally within CCAMLR/CEP to explain the conservation imperatives within the UK delegation papers and to advocate appropriate conservation measures.	6			X				X				X	

This remains unchanged from the original proposal.

Annex 3 Standard Measures

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
12A	Database designed and about to be implemented	1					1	
14A	Workshop organised at the International Penguin Conference	1					1	
14B	Presentations at CCAMLR, at SCAR and at the International Penguin Conference.	3					3	
17A	International steering committee established.	1					1	1

Table 2   Publications

Type (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £

Annex 4 Onwards – supplementary material (optional but encouraged as evidence of project achievement)

Paper WG-EMM-13/18 submitted to the CCAMLR Working Group on Ecosystem Monitoring and Management.

Abstract submitted to the SCAR Open Biology Symposium.

Abstract submitted to the 8th International Penguin Conference.

Workshop agenda submitted to the 8th International Penguin Conference.

Workshop Penguin Tracking database leaflet for IPC8

Abstract submitted to Seabird group

http://oxnav.zoo.ox.ac.uk/sites/default/files/final_abstracts_PDF.pdf (page 37)

Seachange 9 May 2013 Article on penguins

http://www.rspb.org.uk/Images/sea_change_newsletter_tcm9-347908.pdf (page 11)

World Penguin day news story

http://www.birdlife.org/worldwide/news/celebrate-world-penguin-day-and-world-penguin-tracking-database.

Number of penguin tweets via BirdLife_marine twitter account was 23.

Checklist for submission

	Check
Is the report less than 10MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	Y
Is your report more than 10MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	N
Have you included means of verification? You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Y
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.	N
Have you involved your partners in preparation of the report and named the main contributors	Y
Have you completed the Project Expenditure table fully?	Y
Do not include claim forms or other communications with this report.	