Department for Environment Food & Rural Affairs

DARWIN INITIATIVE

Foreign & Commonwealth Office

Funded by UK Government

Darwin Plus:
Overseas Territories Environment and Climate Fund

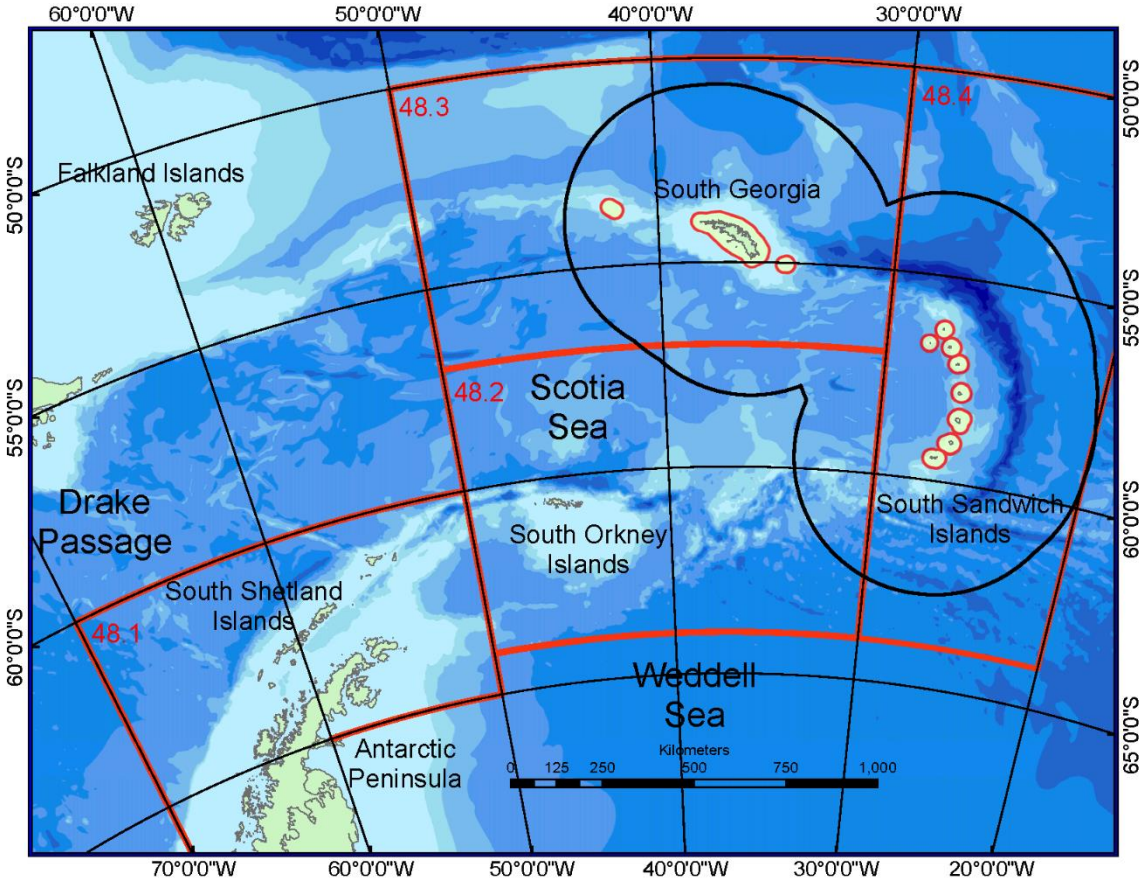
Final Report

Important note *To be completed with reference to the Reporting Guidance Notes for Project Leaders: it is expected that this report will be a maximum of 20 pages in length, excluding annexes*

Darwin Project Information

Project reference	DPLUS054
Project title	Managing Antarctic krill fisheries: identifying candidate marine areas for protection
Territory(ies)	BAT, SGSSI
Contract holder Institution	BAS
Partner institutions	BirdLife International, ERA
Grant value	£99,937.38
Start/end date of project	1 April 2016 to 31 March 2018
Project leader name	Philip Trathan, Head of Conservation Biology
Project website/Twitter/blog etc.	
Report author(s) and date	Philip Trathan, Maria Dias

1 Project Overview



Our study area is shown in the figure above, with a special focus on FAO Subarea 48.1 (the Antarctic Peninsula and South Shetland Islands) and 48.2 (the South Orkney Islands). These areas are where the commercial fishery for Antarctic krill operates during the summer when it overlaps with the foraging grounds of krill-eating predators, particularly land-based predators that are constrained to return to land to provision their offspring.

The fishery for Antarctic krill is managed by the Commission for the Conservation of Antarctic Marine Living Resources. CCAMLR's management of krill currently comprises a set of arbitrary decision rules, based on historical fishing levels and operations. These are recognised as being inadequate for managing a fishery that potentially competes with a very broad guild of krill-dependent predators (penguins, other seabirds, seals and whales, as well as fish and squid). Failure to implement scientific evidence-based measures stems for a high degree of historical mistrust between fishing nations and conservation-minded nations, as well as from the fact that the Antarctic marine ecosystem is highly variable and more complex that generally accepted. Our proposal was designed to help in the formulation of a more scientifically robust management framework by clearly delimiting penguin resource requirements. It will also contribute to specific spatial protection measures around important seabird feeding locations.

There are over 500 sites where krill-eating penguins breed in the west Antarctic Peninsula region and South Orkney Island region. However, only a very few sites have been used to collect penguin tracking information. Therefore, we set out to undertake a comprehensive analyses of penguin movement behaviour and habitat utilisation, centred on mainland and island breeding colonies throughout the southern Scotia Sea. Once developed, our models should be capable of being parameterised for other species for which tracking data are available, for example other penguin species or indeed seals. Specifically, we set out to:

i. Develop a suite of habitat preference models for krill-dependent chinstrap penguins (the major avian consumers of krill). We set out to build computer models to best represent how the species utilizes available habitat. The models were based on part of an existing multi-colony tracking dataset, and incorporated multiple environmental and physical data layers such as sea surface

temperatures, bathymetry, primary productivity, sea level anomalies, eddy kinetic energy and sea ice extent as well as available proxies for prey availability (physical hydrography and associated krill abundance).

ii. Validate each model using part of the tracking dataset across the range of colonies for which they were developed, to assess how habitat variability between colonies impacts predictive power. Specifically, we aimed to identify which physical and environmental characteristics are most likely to lead to models with the highest level of predictive success, and which characteristics may be the best predictors for penguin distribution in variable environmental settings across different colonies.

iii. Test the predictive function of the most appropriate models at a suite of penguin breeding colonies in the region for which coarse resolution Argos telemetry data (platform terminal transmitters, PTT) were available. The most appropriate models should be the ones that perform best in terms of the match between tracking data and predicted penguin distribution, based on the key environmental characteristics of the colony identified above.

iv. Contingent on the validation steps outlined above, we applied the most appropriate models to key breeding colonies for which no telemetry data are available, in order to generate predictive maps of habitat suitability and preference for these locations.

The project provides testable hypotheses that will guide future research, namely to validate predicted important at-sea habitat at as-yet unstudied penguin colonies. Additionally, long-term management of krill fisheries will benefit from quantitative information on key penguin habitat; this is particularly relevant to the krill fishery in terms of current fishing levels and future potential expansion.

We also estimated krill intake for penguins during different phases of their lifecycles (including post-breeding). We linked with existing work being undertaken by BirdLife International and ERA to consider other seabird species and species-specific foraging ranges and habitat preferences. This allow us to generate resource demand estimates for seabirds. This information can then be used to inform fisheries management, as well as the development of spatial protection measures, particularly during critical periods of different seabird life cycles.

This project delivers against many of the priority issues identified within the Darwin Plus guidance notes. This is because our project was designed to help build sustainable fisheries in an area that is known to be warming more rapidly than the global ocean as a whole. For much of the twentieth century the climate of the west Antarctic Peninsula region has warmed at an unprecedented rate. This has been particularly rapid in recent decades with the warming ascribed to changes in atmospheric circulation over the Southern Ocean. These conditions have now resulted in significant trends in seasonal sea ice with a later autumn advance (+1.9±0.5 days year-1) and an earlier spring retreat (-1.2±0.4 days year-1), such that the winter duration of sea ice is -3.1±0.10 days year-1 shorter over the period 1979/80 to 2010/11. This is important because sea ice is a critical habitat for parts of the krill life cycle.

Reduced sea ice is also critical as it potentially facilitates new harvesting strategies for the krill fishery. A series of years in the early part of this century with longer ice free conditions in the Bransfield Strait probably contributed towards the development of a new harvesting strategy, leading krill fishing vessels to explore within the Bransfield Strait. Once established, this new spatial pattern of harvesting persisted and is now the dominant strategy. Overall, it appears that the observed seasonal change in sea ice duration has probably facilitated change and variability in krill fishing locations.

As krill fishing locations have changed, the cumulative number of penguin colonies where competitive interactions potentially might occur has also increased. Competitive interactions may occur at any time, but are most likely when individuals are highly constrained. During brood and crèche, Adélie, chinstrap and macaroni penguins in Area 48 usually forage within 50 to 100 km of their colonies, while gentoos generally feed closer inshore within 20 km. Thus, spatial overlap potentially occurs at almost all colonies but harvesting impacts are not

quantified. Managing competitive interactions will be vital as Adélie and chinstrap penguin populations are declining across the Antarctic Peninsula and South Orkney Islands.

Harvesting impacts are generally unknown as the majority of penguin breeding colonies are not monitored. It is therefore crucial that CCAMLR determine where and when penguins and other krill predators feed and determine the biomass of krill needed. This proposal builds on previous work undertaken by the same group of researchers. It will link penguin telemetry data with penguin colony location data to produce relevant management information through a series of spatially and temporally resolved computer models.

Developing the necessary scientific understanding and providing ecosystem-based initiatives to ensure the Antarctic krill fishery is sustainably managed, is critical. The krill fishery currently operates in the Antarctic Peninsula and Scotia Sea region, so falls within two UKOTs (GSGSSI and GBAT). Thus, to improve the conservation, protection and management of the marine environment in these UKOTs requires that CCAMLR use the best available scientific evidence to develop innovative solutions to protect krill and its predators.

2 Project Stakeholders/Partners

In addition to GBAT and GSGSSI, the major stakeholders for the krill fishery are CCAMLR, Civil Society and the fishery itself. We have engaged with all stakeholders as part of the project.

i. We have kept two UKOTs (GSGSSI and GBAT) involved and informed of project progress to such an extent that they were willing to support our project proposal to Round 9 of Darwin Plus. We were successful in being awarded a follow on grant (DPLUS072 - Developing the risk assessment for the Antarctic krill fishery). This new project proposal has not only gained support from GSGSSI and GBAT, but from multiple scientists also involved with CCAMLR and the krill fishery, they having agreed to provide data and expertise for DPLUS072.

ii. We presented numerous papers to various CCAMLR meetings which resulted in major uptake of our ideas and concepts. Indeed, other CCAMLR Members subsequently presented papers on a Domain 1 (the southern Scotia Arc) Marine Protected Area preliminary proposal highlight priority areas for conservation. Many of the priority areas are exactly those identified by our penguin habitat models. This is an important scientific contribution stemming from Darwin Plus.

iii. We engaged with different parts of Civil Society, as well as with the Pew Charitable Trusts, BirdLife and the Antarctic Southern Ocean Coalition. Following this engagement BirdLife developed papers that considered our ideas and concepts and identified new methods for identifying marine Important Bird Areas. This is also an important scientific contribution stemming from Darwin Plus.

iv. Following discussions about our work at CCAMLR, we engaged with the Association of Responsible Krill Harvesting Companies (ARK) to explore options for voluntary actions in order to help ensure the fishery is sustainable at a range of spatial and temporal scales. These discussion will hopefully lead to voluntary action by ARK.

3 Project Achievements

3.1 Outputs

The number of outputs from the project has met the original expectations; all the CCAMLR papers are attached as annexes to this report. These all focused on the proposed plan of work and the anticipated deliverables. Some of the papers submitted to CCAMLR are under revision so that they may be submitted to peer-reviewed scientific journals. At present, five papers are in review, with more to follow. These papers demonstrate close working relationships between scientists from major krill-fishing CCAMLR Members and from CCAMLR Members that do not fish for krill, as well as with scientists from NGO groups.

The papers from this Darin Plus project have collectively moved the discussion within CCAMLR, so that ideas and concepts developed through this project are now at the forefront of debate in CCAMLR, both in terms of management of the krill fishery and marine spatial planning.

Below we list the expected outputs from the project, followed by those actually delivered and discussed at CCAMLR meetings and the South Georgia & South Sandwich Islands MPA review.

Expected outputs detailed in the original project proposal
1. Calculation of the biomass of Antarctic krill and other prey species consumed by different krill-dependent penguin species during different phases of their annual cycle.
2. Model collated penguin tracking data to determine the preferred foraging sites and moulting locations.
3. Determination of spatial and temporal scales appropriate to manage the Antarctic krill fishery by CCAMLR. Input to processes for designating appropriate protection measures within BAT in relation to the krill fishery. Determine the need for new Antarctic Specially Managed Areas or new Antarctic Specially Protected Areas within BAT through the CEP, part of the Antarctic Treaty.
4. Contribute to the review in 2018 of the SGSSI MPA.

Papers submitted to the CCAMLR Working Group on Ecosystem Monitoring and Management			
Paper reference	Paper title and authors	Agenda item	Project output
WG-EMM-16/16	Start date of the CCAMLR fishing season for Antarctic krill P. Trathan and S. Hill	2.1	3
WG-EMM-16/17	Spatial aggregation of harvesting in Subarea 48.1, in particular during the summer and close to the coast P. Trathan and S. Hill	2.7.1	3
WG-EMM-16/18	Possible options for the future management of the Antarctic krill fishery in Subarea 48.2 P. Trathan, O.R. Godø and S. Hill	2.7.3	3
WG-EMM-16/21	Is current management of the Antarctic krill fishery in the Atlantic sector of the Southern Ocean precautionary? S. Hill, A. Atkinson, C. Darby, S. Fielding, B. Krafft, O.R. Godø, G. Skaret, P. Trathan and J. Watkins	2.7.1	3
WG-EMM-16/37	A bioenergetics model assessment of the prey consumption of macaroni penguins in Subarea 48.3 P.N. Trathan, L. Emmerson, C. Southwell and C. Waluda	2.4.2	1
WG-EMM-17/32	A bioenergetics model assessment of the prey consumption of Adélie penguins in Subarea 48.1 and 48.2 C. M. Waluda, L. Emmerson, C. Southwell and P.N. Trathan	3.2	1
WG-EMM-17/33	Using preferred habitat models for chinstrap	3.2	2

	penguins (*Pygoscelis antarctica*) to help improve krill fisheries management during the penguin breeding season V. Warwick-Evans, N. Ratcliffe, H.L. Clewlow, L. Ireland, A. Lowther, F. Manco and P.N. Trathan		
WG-EMM-17/34	Characterising the preferred at-sea habitats used by chinstrap penguins and the fishery for Antarctic krill: slow-flowing, nearshore waters over shallow bathymetry P.N. Trathan, V. Warwick-Evans, J. Hinke, E.F. Young, A.P.B. Carneiro, M.P. Dias, K. Kovacs, O.R. Godø and M. Santos	3.2,4.2	2
WG-EMM-17/35	Identification of marine Important Bird and Biodiversity Areas for penguins in South Shetland and South Orkney Islands: a comparison of two different approaches M.P. Dias, A.P.B. Carneiro, V. Warwick-Evans, C. Harris, K. Lorenz, P. Trathan	3.2,4.2	2

Papers submitted to the CCAMLR Scientific Committee			
Paper reference	Paper title and delegation	Agenda item	Project output
SC-CAMLR-XXXV/11	Precautionary management of the Antarctic krill fishery at small spatial scales in the context of regional climate variability: is no data the same as no impact? Delegation of the United Kingdom	3.1	3
SC-CAMLR-XXXV/BG/14	Precautionary management of the Antarctic krill fishery at small spatial scales in the context of regional climate variability: pros and cons of coastal buffers, closed areas and move-on rules Delegation of the United Kingdom	3.1	3
SC-CAMLR-XXXVI/09	Developing an experimental approach to help resolve the relative roles of predation and flux on krill distribution and improve the assessment of potential fisheries impacts on predators Delegation of the United Kingdom	3.1	3

Papers submitted to the South Georgia MPA Review			
Paper reference	Paper title and delegation	Agenda item	Project output
Summary of recent (2013-2017) and planned research and monitoring	South Georgia & South Sandwich Islands MPA Review: Susie Grant, Marta Söffker, Chris Darby, Georgia Robson, Sophie Farenden, Ainsley Riley, Helen Peat, Karin Olsson, Tim Earl, Phil Trathan British Antarctic Survey (BAS); Centre for Environment, Fisheries and Aquaculture Science (Cefas)	3.1	4

Below we list the intended indicators of success for the project. Models were developed, papers were submitted to CCAMLR and now peer-reviewed papers are in review or under development.

Indicators of success listed in the original project proposal
1. Working papers will be submitted via the UK Delegation to CCAMLR to the next relevant meetings of WG-EMM, with later submission to selected peer-reviewed journals.
2. Candidate sites will be identified from each tracking dataset. The number and extent of these will be moderated by reference to behavioural signals present in the data. All tracking data and covariate environmental data will be used to extrapolate to colonies without any tracking data. Working papers will be submitted via the UK Delegation to CCAMLR to the next relevant meetings of WG-EMM, with later submission to selected peer-reviewed journals.
3. Spatial foraging models will be integrated with models of prey consumption to identify core feeding areas, for input into the CCAMLR krill fishery management process. Working papers will be submitted via the UK Delegation to CCAMLR to the next relevant meetings of WG-EMM, with later submission to selected peer-reviewed journals.

3.2 Outcome

Project outcome statement in original proposal
Use existing Antarctic krill-dependent penguin colony data and collated penguin tracking data to identify foraging locations to define candidate protection zones especially for krill fishing areas in the Scotia Sea.

The project has significantly changed the dialogue within CCAMLR, and as such has achieved much of what it set out to do. The candidate protection zones identified by our models are near shore coastal areas. These areas are now a constituent part of the outline proposal for creating MPAs in the southern Scotia Arc. This is evident in the CCAMLR Scientific Committee Report and the Commission Report from 2017 (paragraphs 5.63 to 5.65):

5.63 The Commission noted the consideration by the Scientific Committee (SC-CAMLR-XXXVI, paragraphs 5.19 to 5.38) of a preliminary proposal to establish a D1MPA [Domain 1 (southern Scotia Arc) Marine Protected Area], *including the process of developing this preliminary proposal, noting its objectives, priorities, development methods and preliminary boundaries.*

5.64 The Commission recognised that in respect of the development of the D1MPA (SC-CAMLR-XXXVI, paragraph 5.27): (i) the proposal was developed in an inclusive and transparent manner (ii) the scientific background for the proposal was comprehensive and appropriate (iii) the 'Priority Areas for Conservation' (PACs) identified from Marxan analyses undertaken by the proponents were justified by data and appropriate (iv) in the context of climate change, it is important to have PACs along the latitudinal gradient with a duplication of ecoregional features between them integrating the different environmental gradients (v) further consideration of fishing activities (e.g. either by applying a cost layer in Marxan sharing the experiences with other users (SC-CAMLR-XXXVI, Annex 6, paragraph 5.12); or by evaluating the potential displacement of fishing effort; or by identifying areas where displaced fishing activities might otherwise occur) (SC-CAMLR-XXXVI, Annex 6, paragraph 4.8) is needed to develop an agreed set of boundaries (vi) further consultation with industry experts and non-governmental organisation (NGO) representatives would likely improve the proposal.

5.65 The Commission noted that issues relevant to the D1MPA proposal requiring additional consideration include (SC-CAMLR-XXXVI, paragraph 5.29): (i) rationalising the size of the proposed MPA with achievement of its specific conservation objectives and Members' other interests such as fishing (ii) estimating the contemporary distribution and biomass of krill

throughout Planning Domain 1 (iii) providing additional evidence that the proposed MPA can mitigate the effects of climate change or that the proposed MPA includes reference areas that are useful to study such effects (iv) providing additional evidence that the proposed MPA could decrease the risks of krill fishing having a negative impact on the ecosystem (v) considering further data layers and conservation targets related to fishes (vi) developing priorities for an RMP to accompany the proposed MPA.

The only science tabled to CCAMLR with regard to coastal closed no-take buffers has been from this project through the UK CCAMLR Delegation.

3.3 Long-term strategic outcome(s)

CCAMLR has endorsed the use of a risk assessment framework to assess and provide advice on risks associated with the spatial distribution of catches. The risk assessment framework integrates spatial data relating to krill stocks, predator foraging and fisheries in order to compute the relative spatial and temporal risks associated with proposals to subdivide the regional catch limits. The approach is a step towards establishing local catch limits, using a scientific basis for subdividing the interim catch limits in space, and potentially time, to spread risk across managed areas. Our follow on project (DPLUS072) addresses the development of a krill risk assessment framework.

4 Sustainability and Legacy

The only science tabled to CCAMLR with regard to coastal closed no-take buffers has been from this project through the UK CCAMLR Delegation. It is highly unlikely that the dialogue will change now, and coastal protection in areas used by land-based krill predators is central to discussions about marine spatial planning in the areas used by the krill fishery.

The project staff and resources will be used in our follow on project (DPLUS072) which addresses the development of a krill risk assessment framework.

5 Lessons learned

The science supporting proposals that nearshore areas for krill-eating penguins should be candidate protection zones or priority areas for conservation, has come from this project and has been channelled through the UK Delegation to CCAMLR. The dialogue resulting from this science has changed mind sets within CCAMLR such that nearshore candidate protection zones are now a key part of the debate with regards to managing the krill fishery.

The key message to other UKOTs and to others doing similar projects, is that scientific credibility is key, especially in the policy domain. Developing the science can take a long time, but if realistic policy options are to be taken forward, then it is vital to develop the underpinning science. It is very gratifying that other CCAMLR Members have seen the value of our work and included the concepts in their preliminary proposal to establish a D1MPA [Domain 1 (southern Scotia Arc) Marine Protected Area.

Spending time with stakeholders is also key. It is therefore gratifying that BirdLife International has also seen the value of the work and is developing new ways to identify Important Bird and Biodiversity Areas.

Finally, through outreach seminars in the Falklands, scientists working on marine spatial planning for that UKOT have also understood the value of our work and are already applying our methods (ideas and computer code) to a marine system outside of the Antarctic.

5.1 Monitoring and evaluation

Monitoring and evaluation of our work was key to the success of this project. International peer review of our ideas, concepts and outputs occurred as we introduced our work to CCAMLR.

The format of CCAMLR meetings means that this peer-review is very thorough and in depth. This review has enabled us to have confidence in our work, including in the take-up of the ideas as part of the current preliminary proposal to establish a D1MPA [Domain 1 (southern Scotia Arc) Marine Protected Area.

5.2 Actions taken in response to annual report reviews

We have taken action on all recommendations

6 Darwin Identity

We have included acknowledgement to Darwin Plus in all our manuscripts submitted for peer-review. In addition the PI has given a number of invited talks and seminars where the Darwin Plus logo was prominently displayed.

7 Finance and administration

7.1 Project expenditure

Project spend (indicative) since last annual report	2017/18 Grant (£)	2017/18 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs				
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items				
Others				
TOTAL				

Staff employed (Name and position)	Cost (£)
Dr Phil Trathan (BAS Head of Conservation Biology)	
Claire Waluda (BAS)	
Bird Life – Consultancy costs	
TOTAL	

Consultancy – description of breakdown of costs	Other items – cost (£)
Bird Life – Consultancy costs (included as staff costs)	

TOTAL	

Capital items – description	Capital items – cost (£)
TOTAL	0.00

Other items – description	Other items – cost (£)
TOTAL	0.00

7.2 Additional funds or in-kind contributions secured

Source of funding for project lifetime	Total (£)
BAS Research Support Costs (2016-2017)	
BAS Research Support Costs (2017-2018)	
BAS (matched funding if D+ proposal funded) (2016-2017)	
BAS (matched funding if D+ proposal funded) (2017-2018)	
ERA (matched funding if D+ proposal funded) (2016-2017)	
ERA (matched funding if D+ proposal funded) (2017-2018)	
TOTAL	

Source of funding for additional work after project lifetime	Total (£)
Darwin Plus (DPLUS072) (2018-2021)	
BAS Research Support Costs (2018-2021)	
TOTAL	

7.3 Value for Money

We believe that the outputs for this project represent value for money, given the value of the natural capital present in BAT and SGSSI. Both UKOTs hold outstanding biodiversity, so

protecting them in the context of an international environmental agreement is of high priority. Our project supports UK and UKOT objectives in the Southern Ocean, which include conservation and protection of marine ecosystems.

Contributing to the development of MPAs in the Antarctic is a key objective of the UK CCAMLR Delegation.

Annex 1

Project's original (or most recently approved) logframe (project has no logframe).

Annex 2

Report of progress and achievements against final project logframe for the life of the project (project has no logframe).

Annex 3 Standard Measures

Code	Description	Totals (plus additional detail as required)
Training Measures		
1	Number of (i) students from the UKOTs; and (ii) other students to receive training (including PhD, masters and other training and receiving a qualification or certificate)	0 BAT and SGSSI have no population
2	Number of (i) people in UKOTs; and (ii) other people receiving other forms of long-term (>1yr) training not leading to formal qualification	0 BAT and SGSSI have no population
3a	Number of (i) people in UKOTs; and (ii) other people receiving other forms of short-term education/training (i.e. not categories 1-5 above)	0 BAT and SGSSI have no population
3b	Number of training weeks (i) in UKOTs; (ii) outside UKOTs not leading to formal qualification	0 BAT and SGSSI have no population
4	Number of types of training materials produced. Were these materials made available for use by UKOTs?	0 BAT and SGSSI have no population
5	Number of UKOT citizens who have increased capacity to manage natural resources as a result of the project	0 BAT and SGSSI have no population
Research Measures		
9	Number of species/habitat management plans/ strategies (or action plans) produced for/by Governments, public authorities or other implementing agencies in the UKOTs	0
10	Number of formal documents produced to assist work in UKOTs related to species identification, classification and recording.	0
11a	Number of papers published or accepted for publication in peer reviewed journals written by (i) UKOT authors; and (ii) other authors	(i) 0 (ii) 3, 3 others in submission
11b	Number of papers published or accepted for publication elsewhere written by (i) UKOT authors; and (ii) other authors	(i) 0 (ii) See attached CCAMLR papers
12b	Number of computer-based databases enhanced (containing species/genetic information). Were these databases made available for use by UKOTs?	www.seabirdtracking.org/
13a	Number of species reference collections established. Were these collections handed over to UKOTs?	0
13b	Number of species reference collections enhanced. Were these collections handed over	0

Code	Description	Totals (plus additional detail as required)
	to UKOTs?	
Dissemination Measures		
14a	Number of conferences/seminars/workshops/stakeholder meetings organised to present/disseminate findings from UKOT's Darwin project work	2
14b	Number of conferences/seminars/ workshops/stakeholder meetings attended at which findings from the Darwin Plus project work will be presented/ disseminated	2
Physical Measures		
20	Estimated value (£s) of physical assets handed over to UKOT(s)	0
21	Number of permanent educational/training/research facilities or organisation established in UKOTs	0
22	Number of permanent field plots established in UKOTs	0
23	Value of resources raised from other sources (e.g., in addition to Darwin funding) for project work	

Annex 4 Publications

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Nationality of lead author	Nationality of institution of lead author	Gender of lead author	Publishers (name, city)	Available from (e.g. weblink, contact address, annex etc)
See list of CCAMLR papers in section 3.1.						All CCAMLR papers are attached to this report.

Annex 5 Darwin Contacts

Ref No	DPLUS054
Project Title	Managing Antarctic krill fisheries: identifying candidate marine areas for protection
Project Leader Details	
Name	Philip Trathan, Head of Conservation Biology, BAS
Role within Darwin Project	Project Leader
Address	
Phone	
Fax/Skype	
Email	
Partner 1	
Name	Maria Dias
Organisation	BirdLife International
Role within Darwin Project	Scientist, Senior Marine Officer
Address	
Fax/Skype	
Email	
Partner 2	
Name	Colin Harris
Organisation	Environmental Research & Assessment
Role within Darwin Project	Scientist, Environmental consultant
Address	
Fax/Skype	
Email	

Annex 6 Supplementary material (optional but encouraged as evidence of project achievement)

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.	No
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.	Yes
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.	Yes
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.	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.	