Applicant: **Collins, Martin**
Organisation: **British Antarctic Survey**
Funding Sought: **£469,653.00**

DPR9S2\1009

Resolving ecosystem effects of the South Georgia winter krill fishery

Competition between fisheries and predators is a global conservation issue and mitigating this requires an ecosystem approach to fisheries management. The South Georgia krill fishery is restricted to winter, but information about krill stock dynamics and predator foraging during winter are sparse. This project addresses this gap by: (i) quantifying the abundance and distribution of krill and (ii) assessing predator distribution - during the winter in the fishery area. The project outcomes will enable ecosystem-based management of the krill fishery.

PRIMARY APPLICANT DETAILS

Title	Prof
Name	Martin
Surname	Collins
Organisation	British Antarctic Survey
Tel (Work)	[redacted]
Email (Work)	[redacted]
Address	[redacted]

CONTACT DETAILS

Title	Dr
Name	Sophie
Surname	Fielding
Organisation	British Antarctic Survey
Tel (Work)	[redacted]
Email	[redacted]
Address	[redacted]

CONTACT DETAILS

Title	Dr
Name	Norman
Surname	Ratcliffe
Organisation	British Antarctic Survey
Tel (Work)	[redacted]
Email (Work)	[redacted]
Address	[redacted]

CONTACT DETAILS

Title	Dr
Name	Jeniffer
Surname	Jackson
Organisation	British Antarctic Survey
Tel (Work)	[redacted]
Email (Work)	[redacted]
Address	[redacted]

GMS ORGANISATION

Type	Organisation
Name	British Antarctic Survey
Phone (Work)	[redacted]
Email (Work)	[redacted]
Address	[redacted]

Section 2 - Title, Dates & Budget Summary

Q3a. Project title

Resolving ecosystem effects of the South Georgia winter krill fishery

Q3b. What was your Stage 1 reference number? e.g. DPR9S1\10008

DPR9S1\1041

Q4. UKOT(s)

Which eligible UK Overseas Territory(ies) will your project be working in?

☑ South Georgia and The South Sandwich Islands (SGSSI)

*** if you have indicated a territory group with an asterisk, please give detail on which territories you are working on here:**

No Response

Q4b. In addition to the UKOTs you have indicated, will your project directly benefit any other Territories or country(ies)?

⦿ No

Q5. Project dates

Start date:	End date:	Duration (e.g. 2 years, 3 months):
01 October 2021	31 March 2024	2 years, 6 months

Q6. Budget summary

Year:	2021/22	2022/23	2023/24	2024/25	Total request
Darwin funding request (Apr - Mar)	£74,020.00	£187,694.00	£207,939.00	£0.00	**£** 469,653.00

Q6a. Do you have proposed matched funding arrangements?

◉ Yes

What matched funding arrangements are proposed?

Matched funds will be provided by GSGSSI by way of time on the Pharos SG to undertake acoustic surveys and staff time to support the project. The UK Government Blue Belt Programme has agreed to fund the cost of acoustic equipment to be fitted to the Pharos SG. BAS (ALI-Science) will undertake summer krill surveys to compare with the winter data and provide matched funding through the provision of specialist staff time in Cambridge and at King Edward Point (KEP) to support the project. The Antarctic Research Trust will fund the satellite tags and satellite time for the gentoo penguin tagging.

Q6b. Proposed matched funding as % of total project cost (total cost is the Darwin request plus other funding required to run the project). [redacted]

Section 3 - Project Summary and Conventions

Q7. Summary of Project

Please provide a brief summary of your project, its aims, and the key activities you plan to undertake. Please note that if you are successful, this working may be used by Defra in communications e.g. as a short description of the project on GOV.UK.

Please write this summary for a non-technical audience.

Competition between fisheries and predators is a global conservation issue and mitigating this requires an

ecosystem approach to fisheries management. The South Georgia krill fishery is restricted to winter, but information about krill stock dynamics and predator foraging during winter are sparse. This project addresses this gap by: (i) quantifying the abundance and distribution of krill and (ii) assessing predator distribution - during the winter in the fishery area. The project outcomes will enable ecosystem-based management of the krill fishery.

Q8. Biodiversity Conventions, Treaties and Agreements

Please detail how your project will contribute to the aims of the agreement(s) your project is targeting. What key OT Government priorities and themes will it address? You should refer to Articles or Programmes of Work here. You should also consider local, territory specific agreements and action plans here.

This proposal contributes to the management of the SGSSI MPA, through developing a detailed understanding of the winter distribution of Antarctic krill, changes in krill abundance during the fishing season and the overlap of the fishery with krill-dependent predators. The work will be presented at CCAMLR and IWC to support the UK's leadership in natural resource management in the Southern Ocean. CCAMLR is developing a new approach to management of the krill fishery and the project outcomes will feed directly into that initiative.

South Georgia was recently designated an Important Marine Mammal Area and a Key Biodiversity Area and work on winter distribution of cetaceans, seabirds and fur seals will help establish important feeding areas for these species in South Georgia waters.

The project addresses Darwin Plus R9 priorities: increase the effectiveness of MPAs in pursuit of global targets; and implementation of National Biodiversity Action Plans (BAPs). This proposal addresses Objectives 1, 2, 3 and 5 of the SGSSI BAP. The project contributes to objectives under the UN SDG 14 (life below water).

Section 4 - Lead Organisation Summary

Q9. Lead organisation summary

Has your organisation been awarded a Darwin Initiative award before (for the purposes of this question, being a partner does not count)?

◉ Yes

If yes, please provide details of the most recent awards (up to 6 examples).

Reference No	Project Leader	Title
DPLUS109	Trathan	Initiating monitoring support for the SGSSI-MPA Research and Monitoring Plan
DPLUS072	Trathan	Developing the risk assessment framework for the Antarctic krill fishery

DPLUS069	Grant	Building data resources for managing the SGSSI Marine Protected Area
DPLUS054	Trathan	Managing Antarctic Krill Fisheries; identifying candidate marine areas for protection
DPLUS057	Jackson	Where are they now? Right whales in South Georgia waters
DPLUS120	Warwick-Evans	Spatial segregation and bycatch risk of seabirds at South Georgia

Have you provided the requested signed audited/independently examined accounts? If you select "yes" you will be able to upload these. Note that this is not required from Government Agencies.

◉ Yes

Please attach the requested signed audited/independently examined accounts.

UKRI Financial Statements 2019-2020
21/01/2021
15:27:04
pdf 556.74 KB

UKRI Financial Statements 2018-2019
21/01/2021
15:26:56
pdf 901.99 KB

Section 5 - Project Partners

Q10. Project Partners

Please list all the partners involved (including the Lead Organisation) and explain their roles and responsibilities in the project. Describe the extent of their involvement at all stages, including project development.

This section should illustrate the capacity of partners to be involved in the project. Please provide Letters of Support for the Lead Organisation and each partner or explain why this has not been included.

N.B: There is a file upload button at the bottom of this page for the upload of a cover letter (if applicable) and all letters of support.

Lead Organisation name:	British Antarctic Survey
Website address:	www.antarctica.ac.uk

Details (including roles and responsibilities and capacity to engage with the project):	British Antarctic Survey (BAS) is a component of the Natural Environment Research Council (NERC). NERC is part of UK Research and Innovation www.ukri.org. BAS delivers and enables world-leading interdisciplinary research in the Polar Regions. Its skilled science and support staff based in Cambridge, South Georgia, Antarctica and the Arctic, work together to deliver research that uses the Polar Regions to advance our understanding of Earth as a sustainable planet. Through its extensive logistic capability and know how BAS facilitates access for the British and international science community to the UK polar research operation. BAS will be responsible for overall project management and lead on scientific aspects of the project. BAS will field an experienced team including: Martin Collins (Project Leader, marine ecologist and ex-GSGSSI CEO), Sophie Fielding (acoustic analysis), Norman Ratcliffe (penguin ecologist), Jen Jackson (cetaceans), Phil Trathan (marine ecologist and CCAMLR links) and Eugene Murphy (Ecosystems Programme Leader). BAS will appoint a PDRA to undertake much of the data analysis and support the PL. The BAS team will be supported by consultants, Russell Leaper and Susannah Calderan, who are cetacean survey specialists.
Have you included a Letter of Support from this organisation?	⦿ Yes
Have you provided a cover letter to address your Stage 1 feedback?	⦿ Yes

Do you have partners involved in the Project?

⦿ Yes

1. Partner Name:	Government of South Georgia & the South Sandwich Islands
Website address:	www.gov.gs

Details (including roles and responsibilities and capacity to engage with the project):	The Government of South Georgia & South Sandwich Islands (GSGSSI) are based in Stanley, Falkland Islands, where they report to the Commissioner (who is also the Governor of the Falklands). GSGSSI has a small team mostly based in Stanley, but with some staff working remotely from the UK. GSGSSI are responsible for the management of the Territory. GSGSSI (Mark Belchier, Director of Fisheries & Steve Brown, Director of Operations) will be responsible for the fit of acoustic kit to the Pharos SG and timing/logistics of surveys. GSGSSI (Mark Belchier & Sue Gregory) will also play a key role in helping co-ordinate stakeholder engagement and lead on revisions to the krill fishery management plan and MPA plan.
Have you included a Letter of Support from this organisation?	⦿ Yes

Do you have more than one partner involved in the Project?

⦿ Yes

2. Partner Name:	Antarctic Research Trust
Website address:	www.antarctic-research.de
Details (including roles and responsibilities and capacity to engage with the project):	The Antarctic Research Trust (ART) is a Falklands-based charity that was founded in 1997. The ART's aim is to conduct and support scientific research on Antarctic and sub-Antarctic animals in order to provide baseline data for adequate conservation measures. Support includes assistance with travel, fieldwork equipment and fieldwork consumables. It does not include cover for salaries, indirect costs or project overheads.
Have you included a Letter of Support from this organisation?	⦿ Yes

3. Partner Name:	*No Response*
Website address:	*No Response*
Details (including roles and responsibilities and capacity to engage with the project):	*No Response*
Have you included a Letter of Support from this organisation?	◯ Yes ◯ No

4. Partner Name:	*No Response*
Website address:	*No Response*
Details (including roles and responsibilities and capacity to engage with the project):	*No Response*
Have you included a Letter of Support from this organisation?	◯ Yes ◯ No

5. Partner Name:	*No Response*
Website address:	*No Response*
Details (including roles and responsibilities and capacity to engage with the project):	*No Response*
Have you included a Letter of Support from this organisation?	◯ Yes ◯ No

6. Partner Name:	*No Response*
Website address:	*No Response*
Details (including roles and responsibilities and capacity to engage with the project):	*No Response*
Have you included a Letter of Support from this organisation?	◯ Yes ◯ No

If you require more space to enter details regarding Partners involved in the Project, please use the text field below.

No Response

Please provide a cover letter responding to feedback received at Stage 1 if applicable and a combined PDF of all Letters of Support.

Collins Proposal LoS
27/01/2021
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pdf 861.15 KB

Section 6 - Project Staff

Q11. Project Staff

Please identify the core staff on this project, their role and what % of their time they will be working on the project. Further information on who should be classified as core staff can be found in the guidance.

Please provide 1 page CVs for these staff, or a 1 page job description or Terms of Reference for roles yet to be filled. These should match the names and roles in the budget spreadsheet. If your team is larger than 12 people please review if they are core staff, or whether you can merge roles (e.g. 'admin and finance support') below, but provide a full table based on this template in the PDF of CVs you provide.

Name (First name, Surname)	Role	% time on project	1 page CV or job description attached?
Martin Collins	**Project Leader**	15	Checked
Sophie Fielding	Acoustics planning & analysis support	10	Checked
Phil Trathan	Integration & links to CCAMLR	3	Checked
Norman Ratcliffe	Penguin tracking & analysis	10	Checked

Do you require more fields?

◉ Yes

Name (First name, Surname)	Role	% time on project	1 page CV or job description attached?
Jennifer Jackson	Cetacean Lead	20	Checked
Eugene Murphy	Integration & links to BAS Ecosystems	3	Checked
Susannah Calderan	Cetacean observation & acoustics	5	Checked
Russell Leaper	Cetacean observation & acoustics	5	Checked
Mark Belchier	Krill management plan stakeholder engagegment	10	Checked
Steve Brown	Acoustic fit and Pharos planning	5	Checked

Sue Gregory	Krill fishery management & stakeholders	5	Checked
Klemens Putz	penguin tracking support	2	Checked

Please provide 1 page CVs (or job description if yet to be recruited) for the Project staff listed above as a combined PDF.

Ensure the file is named clearly, consistent with the named individual and role above.

Darwin Plus Collins all CVs
25/01/2021
20:28:33
pdf 2.34 MB

Have you attached all Project staff CVs?

Yes

Section 7 - Background & Methodology

Q12. Problems the project is trying to address

Please describe the problem your project is trying to address in terms of environment and climate issues in the UKOTs.

For example, what are the specific threats to the environment that the project will attempt to address? Why are they relevant, for whom? How did you identify these problems? How will your proposed project help?

Please cite the evidence you are using to support your assessment of the problem (references can be listed in your additional attached PDF document which can be uploaded at the bottom of the page).

Competition between fisheries and predators for food is a widespread conservation issue and key concern for management of the krill fishery in the Southern Ocean, where krill is the principal prey for many marine predators, including globally important populations of seabirds and marine mammals.

Under the provisions of the SGSSI Marine Protected Area (MPA), the South Georgia krill fishery is restricted to winter and not permitted within 30 km of the coast (No-Take Zone). These measures are designed to minimise overlap / competition between the fishery and krill-dependent predators. However, there remains the risk of overlap with species that do not disperse or fully disperse during winter (e.g. gentoo penguins, fur-seals) and the possibility that fishery catches could reduce the availability of krill during the following summer. Recent surveys have shown that baleen whales are now returning to South Georgia waters in significant numbers during summer and there is evidence that some remain for all or part of the winter. Preliminary evidence from moorings also suggests that the vertical distribution of krill may be different in winter, which may influence availability to both predators and the fishery.

Research on krill and krill-predators at South Georgia has primarily been conducted during the summer

and, whilst there is no evidence that the fishery significantly affects krill stocks or predator performance, krill harvests are increasing, with 2020 catches in South Georgia (>100,000 tonnes) the highest since 1991. CCAMLR has identified the need to obtain regular biomass estimates of krill at scales pertinent to the fishery and develop a risk assessment, based on predator demand, to inform spatial allocation of catch.

There is thus an urgent need to collect data on krill biomass and predator distribution during the winter in South Georgia waters, identifying if current MPA/CCAMLR measures adequately protect krill and its predators.

Q13. Methodology

Describe the methods and approach you will use to achieve your intended Outcome and Impact. Provide information on:

- **How you have analysed historical and existing initatives and are building on or taking work already done into account in project design. Please cite evidence where appropriate.**
- **The rationale for carrying out this work and a justification of your proposed methodology.**
- **How you will undertake the work (materials and methods).**
- **How you will manage the work (role and responsibilities, project management tools etc.)**

Please make sure you read the Guidance Notes **before answering this question.**

(This may be a repeat from Stage 1 but you may update or refine as necessary)

Krill surveys will be conducted from the Pharos SG in the main area of operation of the krill fishery (Fig. 1) and extend within 10 km of the island to include the MPA No-Take Zone. Each survey will comprise of at least four parallel transects, conducted in daylight, to coincide with the beginning, middle and end of the krill season (May, July & September). Winter surveys will be undertaken in Y2 and Y3 of the project, with comparative summer transects undertaken by BAS. The Pharos SG will be fitted with 38 kHz and 120 kHz transducers, the frequencies used to discriminate krill in standard acoustic methods. Echosounders will be calibrated by staff from the KEP station. Acoustic data will be analysed using Echoview software: vertical and horizontal distribution of krill schools will be analysed in relation to bathymetry and remote sensed environmental data. Krill length data will be obtained from either (i) observers in the fishery or (ii) towing an RMT net from the Pharos SG during hours of darkness.

Seabird and marine mammal observations will be undertaken using JNCC Seabirds at Sea methods during each survey, with a dedicated team of cetacean observers deployed during July surveys to collect high quality data on cetacean abundance and distribution.

Gentoo penguins will be tracked from sites close to BAS stations at KEP and Bird Island, with differing proximities to the krill fishing grounds. Six birds will be equipped with satellite tags after moult in April at both sites in each of two years (N=24). These will transmit locations throughout the winter providing high resolution habitat use data. Subsequent reproductive performance will be measured under existing monitoring programmes.

Krill density and distribution, estimated from acoustic surveys, will be used: (i) to estimate changes in krill abundance and distribution during the fishing season; and (ii) in models as a predictor of seabird/marine mammal abundance, and variability in gentoo penguin movement. The estimates of krill stocks available at varying depths will be compared with fisheries catches and estimates of predator consumption to assess

food availability and potential for competition. Baleen whale and seabird density patterns will be estimated using habitat modelling and compared (i) between years to assess inter-annual consistency in habitat use; (ii) with krill distribution and abundance, to identify krill distribution patterns associated with elevated predator densities; and (iii) with fishery areas, to establish the level of spatial overlap.

If necessary, please provide supporting documentation e.g. maps, diagrams, and references etc., as a PDF using the File Upload below.

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18/01/2021
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pdf 865.54 KB

Section 8 - Stakeholders and Beneficiaries

Q14. Project Stakeholders

Who are the stakeholders for this project and how have they been consulted (include local or host government support/engagement where relevant)? Briefly describe what support they will provide and how the project will engage with them.

The principal stakeholder is the GSGSSI, who are partners in this proposal and directly involved in the development of the application. GSGSSI will facilitate the fit of the acoustic equipment to the Pharos SG and make the Pharos SG available to the project at no cost. GSGSSI will also initiate and implement stakeholder consultations to consider the outcome of the project and develop a revision of the South Georgia Krill Fishery Management Plan.

Other important stakeholders include the Association of Responsible Krill Harvesting Companies (ARK), Aker Biomarine (fishing company), South Georgia Heritage Trust (SGHT), WWF and other NGOs with an interest in South Georgia. ARK are supportive of the proposal and will contribute to the stakeholder consultations. ARK vessels will also provide some supplementary acoustic data and krill catch and length-frequency data from the fishery will provide important context for the project. Letters of support have been provided by ARK, Aker Biomarine and WWF. The Antarctic Research Trust are partners on the proposal and will support penguin tagging aspects of the project.

SGHT are supportive of the proposal (see letter of support) and will contribute to stakeholder discussions and support outreach aspects of the project. The South Georgia Association will also be kept informed of progress with the project - the PL is editor of the SGA Newsletter.

Q15. Institutional Capacity

Describe the lead organisation's capacity (and that of partner organisations where relevant) to deliver the project.

BAS has a long history of ecological research at South Georgia and in the surrounding waters, through its research stations at Bird Island and King Edward Point and science on its research vessels. A key strength of BAS is its multi-disciplinary approach and access to a range of expertise from physical oceanography to ecology, to provide advice and support to project such as this. This proposal brings together a strong team, led by Martin Collins, who is an experienced marine ecologist and former Chief Executive / Director of Fisheries for GSGSSI. The project team also includes experise in acoustics (Sophie Fielding), penguins

(Norman Ratcliffe), cetaceans (Jen Jackson), with Phil Trathan and Eugene Murphy providing links to the BAS Ecosystems Programme and to CCAMLR. The cetacean work will be further supported by Susannah Calderan and Russell Leaper, who are experienced marine mammal observers and have worked extensively in South Georgia waters with Jackson & Collins.

GSGSSI manage South Georgia & South Sandwich Islands with a small team based in Stanley, Falklands. GSGSSI work closely with BAS and the Centre for Environment, Fisheries and Aquaculture Science, who provide advice on fisheries management, to support their management of the marine environment. The involvement of GSGSSI will facilitate an immediate pathway to policy impact.

Q16. Project beneficiaries

Who will your project benefit? You should consider the direct benefits as a result of your project as well as the broader indirect benefits which may come about as a result of your project achieving its Outputs and Outcome. The measurement of any benefits should be included in your project logframe.

The primary beneficiaries are GSGSSI, but the project will also benefit all those interested in ensuring the long-term sustainable management of the krill fishery and the conservation of South Georgia's iconic wildlife populations. In the short- to medium-term GSGSSI will benefit directly from the acquisition and fit of a scientific echsounder to the Pharos SG, which will facilitate acoustic krill surveys during and beyond the life of this project. In the long-term, GSGSSI will benefit from improved knowledge of krill and an ability to manage the krill fishery in a more dynamic and precautionary manner. The project will also enable GSGSSI to show leadership in its management of the krill fishery and broader marine environment.

CCAMLR, who have responsibility for the broader-scale management of the fishery, will benefit from improved data from the South Georgia area in developing their Risk Assessment and the development of tools and management measures that could be transferred to other areas.

IWC oversees international population assessments of whale recovery and to date completely lacks winter density data from the Southern Ocean for cetaceans. This integrated work on cetacean densities and krill abundance will be of direct relevance to the Ecosystem Modelling Working Group at IWC.

Section 9 - Gender and Change Expected

Q17. Gender (optional)

How is your project working to reduce inequality between persons of different gender? At the very least, you should be able to provide reassurance that your proposed work is not increasing inequality. Have you analysed the context in which you are working to see how gender and other aspects of social inclusion might interact with the work you are proposing?

BAS are committed to equality, diversity and inclusion see (https://www.bas.ac.uk/jobs/working-for-bas/our-cultural-values-equality-and-diversity/) and aims to embrace diversity in all its forms and provide staff with a sense of belonging regardless of their characteristics, culture, experience, education or economic background.

The project team includes three senior female scientists (Fielding, Jackson & Calderan) and BAS policies will ensure that there are equal opportunities during recruitment for the PDRA position.

Q18. Change expected

Detail the expected changed this work will deliver. You should identify what will change and who will benefit a) in short-term (i.e. during the life of the project) and b) in the long-term (after the project has ended). Please describe the changes for the environment and, where relevant, for people in the OTs, and how they are linked.

In the short-term (during and shortly after this project) we will:

1. Develop baseline estimates of krill density and distribution during winter, which will be made available to GSGSSI and CCAMLR to inform management.

2. Undertake at-sea observations of seabirds, fur seals and cetaceans, which will be used to estimate winter distribution of key species and estimate krill consumption.

3. Investigate relationships between predator movements/density, and the characteristics of the krill prey field. This will improve understanding of krill swarm characteristics predators prefer during winter and provide a baseline for further winter habitat use and abundance monitoring.

4. Quantify (i) the overlap of predators with the krill fishing grounds and the No-Take Zone and (ii) the proportions of winter krill stocks consumed by predators and harvested by the fishery. Assess whether krill fishing reduces krill availability to predators during or after the fishing season. This will improve understanding of the potential for krill fishing to compete with predators.

5. Integrate the information collected in a revised South Georgia Krill Fishery Management Plan. Although the krill fishery is limited to the winter months and at least 30 km from the island, there is still a risk that local depletions could impact krill-dependent predators. The fishery is expanding, with catches in 2020 the highest since 1991 and focused on a relatively small area to the north of the island (Fig. 1). This project will provide information needed to inform spatial management of the fishery in an ecosystem context. Achieving this would fulfill a long-term aspiration of GSGSSI and CCAMLR, demonstrating best practice for sustainable resource management within the SGSSI MPA.

In the long-term equipment fitted to Pharos SG will enable GSGSSI to continue annual monitoring of krill stocks and distribution across seasons and years to inform and underpin sustainable management.

Q19. Pathway to change

Please outline your project's expected pathway to change. This should be an overview of the overall project logic and outline how you expect your Outputs to contribute towards you overall Outcome, and, longer term, your expected Impact.

This project addresses key questions about the winter distribution of krill, krill predators and the potential impact of the fishery. This is timely, given the recent increase in krill fishery catches and return of baleen whales to South Georgia. The proposal combines a multi-disciplinary team of experienced researchers with policy makers in GSGSSI to ensure that results feed directly into management.

The results will be published in peer-reviewed scientific literature to ensure scientific credibility and raise awareness of the work in the scientific community. Management of the South Georgia krill fishery is the responsibility of CCAMLR and GSGSSI and papers will be presented to CCAMLR's Working Groups and contribute to CCAMLR's regional risk assessment process. Cetacean data will be presented to IWC's Scientific Committee.

Stakeholders will be regularly engaged during the project, including through a project initiation meeting,

6-monthly updates and a workshop towards the end of the project to share and discuss the results. Following stakeholder consultation, the project findings will be a key input to a revised SGSSI Krill Fishery Management Plan and contribute to the next MPA review in 2023.

The provision of a scientific echosounder on the SGSSI patrol vessel will facilitate long-term monitoring of krill.

Q20. Exit strategy

State how the project will reach a stable and sustainable end point, and explain how the outcomes will be sustained, either through a continuation of activities, funding and support from other sources or because the activities will be mainstreamed in to "business as usual". Where individuals receive advanced training, for example, what will happen should that individual leave?

In the short-term the project will help develop a new approach to the management of the krill fishery in South Georgia. That approach will be ecosystem-based and should be maintained well beyond the life of the project, given the fit of equipment to the Pharos SG. The surveys, to be undertaken as part of this project, will enable GSGSSI to set annual catch limits appropriate to the area of operation of the fishery that take account of local predator krill demand. The fitting of state of the art acoustic equipment to the Pharos SG (and transferable to future SGSSI vessels) will enable annual winter surveys of krill in the area occupied by the fishery once the project has ended and we will ensure appropriate staff (e.g. KEP science staff) are trained to operate the acoustic equipment and undertake at-sea predator observations.

Section 10 - Funding and Budget

Q21. Budget

Please complete the appropriate Excel spreadsheet, which provides the Budget for this application. Some of the questions earlier and below refer to the information in this spreadsheet. Note that there are different templates for projects requesting over and under £100,000 from the Darwin Plus budget.

- R9 D+ Budget form for projects under £100,000
- R9 D+ Budget form for projects over £100,000

Please refer to the Finance Guidance for Darwin/IWT **for more information.**

N.B: Please state all costs by financial year (1 April to 31 March) and in GBP. Darwin Plus cannot agree any increase in grants once awarded.

Budgets submitted in other currencies will not be accepted. Use current prices – and include anticipated inflation, as appropriate, up to 3% per annum. The Darwin Initiative cannot agree any increase in grants once awarded.

M. Collins_DP_1041_Budget v1.5 Final
01/02/2021
11:04:24
xlsx 69.72 KB

Q22. Funding

Q22a. Is this a new initiative or a development of existing work (funded through any source)?

⦿ New initiative

Please provide details:

This work is a new initiative to understand the the ecosystem impacts of the winter krill fishery.

Q22b. Are you aware of any other individuals/organisations/projects carrying out or applying for funding for similar work?

⦿ No

Q23. Co-financing

Are you proposing co-financing?

⦿ Yes

Q23a. Secured

Provide details of all funding successfully levered (and identified in the Budget) towards the costs of the project, including any income from other public bodies, private sponsorship, donations, trusts, fees or trading activity, as well as any your own organisation(s) will be committing.

(See Finance for Darwin/IWT **and** Guidance Notes**)**

Donor organisation	Amount	Currency code	Comments
British Antarctic Survey	[redacted]	GBP	Staff time and overhead costs.
GSGSSI	[redacted]	*No Response*	Staff time and provision of Pharos SG and passenger costs on board vessel.
Antarctic Research Trust	[redacted]	GBP	Costs of satellite tags for gentoo penguins and satellite transmission costs.

UK Govt. Blue Belt	[redacted]	GBP	Funding for the acoustic equipment for the Pharos.

Q23b. Unsecured

Provide details of any matched funding where an application has been submitted, or that you intend applying for during the course of the project. This could include matched funding from the private sector, charitable organisations or other public sector schemes. This should also include any additional funds required where a donor has not yet been identified.

Date applied for	Donor organisation	Amount	Currency code	Comments
No Response	*No Response*	0	*No Response*	*No Response*
No Response	*No Response*	0	*No Response*	*No Response*
No Response	*No Response*	0	*No Response*	*No Response*
No Response	*No Response*	0	*No Response*	*No Response*

Do you require more fields?

⦿ No

Section 11 - Finance

Q24. Financial Controls

Please demonstrate your capacity to manage the level of funds you are requesting. Who is responsible for managing the funds? What experience do they have? What arrangements are in place for auditing expenditure?

BAS/NERC will control finances through the fully audited UKRI Shared Business Services Centre (SBS). A separate budget cost centre will be created for the project. The Project Leader, Martin Collins, will manage the overall budget, with support from the BAS Finance Department. Collins has considerable experience of managing budgets at BAS and, previously as CEO with GSGSSI.

BAS/NERC also employs staff within a dedicated Finance Department. These staff will also monitor spend to ensure that the budget is managed appropriately, providing quarterly account statements, and additional statements on request. The Finance Department will liaise with Darwin Plus over Finance and Auditing. Funds have been requested in Y3 to cover the costs of audit. BAS finance have experience of managing and reporting on numerous Darwin Plus projects.

Q25. Financial Management Risk

This question considers the financial risks to the project. Explain how you have considered the risks and threats that may be relevant to the successful financial delivery of this project.This includes risks such as fraud or bribery, but may also include the risk of fluctuating foreign exchange and internal financial processes such as storage of financial data.

A large proportion of funds associated with this project will be for salaries and so will be controlled through the UKRI Shared Business Services Centre (SBS). The UKRI SBS system requires that all non-salary costs have associated receipts, again minimising the risk of fraud. Travel to and from South Georgia (via the Falklands) will be booked and invoices through the BAS /UKRI finance system.. All spend will follow established UKRI procedures to minimise any risk of fraud. GSGSSI accounts are subject to annual audit and expenditure associated with the project will be allocated a separate budget code. The costs of acoustic equipment will be met by UK Blue Belt Programme, with funds transferred to GSGSSI.

Q26. Balance of budget spend

Explain the thinking behind your budget in terms of where funds will be spent.What benefits will the Territory see from your budget? What level of the award to you expect will be spent locally? Please explain the decisions behind any funding that will not be spent locally and how those costs are important for the project.

A large portion of the budget is for staff time. As South Georgia has no permanent residents, it is not possible to use local staff, but we will utilize field staff already on the island to reduce some costs. We have worked closely with GSGSSI to develop the budget and significant funds will go to GSGSSI for fitting of the acoustic equipment to Pharos SG and fuel for the Pharos SG during survey periods.

Q27. Capital Items

If you plan to purchase capital items with Darwin Plus funding, please indicate what you anticipate will happen to the items following project end. If you are requesting more than 10% capital costs, please provide your justification here.

The acoustic equipment is the only capital in the project and is being match-funded by the UK Govt. BB Programme. The equipment will be a valuable asset for GSGSSI, enabling the Pharos SG and any vessel that succeeds the Pharos SG, to undertake acoustic surveys of krill or other marine resources.

Q28. Value for Money

Please describe why you consider your application to be good value for money including justification of why the measures you will adopt will secure value for money.

This is a relatively expensive Darwin Plus proposal but brings together a multi-disciplinary science team to support GSGSSI in addressing an increasingly urgent issue regarding the potential impacts of the krill fishery. It is expensive because it includes the fit of a state of the art acoustics system to the GSGSSI vessel and fuel costs to run winter surveys - the vessel will be provided in kind by GSGSSI. The cost of purchasing the acoustic equipment will now be met by the UK Blue Belt Programme (as matched funding), but the cost of installing on the vessel is included in our request. We have also reduced costs by partnering with the Antarctic Research Trust for the gentoo penguin tracking. BAS have a very strong scientific team and some of the staff costs will be contributed as matched funding. BAS have considerable experience of working in South Georgia, and staff travel will piggy back on existing logistics to ensure value for money. GSGSSI staff

will also contribute their time in-kind to support the project. By equipping and utilising the Pharos SG to undertake this work, we are able to save the considerable expense of chartering research vessels (and the costs of associated passage time) to undertake the surveys. In the long-term we consider that the acoustic equipment will prove to be a tremendous asset to GSGSSI on the Pharos SG and future South Georgia vessels in supporting sustainable management of the krill fishery.

Q29. Outputs of the project and Open Access

All outputs from Darwin Plus projects should be made available on-line and free to users whenever possible. Please outline how you will achieve this and detail any specific costs you are seeking from Darwin Plus to fund this.

All data derived from the project will be archived with the UKRI Polar Data Centre and made freely available to interested parties on request. Data will also be linked to the GSGSSI Data Portal, which was funded by a previous Darwin Plus grant. Information and data visualizations (e.g, penguin tracking) will be made available as soon as possible on BAS and partner websites.

Scientific outputs from the project will be published in open access and we have requested £5000 in the budget to cover this. BAS will cover additional publishing costs. Additional outputs will be disseminated through talks, presentations and web-sites.

Section 12 - Safeguarding

Q30. Safeguarding

Projects funded through Darwin Plus must fully protect vulnerable people all of the time, wherever they work. In order to provide assurance of this, projects are required to have appropriate safeguarding polices in place. Please confirm the lead organisation has the following policies in place and that these are available on request:

We have a safeguarding policy, which includes a statement of our commitment to safeguarding and a zero tolerance statement on bullying, harassment and sexual exploitation and abuse	Checked
We have attached a copy of our safeguarding policy to this application	Checked
We keep a detailed register of safeguarding issues raised and how they were dealt with	Checked
We have clear investigation and disciplinary procedures to use when allegations and complaints are made, and have clear processes in place for when a disclosure is made	Checked
We share our safeguarding policy with downstream partners	Checked
We have a whistle-blowing policy which protects whistle-blowers from reprisals and includes clear processes for dealing with concerns raised	Checked
We have a Code of Conduct in place for staff and volunteers that sets out clear expectations of behaviors - inside and outside of the work place - and make clear what will happen in the event of non-compliance or breach of these standards	Checked

Please outline how you will implement your policies in practice and ensure that downstream partners apply the same standards as the lead organisation.

UKRI (of which BAS is a component) has detailed policy and guidance on Safeguarding in International Development Research and this guidance will be shared with all partners at the outset of the project and included for discussion on the Agenda of project meetings.

Please upload the Lead Organisation's Safeguarding Policy as a PDF

- UKRI-050920-UKCDRSafeguardingInInternationalDevelopmentResearch
- 18/01/2021
- 15:21:29
- pdf 575.32 KB

Section 13 - Logical Framework

Q31. Logical Framework

Darwin Plus projects will be required to monitor (and report against) their progress towards their expected Outputs and Outcome. This section sets out the expected Outputs and Outcome of your project, how you expect to measure progress against these and how we can verify this.

- Stage 2 Logframe Template

Please complete your full logframe in the separate Word template and upload as a PDF using the file upload below. Copy your Impact, Outcome and Output statements and your activities below - these should be the same as in your uploaded logframe.

Please upload your logframe as a PDF document.

- Logframe 180121
- 27/01/2021
- 15:55:36
- pdf 37.44 KB

Impact:

Potential ecosystem impacts of the South Georgia krill-fishery are understood and mitigated through enhanced ecosystem-based fisheries management, ensuring the conservation and protection of South Georgia's iconic wildlife populations.

Outcome:

An understanding of the winter distribution of Antarctic krill and potential impacts of the krill fishery on dependent predators facilitates ecosystem-based management of the krill fishery.

Project Outputs

Output 1:

Long-term capability for winter pelagic ecosystem assessment enabled for South Georgia

Output 2:

Winter krill acoustic and predator surveys / tracking undertaken

Output 3:

Winter krill stock assessment in South Georgia fishery area for each of two years, including krill swarm characteristics

Output 4:

Winter predator abundance, distribution and tracking data analysed.

Output 5:

Stakeholder engagement and disseminated of results in scientific and popular literature and at international fora

Do you require more Output fields?

It is advised to have less than 6 Outputs since this level of detail can be provided at the Activity level.

⦿ Yes

Output 6:

Updates to SGSSI management plans and legislation

Output 7:

No Response

Output 8:

No Response

Activities

Each activity is numbered according to the Output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1.

1.1 Plans prepared for fit of acoustic transponders to Pharos SG (Oct-Dec 2021).
1.2 Transducers and associated electrical kit fitted to Pharos SG during dry-dock (Jan-Mar 2022).
1.3 Transducers tested in SG waters prior to krill season (Apr-May 2022).
1.4 GSGSSI Government Officers and KEP science team trained in operation of echosounders on Pharos SG (Apr-May 2022).
1.5 GSGSSI Government Officers and KEP science team trained in acoustic calibration methods generally and bespoke to Pharos SG.
1.6 Manual written for acoustics operation on Pharos SG.

2.1 Pharos SG echosounders calibrated in Cumberland Bay in advance of each season (May 2022; 2023).
2.2 Acoustic surveys conducted shortly before, during and at the end of the krill fishing season in Year 1 (May-Sep 2022) and Year 2 (May-Sep 2023).
2.3 At-sea observations of seabirds and marine mammals undertaken in association with each acoustic survey.
2.4 Cetacean surveys conducted on Pharos SG in association with each mid-season acoustic survey (Jul

2022 & Jul 2023).
2.5 Survey summary reports prepared after each survey and published on GSGSSI website.
2.6 Six gentoo penguins tracked from each of Bird Island and Maiviken during each winter (2022 & 2023) season (24 in total).

3.1 Acoustic data cleaned and processed using Echoview software after each year's surveys (Oct 2022 & Oct 2023).
3.2 Acoustic data (cleaned raw data & processed) lodged on GSGSSI Data Portal after each year's surveys (Dec 2022 & Dec 2023).
3.3 Acoustic data analysed to estimate winter biomass and swarm characteristics from each survey, linked to environmental parameters.
3.4 Papers prepared for CCAMLR WG-EMM and WG-ASAM and for peer review publication.

4.1 Data from tracked penguins relayed via the Argos satellite system and uploaded to BAS (in real time) and ART websites for track visualisation and data archived on the GSGSSI Data Portal.
4.2 Gentoo penguin data analysed in relation to krill abundance, swarm characteristics, operating area of fishery and MPA No-take Zones (2023/24).
4.3 Cetacean observation data archived on the GSGSSI Data Portal following each survey.
4.4 Cetacean distribution data analysed to provide (i) spatial habitat use patterns of krill-feeding baleen whales in South Georgia in winter; (ii) concordance with areas of high krill density; (iii) overlap with krill fishery; (iv) estimate of seasonal krill consumption by whales at South Georgia in winter.
4.5 Cetacean observations characterised in relation to krill swarms in order to identify any associations between swarm characteristics, and particular whale species.
4.6 At-sea seabird and fur seal data archived on the GSGSSI Data Portal.
4.7 Seabird / fur seal data analysed in relation to the distribution and abundance of krill and in relation to the activity of the krill fishery.
4.8 Papers prepared for annual meetings of CCAMLR ASAM & EMM Working Groups (2023 & 2024).

5.1 Stakeholder meeting at the outset of the project (Oct/Nov 2021) – likely over zoom to engage with all stakeholders and provide information about project and timelines.
5.2 Six-monthly updates circulated to stakeholders and published on BAS, GSGSSI & ART websites.
5.3 Articles prepared for general audience in publications such as the South Georgia Association Newsletter & UK Marine Biological Association Newsletter.
5.4 Papers prepared for CCAMLR and IWC Working Groups in 2023 and 2014.
5.5 Minimum of three papers submitted to peer review journal.
5.6 Stakeholder meeting towards the end of the project (Dec 2023) to disseminate and discuss the results and to consider management / policy applications.

6.1 Krill Fishery Management Plan reviewed and revised to take account of project results and stakeholder input (Mar 2024).
6.2 SGSSI MPA Management Plan and MPA Order reviewed and updated (if required) to take account of project results and stakeholder input.

Section 14 - Implementation Timetable

Q32. Provide a project implementation timetable that shows the key milestones in project activities

Provide a project implementation timetable that shows the key milestones in project activities. Complete the Excel spreadsheet template as appropriate to describe the intended workplan for your

project.

Implementation Timetable Template

Please add/remove columns to reflect the length of your project. For each activity (add/remove rows as appropriate) indicate the number of months it will last, and fill/shade only the quarters in which an activity will be carried out.

R9 DPlus Implementation Timetable FINAL_Collins
27/01/2021
16:17:23
pdf 85.89 KB

Section 15 - Monitoring and Evaluation

Q33. Monitoring and evaluation (M&E)

Describe, referring to the Indicators above, how the progress of the project will be monitored and evaluated, making reference to who is responsible for the project's M&E.

Darwin Initiative projects are expected to be adaptive and you should detail how the monitoring and evaluation will feed into the delivery of the project including its management. M&E is expected to be built into the project and not an 'add' on. It is as important to measure for negative impacts as it is for positive impact. Additionally, please indicate an approximate budget and level of effort (person days) to be spent on M&E (see Finance Guidance for Darwin/IWT**).**

A project Steering Committee will be established at the outset to include key staff from all project partners and will be chaired by PL Collins. The Steering Committee will meet monthly (using zoom for non-BAS partners) and assess progress against agreed project timelines and budget. Any issues will be identified and addressed. The agreed minutes from these meetings will be shared with all partners and archived. Any requests to make changes to timelines or budget will be raised with Darwin Plus / LTS as soon as such requirements may be apparent.

Six-monthly progress reports will be shared with all interested stakeholders and published on partner websites.

The PL Collins, will work closely with the BAS Finance Office to monitor spend and will report back to Steering Committee each month. BAS Finance Office will have overall control of budgets and spend and the project will be subject to external audit (funds allocated for this).

Reports to CCAMLR and IWC and papers submitted for publication will be subject to peer-review, to ensure an unbiased evaluation of the project.

The principal costs associated with M&E are staff time (project team and BAS Finance) and audit costs.

Total project budget for M&E in GBP (this may include Staff, Travel and Subsistence costs)	£[redacted]
Number of days planned for M&E	90.00
Percentage of total project budget set aside for M&E (%)	[redacted]

Section 16 - Certification

Certification

On behalf of the

company

of

British Antarctic Survey, a constituent part of the Natural Environment Research Council and UKRI

I apply for a grant of

£469,653.00

I certify that, to the best of our knowledge and belief, the statements made by us in this application are true and the information provided is correct. I am aware that this application form will form the basis of the project schedule should this application be successful.

(This form should be signed by an individual authorised by the applicant institution to submit applications and sign contracts on their behalf.)

- **I have enclosed CVs for project key project personnel, letters of support, budget and project implementation timetable (uploaded at appropriate points in application).**
- **Our last two sets of signed audited/independently verified accounts and annual report are also enclosed.**

Checked

Name	Martin Collins
Position in the organisation	Marine Ecologist / King Edward Point Science Manager
Signature (please upload e-signature)	Collins_signat 27/01/2021 11:34:40 jpg 104.38 KB
Date	01 February 2021

Section 17 - Submission Checklist

Checklist for submission

	Check
I have read the Guidance documents, including the "Guidance Notes for Applicants**" and "**Finance Guidance**".**	Checked
I have read, and can meet, the current Terms and Conditions **for this fund.**	Checked
I have provided actual start and end dates for this proposed project.	Checked
I have provided a budget based on UK government financial years i.e. 1 April – 31 March and in GBP.	Checked
I have checked that the budget is complete, correctly adds up and I have included the correct final total at the start of the application.	Checked
The application has been signed by a suitably authorised individual (clear electronic or scanned signatures are acceptable).	Checked
I have attached my completed logframe and timeline as a PDF using the templates provided.	Checked
I have included a 1 page CV or job description for all the Project staff identified at Question 11, including the Project Leader, or provided an explanation of why not.	Checked
I have included a letter of support from the Lead Organisation and main partner organisation(s) identified at Question 10, or an explanation of why not.	Checked
I have included a cover letter from the Lead Organisation, outlining how any feedback at Stage 1 has been addressed where relevant.	Checked
I have included a signed copy of the last 2 years annual report and accounts for the Lead Organisation, or provided an explanation if not.	Checked
I have checked the Darwin Plus website **immediately prior to submission to ensure there are no late updates.**	Checked
I have read and understood the Privacy Notice on GOV.UK**.**	Checked

We would like to keep in touch!

Please check this box if you would be happy for the lead applicant (Flexi-Grant Account Holder) and project leader (if different) to be added to our mailing list. Through our mailing list we share updates on upcoming and current application rounds under the Darwin Initiative, Darwin Plus and our sister grant scheme, the IWT Challenge Fund. We also provide occasional updates on other UK Government activities related to biodiversity conservation and share our quarterly project newsletter. You are free to unsubscribe at any time.

Checked

Data protection and use of personal data
Information supplied in this application form, including personal data, will be used by Defra as set out in the latest copy of the Privacy Notice for Darwin, Darwin Plus and the Illegal Wildlife Trade Challenge Fund available here. This Privacy Notice must be provided to all individuals whose personal data is supplied in the application form. Some information, but not personal data, may be used when publicising the Darwin Initiative including project details (usually title, lead organisation, location, and total grant value) on the GOV.UK and other websites.

Information relating to the project or its results may also be released on request, including under the 2004 Environmental Information Regulations and the Freedom of Information Act 2000. However, Defra will not permit any unwarranted breach of confidentiality nor will we act in contravention of our obligations under the General Data Protection Regulation (Regulation (EU) 2016/679).