

**DARWIN INITIATIVE FOR THE SURVIVAL OF SPECIES : APPLICATION FOR GRANT FOR ROUND 9 COMPETITION**

Please read the accompanying Guidance Note before completing this form. Give a full answer to each section; applications will be considered on the basis of information submitted on this form. Applicants are asked not to use the form supplied to cross refer to information in separate documents except where this is invited on the form. The space provided indicates the level of detail required but you may provide additional information on a separate sheet if necessary. Copies of this form are available on disk or by e-mail on request. You are asked also to complete the summary sheet attached at the end of this form. Although you may reproduce this sheet in a reasonable font, you should not expand it beyond an A4 sheet (leaving the allocated space for DETR comments to be made) as additional information will not be taken into account.

1. Name and address of organisation

Environmental Research Unit Ltd
---------------------------------

1. Principals in project

Details	Project leader	Other UK personnel (if working more than 50% on project)	Main project partner or co-ordinator in host country
Surname	Bingham	Mejias	
Forename(s)	Michael Charles	Elena	
Post held	Research Director	Field Assistant	
Institution (if different to the above)			Corporacion Nacional Forestal
Department	Seabird Research	Seabird Research	Wildlife Management Unit
Telephone			
Fax			
Email			

Please provide a one page CV for each of these named individuals.

1. Project title (not exceeding 10 words)

Establishment of penguin monitoring programme in Chile
--

1. Abstract of study (in no more than 750 characters)

<p>THE PROJECT AIMS TO ESTABLISH A PENGUIN MONITORING PROGRAM IN CHILE IN ORDER TO DETERMINE POPULATION TRENDS AND TO MONITOR IMPACTS FROM HUMAN ACTIVITIES SUCH AS FISHING AND TOURISM. THE RESULTS OF THE PROJECT WILL ENABLE COMPARISON WITH PENGUIN POPULATIONS IN THE FALKLAND ISLANDS WHICH HAVE UNDERGONE HUGE POPULATION DECLINES OVER RECENT YEARS. IT IS HOPED THAT COMPARISONS OF THESE TWO POPULATIONS (JUST 500KM APART) WILL HELP ESTABLISH THE CAUSES OF THE FALKLANDS DECLINE. THE PROJECT WILL RUN FOR THREE YEARS, AND AN ESSENTIAL PART OF THE PROJECT WILL BE TO TRAIN THE LOCAL PARK WARDENS SO THAT THEY CAN CONTINUE RUNNING THE PENGUIN MONITORING PROGRAMME AT THE END OF THE THREE YEAR PERIOD.</p>
---

1. Timing. Give the proposed starting date and duration of the project.

Start Date: April 2001    Duration: 3 years (ie. Until 2004)
--

1. Describe briefly the aims, activities and achievements of your organisation. (Please note that this should describe your unit, institute or department within a university.)

<p>Aims</p> <p>To gather information about wildlife resources, and to promote successful harmony between commercial activities and environmental protection.</p>
<p>Activities</p> <ul style="list-style-type: none"><li>- annual monitoring of seabird populations in the Falkland Islands.</li><li>- penguin research in the Falkland Islands and southern Chile</li><li>- running Falkland Islands baseline survey programme</li><li>- publish reference books on penguins, birds and marine mammals</li><li>- maintain a Falkland Islands Database and GIS</li><li>- provide education and promote wildlife protection</li><li>- provide a source of local expertise</li><li>- seek the support of government and commerce in environmental protection</li></ul>
<p>Achievements</p> <p>The Environmental Research Unit, based in the Falkland Islands, is the recognised authority on penguins of the region. We have recently published an authoritative reference book on the subject (Bingham 2000, <i>Penguins of the Falkland Islands &amp; South America</i>. ERU Publications), and our data on penguin populations is the only data of its kind for the region, being quoted in all authoritative works on world penguin populations (eg. <i>Penguin &amp; Conservation Management Plan</i> and <i>Scientific Committee on Antarctic Research</i>). Our census of southern rockhopper and macaroni penguins established world population totals for these species, and identified huge population declines in the Falkland Islands, which are not occurring in nearby South America (Bingham 1998 <i>Oryx</i> 32(3): 223-32)(Bingham &amp; Mejias 1999 <i>Scientia Marina</i>, Vol: 63, Supl. 1)</p> <p>We are the only Falklands organisation qualified in environmental baseline surveying and bird census techniques. The Environmental Research Unit has so far surveyed over 900 square km of land (900 grid squares of 1 km x 1 km) and over 500 km length of coastline. This equals more than 7% of the entire Falkland Islands, covering every single habitat type, coastline type and region. It represents the only quantitative population assessment of breeding birds ever undertaken in the Falklands, and the results are published in our <i>Field Guide to Birds of the Falkland Islands</i> (ERU Publications 1999).</p> <p>Following the 4th International Penguin Conference, the Environmental Research Unit was awarded the task of setting up an international body to draw together penguin biologists, conservation organisations and zoos, so that international attention can be drawn to conservation issues relating to penguins. This new body is entitled Penguin Conservation International, and the Environmental Research Unit was designated the responsibility of establishing the group and promoting its work.</p> <p>The Environmental Research Unit is the only organisation monitoring coastal birds across the region. We are also the only organisation that has maintained an environmental database and GIS for the region, although the Falkland Islands government is now in the process of putting one together.</p> <p>The Environmental Research Unit has promoted wildlife protection through the publication of books, scientific papers, newspaper articles, displays, conferences and over the Internet. Our web site was given an award as one of the best educational resources.</p>

1. Has your organisation received funding under the Initiative before? If so, please give details.

<p>No</p>
-----------

1. Which overseas institutions, if any, will be involved in the project? Please explain the responsibilities of these institutions.

<p>The Wildlife Management Unit of Corporacion Nacional Forestal (CONAF) will be involved in the project. They are owners and managers of Isla Magdalena, Chile's largest penguin breeding site, where the research will be conducted. The site is designated a National Wildlife Reserve because of the penguins, and there are two full-time park wardens who live on the island to protect the penguins. At present the park wardens guard the island and assist tourists who visit the island, but they do not conduct any penguin monitoring work because they do not have access to the necessary training and expertise. There are currently no penguin monitoring programs being conducted in Chile. In addition to conducting 3 years of research, our project aims to give the park wardens adequate training so that CONAF can continue the penguin monitoring program after our project has ended.</p>
--

## PROJECT DETAILS

9. Define the purpose (main objective) of the project in line with the logical framework.

To assist Chile, a country poor in resources, with the conservation of globally important penguin populations by

- conducting a thorough baseline survey of Isla Magdalena to catalogue breeding species
- establishing a locally run penguin monitoring programme in Chile to determine penguin population status
- determining the effects of tourism on one of Chile's most important penguin breeding sites.
- producing a management plan and educational material for the island based on data gathered
- training the host country to run the penguin monitoring programme on their own
- enabling access to alternative sources of funding by training local staff in seabird monitoring techniques
- helping Chile meet its obligations under international biodiversity agreements

10. Is this a new project or the continuation of an existing one?

A new project

11. What is the evidence for a demand or need for the work? How is the project related to conservation priorities in the host country(ies)? How would the project assist the host country with its obligations under the Biodiversity Convention?

How was the work identified?

Our ongoing studies of penguins in the Falkland Islands has revealed massive population declines. The two species hit hardest in the Falklands (southern rockhopper 85% decline, and Magellanic penguin 70% decline) both have world populations restricted to the Falkland Islands and South America. It is therefore important to determine whether populations in South America are also in decline.

Penguin studies have been carried out in Argentina over recent years, which show some evidence of decline. So far no population studies have been carried out in Chile, which holds the majority of the world population outside of the Falkland Islands. Chile is very concerned about the lack of work being done on penguin populations, but it is a poor country, with the majority of the population living below the poverty line. As such Chile has very little funding available for conservation work.

How is the project related to conservation priorities in the host country?

If a penguin monitoring programme could be established in Chile, it would provide data that would enable penguin populations to be effectively managed, especially where potentially fragile populations are subjected to additional pressures from fishing, pollution and tourism. This is the case on Isla Magdalena, one of Chile's most important penguin breeding sites. With a population of around 60,000 breeding pairs, Isla Magdalena has been designated a National Nature Reserve, but it is a popular tourist destination, and there is currently no work being done to evaluate the effects of this tourism. There is no management plan for the island. Our programme aims to address these issues, and has the full backing of CONAF, the local conservation organisation which owns and manages the island.

How will the project assist the host country meet its obligations under the Biodiversity Convention?

Chilean penguins are classified as Vulnerable under the current IUCN convention, and populations are known to be declining in the neighbouring Falkland Islands. With no data for population trends in Chile, and no research being conducted, it is impossible for Chile to meet its obligations under the Biodiversity Convention. This programme will help Chile to meet its obligations through assessment and monitoring (Article 7 of the Convention on Biological Diversity), in-situ conservation (Article 8), training (Article 12) and public education (Article 13)

12. In what ways can this project be considered a Darwin project? How does the project relate to the Darwin principles? How would the project be advertised as a Darwin project and in what ways would the Darwin name and logo be used?

Chile is most definitely a country which is rich in biodiversity but poor in resources. It holds about 50% of the entire world population of southern rockhopper and Magellanic penguins, and yet has no financial resources to study these populations. CONAF are keen to proceed with the establishment of a monitoring programme, and even have personnel available to participate, but they lack the financial resources and the expertise. Without outside funding the project cannot proceed.

Chile has no expertise in penguin research techniques, and this expertise will be provided by a British research organisation. The project will be a collaborative effort between Chile and Britain. CONAF have park wardens who already live on the island. The Environmental Research Unit will train these wardens in basic monitoring techniques, so that CONAF will be able to continue with the monitoring programme on a long-term basis. This training will combine written material with on-site practical tuition during the three years over which the programme will run.

The project will not only help determine and monitor the status of penguin populations in Chile, it will also enable CONAF to manage tourism on the island, by determining the effects of visitor pressure.

A thorough baseline survey of the island will record all wildlife populations and determine population sizes. A map will be produced showing the island's fauna and flora. This data will be used to produce a database and management plan for the island. The map and information gathered will be used to produce educational material for tourists, and the monitoring programme and management plan will ensure that tourism is managed in a sustainable manner. Permanent field plots will be established which will be used by the host country after completion of the project.

According to the Darwin Initiative Standard Output Measures the project meets the following goals

Code 5 - 2 local (Chilean) people to receive over 1 year of training in seabird monitoring techniques

Code 7 - production of training manuals in seabird monitoring techniques

Code 8 - over 20 weeks fieldwork per annum by UK project staff

Code 9 - Production of Management plan for National Nature Reserve

Code 11 - Paper to be published in peer-reviewed journal (Scientia Marina, Penguin Conservation or Oryx)

Code 12A - database to be established and handed over to host country

Code 15A - 3 national press releases in Chile

Code 17A - web site to be established to promote penguin research in Chile

Code 22 - Twenty permanent field plots to be established and continued by locally trained staff after Darwin funding ceases.

The Dutch explorer Oliver van Noort recorded visiting Isla Magdalena during the 16th Century to collect penguins and eggs for food. Darwin also visited the Straits of Magellan during his journey from the Falklands to Chiloe (west coast of Chile), and made many references to Chile's penguins. His visit is recorded in the Charles Darwin School close to the study site. These historical accounts can be used to promote the project and draw attention to the connection with Darwin. Maps and information which will be displayed for tourists could use the Darwin logo and provide information about the Darwin Initiative. The web site could also incorporate the logo, and provide a link or separate page about the Darwin Initiative and Darwin's exploration of the region. National press releases could be used to promote the link with Darwin, the Darwin Initiative and the use of British expertise. The nearby Charles Darwin School could be invited to do a drawing competition of Darwin visiting the penguins, with winners being given a guided tour of the penguin colony (another opportunity for press coverage). The Darwin Initiative itself could demonstrate how they funded British expertise to initiate Chile's first penguin monitoring programme.

13. Set out the proposed timetable for the work, including the programme's measurable outputs using the attached list of output measures.

NOTE: (code x) refers to measurable outputs as per the list of output measures provided.

April to October 2001: The Environmental Research Unit would undertake a thorough baseline survey of the island, to record fauna and flora. Training manuals (code 7), data collection forms and databases (code 12A) will be prepared. CONAF staff will receive theoretical training in seabird monitoring techniques (code 5).

October 2001: Population estimates of all breeding colonies would be made (penguins, gulls and cormorants) and a distribution map of fauna and flora drawn up (code 8). CONAF staff would receive on-site training in seabird census techniques (code 5).

November 2001: 50m x 50m field plots will be established at various locations around the island (code 22), and the number of breeding pairs in each plot will be recorded (code 8). CONAF staff will be trained in setting up study plots (code 5).

December 2001: The number of eggs produced in each of the study plots will be recorded, and data on foraging duration, diet composition and nest activity will be recorded (code 8). CONAF staff being trained in gathering this data (code 5).

January/February 2002: The number of chicks surviving to fledge in each study plot will be recorded, and the data used to determine breeding success and chick survival rates. Numbers of moulting juveniles on the island will be recorded (code 8).

CONAF staff will be trained in collecting this data (code 5).

March 2002: Observations of adult moult period to determine condition and adult mortality. CONAF trained (code 5 and 8).

April to October 2002: The results of the first season's data will be drawn up and presented to the host country along with press releases (code 12A and 15A). CONAF staff will discuss the first season of research, and training material will be updated (code 7). Comparisons of breeding success and chick survival will be made for areas with tourists and those without. An end of year report and management plan will be drawn up, covering research objectives and management of tourism on the island (code 9).

Production of web site to promote the project (code 17A)

October 2002 to March 2004: Two more seasons of monitoring and training under the supervision of the Environmental Research Unit (code 5 and 8)). Assessment of progress and amendments to management plan and training material as required (code 7 and 9).

April - June 2004: Analysis of data and completion of database (code 12A). Production of final report, management plan, press releases and peer-reviewed scientific paper (code 9, 11 and 15A) PROJECT COMPLETED

October 2004: CONAF staff continue with monitoring programme on their own, passing back data to the Environmental Research Unit for analysis and comparison with data from Falklands penguin populations.

14. Do you know of any other individual/organisation carrying out similar work? Give the details of the work, explaining the similarities and differences.

Dr Arne Radl, from the University of Kiel in Germany, spent two years on Isla Magdalena studying foraging behaviour. His work has minimal overlap with the proposed project because he did not investigate population size, status, threats, management, or the effects of tourism. His work ended when he completed his course, leaving Chile with little in the way of useful data. CONAF now feel that they should be actively involved in any future studies, so that the continuity of the work can be assured. This is the aim of our project.

There has not been any other monitoring work on Magellanic or Southern Rockhopper penguins anywhere in Chile, despite the fact that Chile holds almost 50% of the entire world population for these species.

15. Will the project include training and development? Please indicate how many trainees will be involved, from which countries and what will be the criteria for selection. How will you measure the effectiveness of the training and will those trained then be able to train others? Where appropriate give the length of any training course.

It is the aim of the project that after 3 years the Chilean conservation organisation CONAF, who own and manage the reserve, will be able to take over the monitoring programme themselves. CONAF currently employ wardens to live on the island, looking after tour boats that visit the island three days per week. These wardens have a great deal of spare time on the days when boats are not visiting, and the time passes slowly with nothing much to do. With adequate training they would be able to do all the monitoring work themselves, making their work more rewarding, and providing valuable data.

The wardens would be trained in all aspects of the work. Training would include some written work, but would be mostly on-site practical tuition given in the field. Two Chilean staff would be trained, and the training would last for 3 years. Full instruction would be given during the first year, after which the wardens would be expected to begin undertaking aspects of the work alone. At the end of three years they would be sufficiently experienced to take charge of the monitoring programme, and to train up additional staff as required, with the help of training material prepared by the Environmental Research Unit.

16. How will trainee outcomes/destinations be monitored after the end of the training?

Progress would be monitored continually during the second and third year, to ensure that the trainees were becoming proficient. Even after three years, the Environmental Research Unit would still maintain a close working relationship with CONAF. Data gathered on Isla Magdalena would help to determine whether the population declines occurring in the Falklands were also occurring in Chile. Isla Magdalena is just 500km from the Falkland Islands, and data gathered on Isla Magdalena would provide useful comparison with data gathered in the Falkland Islands.

It is also proposed that the Environmental Research Unit would continue to carry out research on Isla Magdalena after the initial three years. If basic population monitoring was being conducted by CONAF, the Environmental Research Unit could concentrate on more specialist work, such as satellite tracking. This would enable the Environmental Research Unit to oversee the work being done by CONAF for many years.

17. How is the work of the project expected to continue after the end of grant period? A clear exit strategy must be included.

Since CONAF currently employ wardens to live on the island to deal with tourists, there will be little additional cost for them to take on the monitoring programme at the end of the three year period. At the end of the three year period, CONAF staff will be highly trained and experienced in seabird monitoring techniques, and would be perfectly able to continue with the work without further supervision. Nevertheless, the Environmental Research Unit will maintain an interest in working on Isla Magdalena to further its own studies, and this will enable a long-term association with CONAF. With staff trained in seabird monitoring, CONAF would be able to seek alternative sources of funding for their own seabird monitoring and conservation projects.

## MONITORING AND EVALUATION

18. Describe how progress on the project would be monitored and evaluated in terms of achieving its aims and objectives, both during the lifetime of the project and at its conclusion. How would you ensure that it achieves value for money? What arrangements will be made for disseminating results? If applicable, how would you seek the views of clients/customers?

During the first year progress would be evaluated by the completion of the baseline survey, and production of a report, detailed map, and management plan for the island. Progress by CONAF staff would also be evaluated, but this would be by continuous assessment during the on-site training.

A training manual would be produced prior to the start of the first season of fieldwork, so that CONAF staff have a constant reference to key points. This manual would be as self-explanatory as possible, and at the end of the first season of fieldwork the manual would be evaluated with CONAF staff to see what improvements can be made. (The manual would remain an important tool after the end of the three year period, so that CONAF staff can train other staff).

On-site training would be evaluated more rigorously during the second and third seasons, as CONAF staff are asked to implement the skills they have learned during the first season. By the third season they will need to demonstrate an ability to undertake all aspects of the work without supervision.

Progress with regard to the scientific objectives will be evaluated at the end of each year with the production of a full report, and updates to the management plan. By the end of the third year, the data will be published in a peer-reviewed scientific journal.

Value for money would be achieved by enabling the local owners and managers of the site to effectively monitor and protect a designated nature reserve using existing resources. Park wardens already live on the island to protect it and to act as tour guides for visiting boats. By providing them with training in seabird monitoring techniques they would be able to extend their role without incurring additional costs. Once trained they would also be able to apply for other sources of funding to extend their work.

Tourism is becoming an important income for the region, which is otherwise very poor and lacks natural resources. It is important that this tourism can be conducted in a sustainable manner, and some basic monitoring is essential if that is to be the case.

Penguins are generally very tolerant of tourism, and a successful monitoring programme can enhance tourism and increase prosperity, whilst enabling proper management of the resource. CONAF receives a payment from each tourist who visits the island, and some of this income can be put back into funding the long-term monitoring programme and management plan established by the project.

The entire programme would be a combined effort, with the views of CONAF staff being sought at all times. This would be important in updating the educational material, management plan and training programme to meet their needs.

19. Logical framework. Please enter the details of your project onto the matrix using the note at Annex B of the Guidance Note.

Project summary	Measurable indicators	Means of verification	Important assumptions
<p>Goal</p> <p>To assist countries rich in biodiversity but poor in resources with the conservation of biological diversity and implementation of the Biodiversity Convention</p>	<p>An ongoing process which would show improvements in the ability of developing countries to protect their biodiversity</p>	<p>Reports, publications and site visits by international organisations.</p>	<p>Help from countries which hold the lacking resources</p>
<p>Purpose</p> <p>To assist Chile, a country poor in resources, with the conservation of globally important penguin populations.</p>	<p>Data on penguin status, threats and conservation. Management plans for protected breeding sites. Training for local staff.</p>	<p>Reports and publications, databases, management plans for reserves, ability of local agencies to continue with research and raise own funds</p>	<p>Funding to initiate process</p> <p>Available expertise</p> <p>Local support for the project</p>
<p>Outputs</p> <p>To gather information about Chilean penguin populations</p> <p>To help Chile to monitor and manage its own penguin populations in the long-term</p> <p>To identify potential threats from human activities</p> <p>To raise the profile of penguin research in Chile</p> <p>To give Chile access to other sources of funding through training.</p>	<p>Population estimates and data on breeding success</p> <p>The ability of local staff to continue with penguin monitoring after 3 years</p> <p>Information and data on potential human interactions</p> <p>Education and public awareness programmes</p> <p>Ability of local agencies to begin new areas of research using own staff after 3 yrs</p>	<p>Annual reports and scientific publications</p> <p>Annual training assessments and the production of a management plan</p> <p>Annual reports and scientific publications</p> <p>Press reports, tourist information, projects with Charles Darwin School</p> <p>Management plan after 3 years including future work</p>	<p>A research programme to gather data</p> <p>A training programme to teach local staff</p> <p>Availability of local staff</p> <p>Data on the impact of potential threats</p> <p>Information for education and public awareness</p> <p>An infrastructure that will nurture funding for new research</p>
<p>Activities</p> <p>To establish a penguin monitoring programme on Isla Magdalena.</p> <p>To provide local staff with the expertise to conduct the work in the long-term</p> <p>To produce baseline data and management plan for Isla Magdalena.</p> <p>To promote conservation work through education, press reports and publications</p>	<p>Annual data on population size, breeding success and foraging behaviour</p> <p>Annual training assessment and development of locally based research objectives</p> <p>Maps and databases of fauna and flora. Production of initial management plan after 1 year</p> <p>Educational initiatives run through the Charles Darwin School and local press</p>	<p>Annual reports, press releases and scientific publications</p> <p>Annual training reports and locally prepared management plan and research proposals</p> <p>Baseline survey report containing distribution maps, population estimates and databases after 1 year. Management plan each year.</p> <p>Visits to island by pupils. Darwin drawing competition. Press releases and reports.</p>	<p>Available funding (Darwin?)</p> <p>Overseas (British) expertise</p> <p>Co-operation of local agencies, staff and public</p> <p>Access to media and scientific publications</p> <p>Office facilities to analyse data and write reports and articles.</p> <p>A clear set of objectives</p>