

Darwin Initiative for the Survival of Species

Annual Report

1. Darwin Project Information

| | |
|--|--|
| Project Ref. Number | 162/13/016 |
| Project Title | <i>Endangered otter and invasive mink in Patagonia</i> |
| Country(ies) | <i>UK, Argentina</i> |
| UK Contractor | <i>Wildlife Conservation Research Unit (WildCRU), Oxford University</i> |
| Partner Organisation(s) | <i>PROFAUNA Organisation, University of Buenos Aires (UBA), Administracion de parques Nacionales (APN)</i> |
| Darwin Grant Value | £ 89,664 |
| Start/End dates | 1 Apr 2004 to 31 Mar 2007 |
| Reporting period (1 Apr 2004 to 31 Mar 2005) Annual report number | 1 Apr 2004 to 31 Mar 2005 <i>Annual report 1</i> |
| Project website | www.wildcru.org/research/darwininitiative.htm www.profauna.org.ar/huillin.htm |
| Author(s), date | <i>D.W. MacDonald & M.H. Cassini (21 Mar 2005)</i> |

2. Project Background

The Southern River Otter (*Lontra provocax*), or *huillin*, is one the most endangered mammals of the Southern Cone of South America; according to the IUCN, it is in danger of complete extinction. The *huillin* is found in just three areas of the Andean-Patagonian region of Argentina; the isolation of their populations and their apparent inability to expand their distribution are of particular conservation concern. Our pilot studies for this application (Aued *et al.* 2003) suggested that the geographic distribution of otters is related positively to prey abundance, and negatively to the presence of a potential competitor, the invasive American Mink (*Mustela vison*). Human barriers could also affect dispersal.

By the 1970s, the native otter was already close to extinction. Feral populations of American Mink (originally introduced in the 1950s) were spreading rapidly through the valleys of the Andean-Patagonian region. Where mink became established, they appear to be responsible for near eradication of several species of riparian bird and mammal through predation of adults, nests and nestlings. Our study of the food and habitat requirements of mink in Argentina demonstrated that they overlap closely with those of the otter, suggesting great potential for competition between the two species (see Previtalli *et al.* 1998).

3. Project Purpose and Outputs

The purpose of this project is to protect vertebrate biodiversity in the Andean-Patagonian region of Argentina by reducing the impact of invasive American mink and by facilitating the range expansion of endangered native otters in National Parks.

The planned outputs are as follows:

1) Academic outputs – theses, scientific papers and technical reports. These will contribute towards the first indicator of Purpose achievement - the generation of new knowledge regarding which factors limit otter population expansion and how mink impact on vertebrate diversity. This knowledge is needed to underpin the otter's recovery.

2) (a) Practical management tools – management plans and training/implementation guides, computer databases, field reports, workshop records and formal agreements with the NPA. These will build Patagonia's capacity for otter reintroductions and mink removal - the second indicator of Purpose achievement.

2 (b) Training and education - training future Argentine biologists, managers and wardens, educating stakeholders and policymakers, dissemination of results by a variety of methods and organisation of a permanent monitoring scheme. Trained personnel will be available to implement plans based on the aforementioned new knowledge. These will also build Patagonia's capacity for otter reintroductions and mink removal - the second indicator of Purpose achievement.

The major outputs of this project will be scientifically based plans designed for the national authorities, e.g. National Parks, to implement; their adoption of our plans will itself be a measure of our success, and when they do so it will be possible to measure the success of each milestone they reach against our predictions.

The outputs or proposed operational plan have not been modified over the last year.

4. Progress

Provide a brief history of the project to the beginning of this reporting period

Not applicable

Summarise progress

The project was initiated on 1st April 2004. Work was originally divided into two phases: (1) Ecological study; and (2) Action plan development. The work in the past year can be divided in three phases.

April-May: Organisation, including project planning and announcement, training students, and a preliminary campaign and Think Tank meeting in Patagonia.

June-December: Testing and development of the techniques required for molecular analysis, diet analysis, and Geographical Information System (GIS) analysis. These are complex techniques that in certain cases (e.g. extraction of DNA from faeces) required very innovative developments.

January-March: Fieldwork, sample collection, and survey of mink, otter and environmental variables. We surveyed an area covering a distance equivalent to that between London and Naples, in the South of Italy.

1) Project planning: Dr. Marcelo Cassini performed preliminary project planning. This involved: (a) selection of the field biologist (Lic. Laura Fasola, University of Buenos Aires), four undergraduate students (two to conduct honours projects and two to gain

field experience) - see below; (b) sourcing and purchase of field equipment (including 4x4 van, GPS, satellite telephone, camera, radio and camping equipment, etc); (c) preparation of lab facilities for genetic work, in collaboration with Dr. Centrón; and (d) planning and organising four months of fieldwork.

2) Project announcement: The project has been announced on both the WildCRU (www.wildcru.org/research/darwininitiative.htm) and PROFAUNA websites (www.profauna.org.ar/huillin.htm). These pages will be further developed as the project progresses.

3) Student selection & training: Four students were selected and trained to do field-based or genetic studies. Marcelo Bello and Leonardo Leggieri (both University of Lujan) will be involved in otter and mink surveys, Juan Muzio (Universidad of Comahue) will conduct his undergraduate thesis on local movements and behaviour of mink, and Cecilia Gozzi (University of Luján) will conduct hers on otter diet. Bello, Muzio and Leggieri received training in field techniques, such as censusing, species recognition, etc. Gozzi and Muzio received training in faecal analysis.

4) Preliminary campaign, Think Tank meeting, & sample collection for technique development: We made a ten-day trip to Bariloche and the surrounding areas (northern study site), where the following activities took place: (a) an intensive Think Tank meeting at the local National Park Administration office between the three Argentinean project personnel (Lic. Claudio Chéhebar, Dra. Daniela Centrón and Dr. Cassini). This meeting involved intensive planning of project details; (b) a preliminary campaign to three lakes in the region, where field methodologies were tested and faecal samples collected for the development of genetic techniques; (c) two additional meetings with local researchers: Dr. Victor Cussac (University of Comahue, local institution) and Dr. Heber Bonino (INTA, National Institute of Agricultural Technology).

5) Testing & development of molecular techniques: We have successfully developed molecular genetic techniques using a variety of sample types, including tissue, fresh new faeces, and dry old faeces. In particular, we: (1) tested three DNA purification protocols; (2) amplified two molecular markers (mitochondrial DNA cytochrome b gene and mDNA control region); and (3) sequenced mDNA cytochrome b gene of *Lontra provocax*. (See appendix).

6) Testing & development of diet techniques: We successfully tested scat analysis techniques for otters and mink (see Appendix).

7) Characterisation of landscapes & habitats using satellite imaging, processing of maps & GIS: We obtained all satellite images, maps and other sources of geographical information necessary for the project. We successfully tested several geographical data processing techniques that will allow us to map species distribution, characterise environmental variables, and produce a model of future species distribution (see Appendix).

8) Production of first 6-month report: Completed.

9) Survey in Nahuel Huapi, Lanin National, and Tierra del Fuego Parks: We have successfully surveyed the distribution of otters and mink in the entire north-south geographical range, and measured local environmental variables. This fieldwork involved surveying more than 3,000 km of road and sampling around 100 water bodies over 140 field days (see Appendix).

Provide an account of the project's achievements

We have been successful in all aspects of the plan for the first year.

We trained 5 students as planned, the original partners (David Macdonald, WildCru; Marcelo Cassini, PROFAUNA; Claudio Chéhebar, Argentinean National Parks; Daniela Centrón, Molecular Lab of University of Buenos Aires) interacted efficiently, and we developed our relationships with other key players, including Laura Malmierca, from Tierra del Fuego, and Maximiliano Sepúlveda, from Chile.

We successfully tested all techniques required for the analysis of data and samples, including: molecular, diet and geographical information analysis. Especially successful was our development of a technique for isolating DNA from faecal samples – this work is probably unique.

We surveyed an enormous geographical area over many trips conducted by a number of different teams. Patagonia is an isolated region often experiencing unpleasant weather, so field workers required a strong constitution.

We expanded the project to include two additional local satellite projects in collaboration with other researchers. We obtained additional funding to pay for this research from an Argentinean source.

We have expanded our plans for the workshop which is due to take place during the project's second year, by transforming it into a bi-national workshop to include key specialists from Chile and Argentina.

Discuss any significant difficulties encountered

The main difficulty encountered during the year related to the administration of finances, including some delay in receiving money in Argentina, and an unavoidable need to make slight changes to the distribution of resources between budget items.

Another unexpected difficulty was that PROFAUNA's van was damaged in an accident (while it was parked). No one was injured, but repairs to the van took 30 days, which resulted in a similar delay in completing the Patagonian survey.

Has the design of the project been enhanced over the last year?

The project design has been enhanced in two main ways.

First, we were able to expand the survey area substantially. This became possible in part as a result of not needing to survey fish and macro-crustaceans (which are both competitors and prey to otters) as originally planned, because we established links with Argentinean researchers who have recently conducted such a survey, and who are prepared to allow us to use their data (Victor Cussac) or have recently published them. The other reason was that we optimised survey speed by deploying manpower as three teams working simultaneously, without increasing the cost of the project.

The second important improvement was expanding our collaboration with additional individuals and organisations involved in conserving Patagonian biodiversity, as described in the following section.

Present a timetable (workplan) for the next reporting period

The second year (Apr 2005-Mar 2006) will be mostly taken up with processing and analysing diet, molecular and GIS data, as originally planned. We collected a great number of samples for diet and genetic analyses during the summer survey, and the GIS work will be quite time consuming, because the study area is very large.

As a result of contacts made with Chilean stakeholders during the first year of the project, we agreed to conduct a joint workshop that will be attended by all key researchers and technicians involved in otter conservation in Chile and Argentina. In order to accommodate the new arrangement, we decided to bring the workshop forward from Feb-Mar 2006 to Sep 2005.

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

Not applicable.

6. Partnerships

- *Describe collaboration between UK and host country partner(s) over the last year. Are there difficulties or unforeseen problems or advantages of these relationships?*

The collaboration between WildCRU, University of Oxford and PROFAUNA has worked very smoothly. Regular email contact has allowed us to keep each other informed of progress and to develop plans. No difficulties or unforeseen problems have arisen. A positive development is that WildCRU, while remaining a full member of Oxford University, has moved to its own new quarters at Tubney House just outside Oxford. As a result, WildCRU will be able to provide superior facilities to host partner collaborators when they visit Oxford, e.g. Marcelo Cassini will be spending a week in Oxford in Autumn 2005.

We have developed a new agreement with Lic. Laura Malmierca (Coordinator of the Technical Office of the Tierra del Fuego National Park). We have agreed that: (1) they will give us access to a unique set of Southern river otter faecal samples, collected (by members of the Tierra del Fuego National Park) from one of the three Argentinean otter populations. The faeces were collected seasonally over five years. We have recently selected an undergraduate student who will conduct their thesis using these data.

Another agreement was forged with Dr. Victor Cussac from the University of Comahue (Patagonia). Dr. Cussac is a specialist in freshwater fish ecology. He has studied a community of native and exotic fish in two connected lakes of the Nahuel Huapi National Park. We agreed to collaborate in research on the impact of mink on native fish species. Dr Cassini and Dr Cussac co-supervised an undergraduate student on this work - as a satellite project to the main work of this Darwin Initiative project. This student was awarded a bursary by the Argentinean National Park administration for this work.

Perhaps the most important achievement in terms of forming new links has been our successful engagement with Chilean stakeholders. Chile and Argentina are the only two countries that make up the south cone of South America. The southern part of both countries forms the Andean-Patagonian ecosystem, which is home to both Southern river otters and mink. During the first year, we agreed with Chilean stakeholders to hold a bi-national workshop to be attended by key researchers and technicians working with otters in both countries. Dr Cassini and Lic. Maximiliano Sepúlveda (coordinator of the Chilean project, 'Proyecto Huillín', being conducted by the Chilean Administration, 'Comité Nacional Pro Defensa de la Fauna y Flora') have shared the work of organising this workshop, and preparations are now at an advanced stage. It will be held in Valdivia city, Chile, between 30th August and 1st September 2005.

7. Impact and Sustainability

The first year of the project was mainly devoted to ecological work, so we did not expect our work to have had a large impact yet. However, we can say that, since we travelled almost the entire geographical range of otters and mink, most key local stakeholders are aware of the project and are keenly awaiting its results.

8. Post-Project Follow up Activities (max 300 words)

Not applicable

9. Outputs, Outcomes and Dissemination

Explain differences in actual outputs against those agreed in the initial 'Project Implementation Timetable' and the 'Project Outputs Schedule'

Rather than producing 200 newsletters, we publicised the project via the internet (see web pages mentioned in section 1). Otherwise, we adhered exactly to the original Project Implementation Timetable, and all other planned Project Outputs (see Table 1) were accomplished. We also achieved additional outputs, as described earlier. These were: (1) two satellite research projects developed through agreements made with local people (one project on otters in Tierra del Fuego and the other on mink in Nahuel Huapi); and (2) advanced plans for a bi-national workshop.

Provide details of dissemination activities in the host country

Dissemination activities were not planned for the first year. Rather this was a period of organisation, data collection, and testing and development of a variety of sophisticated techniques required for the project. Dissemination activities are planned for the second year, in the form of an international workshop and publicity, and particularly in the third year, when the action plan will be presented to the local authorities. There is a good probability that the authorities will adopt our plan as we are working in close liaison with local administrators within the Argentinean National Park Administration who are responsible for these types of action.

Although we did not plan specific dissemination activities for the first year, we managed to obtain significant publicity for the project throughout the Andean-Patagonian region (and in particular in the six Parks), through our work there.

Table 1. Project Outputs (According to Standard Output Measures)

| Code No. | Quantity | Description |
|----------|----------|---|
| 4b | 5 | Training of 5 students |
| 4d | 32 | Number of weeks of training received by students |
| 14a | 1 | Think Tank meeting and dissemination workshop with stakeholders |
| 7 | 2 | Items of training materials for student training |
| 16 | 0 | 200 newsletters |

Table 2: Publications None

| Type * | Detail | Publishers | Available from | Cost £ |
|------------------------------|-----------------------|--------------|---------------------------------|--------|
| (e.g. journals, manual, CDs) | (title, author, year) | (name, city) | (e.g. contact address, website) | |

10. Project Expenditure

Table 3: Project expenditure during the reporting period (Defra Financial Year 01 April to 31 March)

| Item | Budget (please indicate which document you refer to if other than your project schedule) | Expenditure | Balance |
|------|--|-------------|---------|
| | | | |
| | | | |
| | | | |

- Highlight any recently agreed changes to the budget and explain any variation in expenditure where this is +/- 10% of the budget.

11. Monitoring, Evaluation and Lessons

- Discuss methods employed to monitor and evaluate the project this year. How can you demonstrate that the outputs and outcomes of the project actually contribute to the project purpose? i.e. what are the indicators of achievements (both qualitative and quantitative) and how are you measuring these?

This first year was dedicated to ecological research, data and sample collection, and technique development. Evaluation of the success of this year's work will ultimately be measured in three ways: publications and thesis produced over the following two years, findings disseminated and information exchanged at two major meetings (over the next two years), and the most important is the translation of this ecological information into an action plan that will be adopted by the Argentinean National Park Administration by the end of the project.

- What lessons have you learned from this year's work, and can you build this learning into future plans?

This year's work involved a good deal of logistical planning and coordination because many people were involved in the project, either directly or indirectly. Specialists were involved in the molecular biology, and in GIS development. The area surveyed in Patagonia was of similar width to Europe (2000 km – the distance between England and Italy). Three field teams had to be coordinated over this area, and we had to obtain permits, and organise logistic support in each of the National Parks for accessing remote areas, etc. Therefore, a crucial lesson from the first year was the importance of an efficient coordination system, which must include the organisation, monitoring and rapid evaluation of partial results of the project.

12. OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum)

■ **I agree for ECTF and the Darwin Secretariat to publish the content of this section**

Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2003/2004

| Project summary | Measurable Indicators | Progress and Achievements April 2003-Mar 2004 | Actions required/planned for next period |
|---|--|--|---|
| <p>Goal: To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve</p> <ul style="list-style-type: none"> • The conservation of biological diversity, • The sustainable use of its components, and • The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources | | | |
| <p>Purpose (<i>insert original project purpose statement</i>)</p> <p>To protect the vertebrate biodiversity of Argentina's Andean-Patagonian region by reducing the impact of invasive American mink and by facilitating the range expansion of endangered native otters in National Parks.</p> | <p>(<i>insert original purpose level indicators</i>)</p> <p>New knowledge regarding which factors limit otter population expansion and how mink impact on vertebrate diversity. Identification of key sites for otter reintroductions and mink removal by yr 2.</p> <p>Increased capacity for researchers, wildlife managers and Park wardens to implement effectively otter reintroductions and mink removal. Permanent monitoring of otter status and mink impact by yr 3.</p> | <p>(<i>report impacts and achievements resulting from the project against purpose indicators – if any</i>)</p> <p><i>New knowledge:</i> we collected all field data and developed the necessary techniques for producing the results that will be required in order to understand the factors that limit otter population expansion and the impact of mink on vertebrate diversity.</p> <p><i>Increased capacity:</i> We trained students and interacted with Park wardens and Park co-ordinators, expanding their knowledge of otter conservation.</p> <p>We are organising an Argentina-</p> | <p>(<i>report any lessons learned resulting from the project & highlight key actions planning for next period</i>)</p> <p>Next year will be dedicated to data analysis, stakeholder meetings and dissemination of findings.</p> |

| | | | |
|--|--|--|---|
| | Ultimately, expansion of otter population numbers and distribution range and concomitant reduction of mink . | Chile workshop to be held in the coming project year. This ultimate purpose cannot be fully achieved until later in the project | |
| Outputs | | | |
| <i>(insert original outputs – one per line)</i> | <i>(insert original output level indicators)</i> | <i>(report completed activities and outcomes that contribute toward outputs and indicators)</i> | <i>(report any lessons learned from the project & highlight key actions planning for next period)</i> |
| Training of future Argentine biologists and managers and wardens of National Parks of Patagonia. Education of stakeholders, policy makers via workshops/Think Tanks. | 5 (3, undergraduate theses), 8 (4a&c) receiving 32 (4b&d). 4 (7), workshops with 20 (6A) receiving 20 (6B). | 1) Two web pages describing and publicising the project to the local community in the host country 2) Training of 5 students (each receiving 32 training weeks) and 3 undergraduate theses initiated (1 already defended) 3) Think Tank meeting in Patagonia with local project partners 4) Computer databases established for mink, otters and prey distribution | 1 undergraduate thesis defended, 2 theses in preparation Stakeholder workshop will be expanded to include key workers from Chile - the only other country with Southern river otters in South America. |
| Action plans and other research products for the conservation of vertebrate biodiversity in Patagonia. Academic output. | 2 (9) on otter conservation & mink control, 1 (10) on monitoring, 3 (12) on mink, otter and prey distribution. 7 (11), 7 (14). | These outputs are planned to take place in later years | During next year we will analyse all of the samples and data collected in the first year, using techniques tested and developed in that year. We will prepare several manuscripts to be published in peer-reviewed scientific journals. |

| | | | |
|--|---|--|--|
| Several methods of result dissemination. | 3 (15), 1 (16), 1 (18), 2 (19). | These outputs are planned to take place in later years | A slight compromise in significant dissemination activities. |
| Organisation of a permanent monitoring scheme. | 1 (20) on mink impact and otter distribution. | These outputs are planned to take place in later years | |