

Project Reference No.	162-11-013
Project Title:	<i>Conserving the critically endangered Darwin's fox on Chiloé Island, Chile</i>
UK Contractor:	Institute of Zoology, Zoological Society of London
Collaborator(s)	
Darwin Grant value:	£158,006
Start/end date:	21 June 2002 – 31 March 2005
Year of project	1 May 2003 - 31 April 2004

Project summary

Darwin's fox is the rarest and most geographically isolated fox in South America. It has been estimated that fewer than 500 individuals exist in the southern rainforests where it is endemic. Although one of the smallest foxes in the world, it is considered to be the largest carnivore of Chiloé, and for this reason the foxes have an important trophic role in the native forests of the island. Its diet includes fruits and it may have importance as an agent of seed dispersal. Loss of the species could therefore also affect the composition and dynamics of the forest. The main threats to the Darwin fox's future include viral diseases from domestic dogs, loss of forested habitat and human persecution. The need for research studies was considered urgent to provide information as a basis for conservation measures. It is anticipated that conservation of Darwin's fox would promote the conservation of its forested habitat and hence the biodiversity of the entire ecosystem. As specified in the Logical Framework, the purpose of the Darwin project is: *to assist Chile with the conservation of its biological diversity with the initial focus on the conservation of one critically endangered species, the Darwin's fox*. The first indicator for this purpose, and the 4th research activity is production of a conservation management plan. The main objectives of the project were clearly stated in the first annual report:

A. Research

- (i) estimate fox density and distribution;
- (ii) determine genetic structure of the population;
- (iii) assess the risk of viral diseases transmitted by domestic dogs.

B. Training

- (i) train Chilean scientists and conservation managers in conducting independent field research;
- (ii) train Chilean scientists in using molecular genetic techniques for conserving biodiversity;

C. Awareness Raising

- (i) increase the awareness of local communities, land users, conservation managers and students in sustainable use of natural resources that leads to conservation of entire and functional forest ecosystems.

Summary of progress (to beginning of reporting period)

In its first year, the project made satisfactory progress. It initiated useful research into the density of Darwin's foxes (capturing 12 foxes and radio-tracking 9 of them). It also made progress with training in field methodology and with its awareness-raising programme. It fell behind in the training of molecular genetic techniques but this input was rescheduled for the second year. GIS mapping of the island progressed well.

The project has now completed its second year of work.

Comments and queries for Project Leader

Good progress has apparently been made in community studies, education and awareness raising. The problem that you have encountered with genetic studies is regrettable but unavoidable and you have identified a way forward which is creditworthy. I am however concerned about the lack of information reported on research into the basic ecology of Darwin's foxes and the lack of systematic investigation into the severity of different mortality factors – feral dogs, domestic dogs, human persecution, disease, loss of habitat etc. Presumably these are the factors that require management and an understanding of these factors should inform your conservation management plan, IUCN Action Plan, training programme and education & awareness programme.

The need for the project to directly address the issues required by a sound management plan were highlighted in the review of the first annual report. Yet virtually no mention of the management plan is made in the second annual report. It has even slipped off the abbreviated logframe included as Annex 1. It is recommended that the project present its plans for preparing a management plan and species action plan at an internal ZSL review (see General Assessment, below).

Scientific and technical assessment (in year of reporting period)

A. Research

Density and Distribution

Field observation is difficult in the thick scrubby habitat of the southern forests of Chile and consequently the project relies on a number of indirect methods to investigate the ecology of Darwin's foxes. In its second year the project has extended the first-year study of fox density and space use from three sites to ten sites. Other than this bald fact and a note that density will also be estimated by "scent station methodology" and "genetic analysis", almost no ecological information is presented. This applies both to the application of methods (there is no information on the number of foxes captured by age, sex and reproductive condition, nor on the number of re-captures, number of individuals visiting scent stations, etc.) and to the research results (no information is presented on range size, seasonal use of different habitats, food, reproduction, survival etc.). Although the report states that radio-tracking has continued in the second year and that distribution over a wider area will be extrapolated on the basis of a GIS, no maps or analyses are presented. The first annual report states that camera traps were ordered. No information on whether these have been used is given.

The project has initiated an assessment of demography, health and space use of domestic dogs based on a "large number" of interviews with local dog owners. In addition to interviews, blood samples were collected for serology and some GPS collars fitted. This

is a valuable approach to assessing the incidence of dog predation on foxes and risks of disease transmission. It would have been helpful if information on the numbers of dog owners interviewed, blood samples taken and collars fitted had been provided in the annual report itself.

Genetic Structure of Population

No variability was identified in the two most variable mtDNA loci indicating a major historic population bottleneck and the possibility of increased vulnerability of the species to infectious diseases. So far only canine microsatellite markers have been applied; the next step is to develop fox-specific markers to confirm lack of genetic variability.

Viral diseases

Scheduled for year 3

B. Training

Training in field methods (radiotracking, use of scent stations, etc) was provided to all staff members and volunteers on a one-to-one basis. Chilean project members were intensively trained in genetic and epidemiological methods. Little information is provided in the annual report on the nature of this training (e.g. number of days or weeks that training was delivered in the form of seminars, workshops, “on the job” training etc.), or on the number of project staff trained, or on the utility of their training in terms of career options in Chile relating to biodiversity conservation.

C. Education and Awareness Raising

Some 5.4 weeks of training courses were delivered to graduate and postgraduate students but little information is provided on in the annual report on who the recipients were, or why they were selected, and there are few details about the contents of the courses.

Posters and leaflets were distributed and classes on conservation (in relation to Darwin’s Fox) were delivered to 1700 children and 90 teachers. Working with a Chilean TV network, 16 mini-documentaries on conservation in general and Darwin’s foxes in particular were produced. The film material included on the DVD sent with the annual report is both entertaining and informative. In addition the project has undertaken a baseline survey of attitudes to biodiversity and fox conservation of 519 households in three local communities using a quantitative questionnaire based on personal interviews. All this and an excellent website add up to a substantial environmental education and awareness-raising programme.

Partnerships

The project is fully supported by its main partner institution, Universidad de Los Lagos (ULA), but has encountered a ‘significant administrative burden’ relating to the level of general and financial administration required by project staff. This apparently takes about 50% of the time scheduled for working on the project.

The project continues to make overtures to government departments. A joint conference on molecular genetics in biodiversity and conservation is being organised with the Universidad de Chile.

Impact and Sustainability

One of the most enduring legacies of Darwin Projects arises through the raised capacity of project staff and beneficiaries who have received substantial training inputs. It is hard

to assess this component in the Darwin's fox project as little information is provided on the training courses and their relevance to biodiversity conservation (see Scientific and Technical Assessment). Interest in advanced level training is reported from Chilean postgraduate students. The impact of the education campaign in the study area will presumably be assessed in the third year.

Outputs, Outcomes and Dissemination

Although details are sometimes hard to find, the project has apparently achieved many of the key milestones listed for the first two years. Some of the outputs such as the website, educational materials, genetic investigations and dog-owner interviews are particularly creditworthy. Two significant outputs that have been delayed are the submission of manuscripts to peer-reviewed journals and GIS training; both are rescheduled for the third year.

Project Expenditure

In the second year, the project brought forward a carry-over from the budget of 2002/3 amounting to £15,118 principally arising from "Capital Items" (£5,501) "Others" (£6,505) and "Salaries" (£1,567). Due to increased expenditure in the second year on "Capital Items" and "Others", part of the carryover was used leaving a net underspend for the first two years of £7,764.

Monitoring, evaluation and learning

Following advice received in the review of the first annual report, the project tightened up its M&E systems. "The improvement of the management structure was addressed by intensifying the line-management structure, by setting deadlines on reporting for all staff and by improved communication through internal bulletins." The project found that a high level of supervision was necessary to ensure working schedules were met and reports submitted on time. These problems have been partially addressed by hiring secretarial support to assist with administration and by the appointment of a voluntary Project Development Officer.

Judging from the amount of information contained in the reports, annexes, website and films, the project is now delivering well. Nevertheless there is an evident lack of coordination as seen in the patchy reporting in the annual report. Furthermore, no half-yearly report was received by ECTF in 2003 despite several reminders.

General assessment

The project is delivering well in many areas, especially in community studies, awareness raising, education and dissemination. On the scientific side, the project is working hard on overcoming technical difficulties with its assessment of the genetic structure of Darwin's foxes, although early results may be explained by a lack of genetic variability in the population.

The project appears to perform less strongly in its ecological studies and investigations relating to applied conservation. No data were presented on fox density or distribution or even on the number of animals captured and collared, or on those visiting scent stations. No GIS maps were presented. The project does not appear to have begun to analyse or systematically assess the severity of various threats to Darwin's fox or to explore management options. However, examination of the project's excellent website, the materials included in the annex to the annual report, and the films recorded on DVD,

suggest that the project may be achieving more in these areas than is evident from reading the report alone.

It is recommended that ZSL conduct an internal review of the project at the earliest possible data with a view to formulating a step-by-step programme for developing a management plan and species action plan. This could be conducted in London but might be better in Chile where non-project ZSL staff could assess local conditions, and where local project staff could participate and present summaries of their work, including results of all field data collected to date.

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General assessment for Darwin Secretariat (confidential, not passed on to the project leader)

The project appears to be achieving a wide range of outputs quite successfully but it is hard to assess the quality of some activities from the annual report alone, especially with regard to the ecology and practical conservation of Darwin's foxes which are central components of the overall project.

In the review of the first annual report, the Project Leader was advised that "the issue of writing the management plan should be discussed at a senior level at an early stage." There is no indication in the second annual report that this advice was heeded or acted upon.

Apart from reading the annual report, I have spent some time going through the voluminous annexes, and viewing the project's website and films. The impression given is of a project that suffers more from a lack of coordination, and possibly overall direction, than a lack of achievement *per se*. The failure of the project to provide a 6-monthly report despite repeated reminders is also indicative of insufficient time devoted by the Project Leader to project monitoring and coordination.

I remain concerned that one of the most important outputs of this project is being overlooked or not given sufficient priority. In the project application provision is made for the "development of a conservation action plan" for the Darwin's fox (see sections 11, 13 & 17, Output number 9, Milestone 4.1 and in the logframe, measurable indicator 1 against Purpose). The same output appears in the logframe agreed for the Project Schedule. Accordingly I have recommended that ZSL conduct an internal review of the project at the earliest possible data with a view to formulating a step-by-step programme for developing a management plan and species action plan. This could be conducted in London but might be better in Chile where non-project ZSL staff could assess local conditions, and where local project staff could participate and present summaries of their work, including results of all field data collected to date.

This may not be a popular recommendation but I have no doubt that it will prove beneficial if acted upon.