

# Darwin Initiative for the Survival of Species

## Half Year Report Form

<b>Project Title</b>	Genetic diversity and management implications for high Andean guanaco populations in Peru.
<b>Country</b>	Peru
<b>Organisation</b>	Cardiff University
<b>Project Ref. No.</b>	162/12/022
<b>Report date</b>	21st October 2004

### 1. Outline progress over the last 6 months against the agreed baseline timetable for the project (if your project has started less than 6 months ago, please report on the period since start up).

This report covers the period between 01/04/04 and 30/09/04 and began with Cardiff PDRA Ciara Dodd (CD) travelling to Lima on 22/03/04. This work period began with a general meeting between CD and members and staff of CONOPA to discuss work for the subsequent 6 months. In summary, the objectives for this period were outlined as: a) planning and running the Conservation Biology Course; b) developing the fieldwork sampling strategy; c) outlining the principal lab work goals.

#### a) Conservation Biology Course

The one-month course in Conservation Biology was held at Universidad Cayatano Heredia in Miraflores, Lima. As a result of this course, CONOPA and the newly formed conservation biology department in Universidad Cayatano Heredia now have a mutually beneficial agreement for future collaboration. The structure of this course was built on the models of two previous successful courses run as part of DI projects in Gabon (08/044) and Malaysia (09/016). An intensive period of teaching of core lectures took place in the first 2 weeks. These core lectures covered aspects of conservation biology, population biology, threats to biodiversity, conservation genetics, and population and habitat viability assessment (PHVA) and were delivered by PDRA (CD) and Coordinator (MWB). The second two weeks of the course consisted of invited guest lecturers from governmental, university and conservation organisations to discuss many aspects of conservation projects and legislation within Peru. In addition, it was decided to organise three special topic days to which members of the public were invited. These days were advertised in the local newspapers, at the university and on the CONOPA website.

A three-day field course to Reserve Nacional de Paracas was arranged in collaboration with INRENA. During the weekend of the field course, a visit was made to the CAMISEA project in Pisco, which was responsible for environmental monitoring of a large gas pipeline project situated adjacent to the Paracas Reserve.

Applicants for the course were invited from governmental organisations such as INRENA, CONAM, CONACS, Peruvian NGOs and international conservation organisations. Thirteen students were enrolled onto the course after their applications were evaluated by CONOPA officials (Jane Wheeler (JCW) and Domingo Hoces (DH)) and CD. The number of students from each organisation was: INRENA (3), CONAM (2), Museo de Historia Natural (2), APECO (1), Animal Management (1), EPG UNALM (1), Asociacion Civil Salvemos al Guanaco (1), Facultad de Medicina Veterinaria San Marcos (3 – including the two Darwin Trainees, Katherin Yaya (KY) and Jorge Rodriguez (JR)).

Core lecture materials were provided in English and Spanish and all guest lectures and open days were delivered in Spanish only. At the conclusion of the course all of the lectures were compiled on to a CD together with additional background information that was given to all students and course speakers.

All fifteen course participants were awarded a diploma at the end of the course following satisfactory input to the course and the successful completion and assessment of three coursework exercises: i) individual presentation about an endangered species; ii) group presentation about a current and

proposed management of a protected area; iii) individual presentation of a scientific paper. The students also gave an additional non-assessed presentation about the results of the PHVA analysis conducted in the PHVA modelling exercise that was run during the second week of the course.

### **b) Fieldwork sampling strategy**

An outline plan for sample collection was drawn up in April, although delays by INRENA in issuing the permit to allow sampling to commence meant that the first sampling expedition was deferred until mid-May. However, subsequent sampling has been successful and was ahead of schedule in September 2004. All guanaco samples consist of faeces, which were non-invasively collected after observing the animals in their natural habitat through binoculars and/or a spotting scope. To summarise, the guanaco faecal samples that have been collected in this six-month period are:

- i) 11/04-18/04 - 30 samples collected from Huallhuas, (Ayacucho). On 18/04 CD and JCW travelled to the Huallhuas community to present information about the project and objectives and management.
- ii) 16/05-10/06 - 34 samples collected from Calipuy, (La Libertad).
- iii) 27/07-06/08)- 23 samples collected from Chavin, (Ica).
- iv) 22/08-01/09 - 38 samples collected from Machahuay, (Arequipa). This is 1 month ahead of schedule.

In addition to collecting samples, GPS readings were taken at each sampling location for use in genetic and population analysis and for PHVA purposes. Data was collected from the local community about the guanaco population in their area by using a standard questionnaire. This information will be used in the PHVA to help design a suitable management plan. Information about the project and the remit of CONOPA was disseminated within the communities where sampling took place.

The remaining populations in Yanaque, (Moquegua) and Vilani, (Tacna) are scheduled to be sampled in November and December 2004, respectively.

A map detailing the distribution of guanaco in Peru and the location of sampled populations will be provided in the Year 2 report.

As well as sampling guanaco populations, a vicuña chaccu was organised by CONACS in Catac, Ancash on 03/09/04. Prior to the chaccu, JCW and DH presented data about the utility and importance of genetics in vicuña population biology and management. The application of these techniques in guanaco populations and in particular in the Darwin guanaco project was discussed. A subsequent presentation of the results will be made to the community, after the samples have been analysed in Cardiff in November 2004.

### **c) Lab-work**

Throughout this six-month period, regular lab meetings have taken place with the whole of the CONOPA team regarding all issues relating to the project and in particular relating to progress or technical problems in the laboratory.

The priority areas for lab work during this period have been: continuing optimisation and extraction of faecal samples from new guanaco populations; optimising faecal microsatellite amplification of single and multiplexed loci on silver-stained gels; creating allelic ladders for the accurate scoring of alleles between different silver-stained gels. Darwin trainees JR and KY have received in depth training and troubleshooting in the laboratory in these areas.

Significant progress has been made in amplifying microsatellites from DNA extracted from faeces. Up until this point only mitochondrial DNA has regularly and successfully amplified. Furthermore, it is now possible to amplify microsatellite loci from these samples in multiplexed PCR reactions, which will improve screening efficiency and reduce screening cost. However, further optimisation of some loci and samples will be necessary to remove non-specific bands. This work will continue into the next six-month period in the laboratory in Cardiff.

Following the amplification of multiplexes visualised on silver-stained gels, it became clear that some of the multiplexes needed redesigning to allow for differences in the techniques of visualisation of the loci between the fluorescent ABI methodology used in Cardiff and the silver-stain methodology used in Lima. The structuring of multiplexes for silver-stained gels has to be revised due to the nature of the technique and the testing of these new multiplexes will continue in Cardiff in the next 6-month period.

Guanaco allelic ladders have been successfully developed that will maintain consistent allele scoring between different gels. This is vital to ensure that high quality reproducible data is produced from this project.

**2. Give details of any notable problems or unexpected developments that the project has encountered over the last 6 months. Explain what impact these could have on the project and whether the changes will effect the budget and timetable of project activities. Have any of these issues been discussed with the Department and if so, have changes been made to the original agreement?**

Delays by INRENA in issuing the sampling permits prevented sampling until mid-May 2004, however, INRENA finally issued a permit that will allow sampling to take place for one year. This problem should not have a major impact on the project timetable since only two out of the intended six populations remain unsampled. It is intended that these populations will be sampled in November and December 2004.

Certain logistical difficulties have come to light whilst sampling, although again these have been resolved and should not have a significant impact on the project. The nature of the terrain where the guanaco population occur requires six people for each sampling expedition, which is more than originally anticipated. In order to effectively collect samples people worked in two groups and were in constant contact with walkie-talkies.

Standardisation of extraction methods has been successful in the majority of cases, however individual samples and/or populations sometimes prove problematic and need to be extracted several times or using revised procedures. Since the faecal extraction kit is not easily available in Peru and is much more expensive, this can be problematic when additional extractions need to be performed. This problem has been resolved by bringing more faecal samples to the UK for extraction than was envisaged. This however will not have an impact on the project timetable or budget.

**3. Are there any other issues you wish to raise relating to the project or to Darwin's management, monitoring, or financial procedures?**

The following remarks are made in response to comments received relating to the Year 1 report.

**Monitoring and evaluation**

In Cardiff weekly lab meetings have taken place throughout the duration of the project which provide the opportunity to update MWB on the progress of the project as well as to address any problems in the lab. This is also an opportunity for other lab members to provide their input and ideas where problem solving is required. In addition weekly journal clubs and seminars enable group discussion of current scientific papers, provide an informal environment for practicing the delivery of presentations, broaden the knowledge base of lab members and keep them informed about the research activities of group members. These activities are particularly valuable for the Darwin Trainee during their UK visit.

During the PDRAs visit to Lima, CD provided weekly updates to MWB via email, discussing progress and potential problems. In addition, a project meeting was held between CD, JCW and MWB at the end of MWBs visit to Lima for the Conservation Biology course in July 2004.

**Project expenditure**

The discrepancy in the initial 2003/4 salary and overheads budget compared to that stated in the annual

report is primarily due to the agreed late start of the project. In addition, the PDRAs salary was lower than originally budgeted in the first few months of the project as her PhD was not awarded until January 2004.

The overspend on travel is because the flight costs are higher than anticipated, particularly between Lima and Cardiff for the Peruvian Trainee.

Please send your **completed form by 31 October each year per email** to Stefanie Halfmann, Darwin Initiative M&E Project Manager, Email: [stefanie.halfmann@ed.ac.uk](mailto:stefanie.halfmann@ed.ac.uk)