Darwin Initiative for the Survival of Species

Second Annual Report

Tree Diversity, Agroforestry Development and Reafforestation in the Peruvian Andes

Darwin Initiative

Annual Report

1. Darwin Project Information

Project Ref. Number	*332*
Project Title	***Tree diversity, agroforestry development and reafforestation in the Peruvian Andes***
Country(ies)	*Peru*
UK Contractor	*Royal Botanic Garden Edinburgh*
Partner Organisation(s)	*Herbario MOL, Departamento de Ciencias Forestales, Universidad Nacional Agraria, La Molina* *Asociación Peruana para la Promoción del Desarollo Sostentible (APRODES)*
Darwin Grant Value	*£77,724*
Start/End dates	*August 2004/August 2006*
Reporting period (1 Apr 200x to 31 Mar 200y) and annual report number (1,2,3..)	*1 April 2005 to 31 Mar 2006* *2*
Project website	*www.darwintreediversity.org.pe*
Author(s), date	*Toby Pennington/Carlos Reynel/ 2nd May 2006*

2. Project Background

This project follows and builds upon "*Tree diversity and agroforestry development in the Peruvian Amazon*" (09/017). It aims to provide high quality biodiversity data on trees from the Peruvian Andes of potential importance in agroforestry systems and for reafforestation. Andean forests are highly threatened, and this project will help to raise their profile, stimulate reafforestation, and improve the livelihoods of resource poor-farmers. It will also build Peru's capacity for biodiversity research by providing training of local personnel and improved herbarium resources for tree identification.

The project has two objectives:

1. To complete the capacity building of the Peruvian National Forest Herbarium (MOL) to enable it to deliver accurate tree species identifications essential for the biodiversity assessment that underpins the conservation of Peruvian forests. This builds upon the original project by completing the process of mounting, incorporation and distribution of specimens in the MOL collection, and by provision of a database available via the www of specimens only held at MOL and with no duplicates elsewhere.

2. To provide information on identification, uses and silviculture of c. 100 Andean tree species with economic potential, and of species suitable for reafforestation projects in Andean Peru. This will be complementary to the information about economically useful species from the Amazon region provided by the original project.

3. Project Purpose and Outputs

Purpose

To build capacity in Peru to survey, conserve and sustainably use Andean forests and their tree species, with particular emphasis in the Central Andean Chanchamayo region.

Outputs

Output 1: mount and incorporate into the collection the backlog of fully identified specimens at MOL, including databasing specimens only held at MOL; distribute duplicates from MOL to other international herbaria.

Output 2: provision of a teaching herbarium in Chanchamayo, Andean Peru.

Output 3: provision of a user-friendly identification manual containing silvicultural information of tree species with economic potential, and of species suitable for reafforestation projects in Andean Peru.

Output 4: Publicity to raise the profile of Andean forest conservation nationally and internationally.

Changes to proposed operational plan

Toby Pennington was granted sabbatical leave from the Royal Botanic Garden Edinburgh (RBGE), enabling him to be in Peru from six months from November 2005 to May 2006. This has enabled him to have far more direct involvement with project work, and has resulted in greater fieldwork, teaching and training outputs.

From January 2006 we have diverted some of the salary money earmarked to employ student trainees in herbarium curation work to José-Luis Marcelo, who has recently gained a permanent position as an assistant professor with MOL. We consider this a sensible change in terms of project legacy because José-Luis' long-term job includes a good deal of undergraduate student teaching in plant identification, herbarium curation, and general botany. The experience he can gain via project work will be extremely valuable in improving his student courses. He has also joined the project team on field visits, which are developing his identification skills. Though the university salaries in Peru are very low, and retention in these junior posts is problematic, José-Luis is clearly very committed to biodiversity science and especially teaching, and we consider that he can make a significant impact in Peru.

The Darwin Secretariat was informed of these changes by e-mail, though no response was received.

4. Progress

Project history

This report covers months nine to 20 of post-project funded work. This post-project aims to consolidate the capacity building of MOL following the project "*Tree diversity and agroforestry development in the Peruvian Amazon*" (162/09/017; Oct 2000 – Oct 2003), via completing the process of mounting, incorporation, distribution and databasing of specimens, and by providing more training. It will also provide a user-friendly identification and silviculture manual for 130 useful tree species from Andean Peru, which complements the guide to Amazonian species from the prior project. Finally, it will construct new teaching herbarium facilities in the Chanchamayo region of Andean Peru. The first eight months of the project provided a solid start, meeting all targets of specimen mounting, databasing, training and compilation of the identification manual.

Achievements

(i) Capacity-building in the MOL herbarium

Mounting of herbarium specimens.

This work is co-ordinated by Carlos Reynel, and has involved 11 undergraduate and recently graduated students. Training has been provided by Carlos Reynel, Aniceto Daza (MOL technician), José-Luis Marcelo and Pamela Caceres (one of the more experienced students trained during the first project). Our aim is for different students to be employed in rotation through the project so that they can gain experience of herbarium curation through hands-on work. 7500 specimens have been mounted, which was the target for this year.

An additional output is capturing digital images of key plant specimens. This is an excellent means of safeguarding at least some of the specimen information indefinitely, and disseminating it beyond MOL. Digital imaging has continued, with Pamela Caceres taking over 500 images of specimens of Moraceae, and Aniceto Daza has captured images of 1000 collections made by Terry Pennington as part of this and the prior project.

Databasing

3000 specimens have been databased, meeting the target for the year.

Distribution of duplicate specimens from MOL

MOL holds many duplicate specimens of individual plant collections. In some cases these collections are held only at MOL because no resources have been available to distribute them to collections elsewhere. Distribution of these duplicates to international herbaria outside Peru (e.g, RBGE, RBG Kew) will ensure their long-term safety and availability to the scientific community. Project staff at MOL secured an export permit for c. 2000 more duplicate herbarium specimens, which have been sent to the UK (now 3400 sent in total during the project). This involved long negotiation with the Peruvian Instituto de Recursos Naturales (INRENA). These specimens have been sorted by Terry Pennington at RBG Kew, and have been found to contain many interesting collections, including new species records for Peru. A set of duplicate specimens is now ready for sending to RBGE of these specimens, and of the 1400 sent during the first year of this project.

Training of Peruvian students

Toby Pennington's sabbatical period in Peru has enabled expansion of outputs in this area. The number of trainees was higher and their backgrounds more diverse (from undergraduate students to professional scientists), and the nature of training was diversified to include mentoring of undergraduate thesis students, some of whom are carrying out research of direct relevance to the project.

Toby Pennington taught a day-long course to the MSc in Forest Management (Gestión de Bosques y Recursos Forestales; four students) in January 2006 covering the plant diversity and biogeography of neotropical seasonally dry tropical forests, with particular emphasis on Peruvian formations. Trainees on this course included staff of the Universidad Agraria La Molina and INRENA. A second course covered neotropical plant biogeography (4 hours of lectures) to a group of c. 35 undergraduate students and 4-6 MSc students. A third course (one full day, February 2006) was taught at the University field station of La Genova to 10 undergraduate students. This covered the biodiversity and identification of the plant family Leguminosae, which is the dominant tree family of neotropical forests. The course involved half a day of lectures and laboratory work and half a day studying plants in the field.

Carlos Reynel is supervising many thesis students at the Universidad Nacional Agraria. Three of these are carrying out taxonomic studies of plant groups in the Andean Chachamayo region of Central Peru, which are directly relevant to the identification guide. These students are: Lucia Ibarguren (Euphorbiaceae), Natalia Reategui (bamboos) and Claudia Asmat (Myrtaceae). Additionally, Toby Pennington has provided supervision to Sonia Palacios, whose thesis covers savanna vegetation in the Chanchamayo region, and Jedi Rosero, whose thesis investigates growth patterns of seasonally dry tropical forest trees. Sonia accompanied Toby Pennington, Aniceto Daza and José-Luis Marcelo on a field visit to the Chanchamayo region in February 2006.

(ii) Provision of teaching herbaria in the Chanchamayo region of Andean Peru

Construction of the teaching herbaria at the Universidad Agraria's field stations at La Genova and Satipo are complete.

(iii) Provision of a user-friendly identification manual containing silvicultural information of tree species with economic potential, and of species suitable for reafforestaton projects in Andean Peru.

The list of priority species for inclusion in the identification guide now numbers 130 species, 30 more than the original estimate. Additional species continue to be added at the request of organisations working in reafforestation in the Central Andes (e.g., APRODES, Pronaturaleza and INRENA). An example of the kind of request we have received is to include more species of the genus *Inga* (Leguminosae), which contains many species of high potential for agroforestry. These species are morphologically similar and hard to identify, and users

(Pronaturaleza) have indicated that they would like as many of these species included as possible so that they might be better able to distinguish them. In the northern Andes, the NGO Centro Mallqui (Kuelap region) requested the inclusion of more species of *Weinmannia* (Cunoniaceae), which is another species-rich, morphologically complex genus.

Carlos Reynel has completed 120 descriptions and 125 illustrations for inclusion in the user-friendly identification guide. This is ahead of the original schedule of illustration and description of 100 species, though somewhat behind schedule in the sense that the aim was to have a complete draft ready by the end of year two. However, we estimate that the expanded book will be published in August 2006, only one month behind schedule. We consider that this small delay is justified by the user demands to increase the scope of the manual. A more inclusive manual will increase the eventual impact and legacy of the project.

Terry Pennington led a three week field training visit from April 24th to May 14th to Northern Peru with Aniceto Daza (MOL) and Jaime Leon (APRODES). They visited Cajamarca and Amazonas, following a route from Leimebamba to Balsas, and Chachapoyas to Mendoza. They collected specimens from 110 trees, including probable new species of the mahogany relative *Cedrela*, and of Lauraceae. The collections included fertile material of priority species for the manual, which have been ideal for illustration.

Carlos Reynel, Aniceto Daza and José-Luis Marcelo visited the Chanchamayo region in May 2005, November 2005 and February 2006 to make field collections of priority species for the manual. These visits involved APRODES staff (Migdonio Sanchez, Alejandro Reyna, Juan Quispe) and also liaison with Universidad Nacional Agraria staff co-ordinating the construction of the teaching herbaria. The APRODES trainees have received instruction in: identification of trees of montane and premontane forest; permanent plot establishment and monitoring; collection of and preparation of herbarium specimens; seed and seedling collection for growth in the APRODES nursery; recording of ethnobotanical information.

Toby Pennington and Aniceto Daza (MOL) made field visits to the Chanchamayo region in December 2005, and February 2006 (when they were accompanied by José-Luis Marcelo). A final visit to Chanchamayo for this project year scheduled for the end of March was delayed until the 4th-8th of April, when the field team also included Dr James Richardson (RBGE; whose visit was funded from RBGE funds) and an APRODES technician (Alejandro Reyna).

Toby Pennington also made additional field visits to: a second region of the Central Andes (Huancayo-Rio Mantaro) with Aniceto Daza and José-Luis Marcelo totalling 9 days; northern Peru (10 days) with Aniceto Daza and José-Luis Marcelo; and southern Peru (with Aniceto Daza; 8 days). These additional field trips aimed to ensure that the guide has wide geographic applicability. They enabled more field data to be gathered for priority species, and many digital photographs were taken, which we aim to add to the project website. This additional field research (6 weeks more than planned) did not impact the project budget as extra costs were met by Toby Pennington.

Bibliographic research in libraries at herbaria of RBGE and RBG Kew is necessary to discover existing published work about the taxonomy, biology, phenology, ecology and growth requirements of the species to be included in the identification manual. This literature is being copied and repatriated to Peru. This has been completed for 100 species, the target in the project schedule. Some more bibliographic research will be necessary in the final months of the project for some of the additional species to be included in the manual, though we anticipate that for many of these, there will be no published literature.

(iv) Publicity to raise the profile of Andean forest conservation nationally and internationally

The project website (www.darwintreediversity.org.pe) has been entirely re-worked, taking into account the reviewer comments of the previous annual report.

(http://www.rbge.org.uk/rbge/web/science/research/tropdivers/perueng.jsp and http://www.rbge.org.uk/rbge/web/science/research/tropdivers/peruspan.jsp) will be updated in May 2006 on Toby Pennington's return to the UK.

An article about this and the prior project was published in May 2005 in *National Park International Bulletin*. This is a quarterly magazine circulated in more than 140 countries that provides a forum through which news, views, ideas and opinions about national parks and protected areas worldwide are exchanged (see

http://www.nationalparkinternationalbulletin.com/). The author of this article learned about our work via articles in the RBGE *Botanics* magazine.

Workplan for next reporting period

(i) Capacity-building in the MOL herbarium

Mount 2500 and database 1000 specimens.

(ii) Provision of a user-friendly identification manual containing silvicultural information of tree species with economic potential, and of species suitable for reafforestation projects in Andean Peru.

Field visits to: Chanchamayo and Huancayo-Mantaro regions of Central Peru; and northern Peru. These aim to gather final field data for priority species.

Complete descriptions of ten species and illustrations of five species to complete the draft of the manual. Review draft and submit to publisher.

(iii) Publicity to raise the profile of Andean forest conservation nationally and internationally

Website update.

Conference presentation at Peruvian Botanical Congress (September).

Press releases in UK and Peru to mark end of project. In Peru, this is likely to take the form of a formal launch of the new book at the British Embassy.

Submission of two scientific papers.

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

The reviewers asked for responses to the following issues:

Working with APRODES – how has this changed mode of operation in comparison to prior project?

In many ways working with APRODES has proven more straightforward than working with ICRAF (International Centre for Research in Agroforestry; now the World Agroforestry Centre), especially in ease of dialogue. APRODES is based in both Lima and Chanchamayo (i.e., both principal venues for the current project), which facilitates discussion. Carlos Reynel and Eduardo Lavalle (Director of APRODES) are able to meet regularly in Lima. In contrast, in the prior project, ICRAF were based in Amazonian Peru, making regular face-to-face meetings in Lima with MOL staff logistically problematic. Furthermore, in the prior project, after John Weber (head, ICRAF Peru at the start of the project) resigned his post, he was replaced by a series of short-term appointments, making building of strong personal relationships difficult. In the current project, the staffing of APRODES has remained stable, and good relationships have been built.

Website and linkages

The website has been entirely redesigned (see www.darwintreediversity.org.pe). We have reverted to the original address, which was still better known than the second address we used, though the pages are still hosted on the Universidad Nacional Agraria La Molina server, which provides a stable, long-term platform.

Whilst in Peru, Toby Pennington was able to discuss linkages to and from the ICRAF website with Jonathan Cornelius (head, ICRAF, Peru). He is very keen to see linkages from ICRAF pages (www.icraf-peru.org) to the new project website, and these should soon be operational. Via Jonathan Cornelius, we have explored the possibility of adding data regarding tree species covered in both this and the prior project to the ICRAF AgroForestTree database, and this work will start in the remaining months of the project.

BG-BASE

As the reviewer noted, changing the nature of BG-BASE is largely beyond our influence. One BG-BASE director is based physically at the Royal Botanic Garden Edinburgh, but is not a staff member, and BG-BASE is a private company, not institutional software. We agree that bringing BG-BASE fully online as has happened with BRAHMS might be beneficial for various users. An enormous benefit for this project of using BG-BASE has been the close availability

of friendly, prompt, face-to-face technical support within the same institution in Edinburgh that has enabled the rapid resolution of various problems in Peru.

Other institutes in Latin America (e.g., Chile/Mexico) use BG-BASE, but no formal support network exists.

Commitment of RBGE and UK project staff to work in Peru

Toby Pennington spent 4th November 2005 to 31st March 2006 in Peru as part of a six month sabbatical visit (ends 3rd May 2006). A large part of the rationale for this visit was greater involvement in project work. That RBGE granted permission for this leave demonstrates the institute's commitment to this work in Peru.

Terry Pennington has fulfilled his scheduled commitment to field research and training in Peru (three weeks).

Methodology for tree selection

We will include the methodology used to make the selection of the 130 tree species in the introduction of the user-friendly manual as the reviewer suggests. Essentially, the principal difference in the construction of the priority lists of species between these projects was that in the prior project, ICRAF supplied a list of species highlighted by their own field research programmes. In the current project, we have generated the list via a series of discussions with organisations involved in agroforestry and reafforestation in the Peruvian Andes, and by our own field research that has involved informal interviews with individuals from communities in the Andes that use tree resources.

Print run of the user-friendly manual and web availability

The reviewer has highlighted an important issue that we unfortunately could not predict at the moment that the original proposal was drafted – that demand for the identification guide of "*árboles útiles de la Amazonia peruana*" would be so high. This means that it is probable that demand for the guide from the current project will be equal or perhaps greater, but we based the budget for printing on the budget of the prior project. We will therefore not have sufficient funds in the current budget to print the number of copies we may need. However, this problem should be regarded positively (better than no uptake!), and we are actively seeking sources of extra funds to print more copies. One strong possibility is a grant from the Members Programme of the Royal Botanic Garden Edinburgh, which can be applied for in January 2007.

The full text of the manual from the prior project is available on the project website, and the full text of the new manual will be similarly available.

6. Partnerships

Collaboration between the UK partners (principally RBGE, also RBG Kew) and Peruvian partners has continued to be excellent, and has been strengthened by Toby Pennington's long stay in Peru, which has enabled far closer contact with both MOL and APRODES. In order to arrange a long-stay academic visa for Toby Pennington and his family, a convenio was signed between the University of Edinburgh (where Toby Pennington is an honorary research fellow) and the Universidad Nacional Agraria, La Molina; the convenio had to be with a UK university, so RBGE was not eligible. This convenio can help facilitate future work, and wider issues such as student exchanges.

Contacts with other governmental and non-governmental organisations in Peru are also continuing, strengthening and widening.

Euridice Honorio, a student trainee of the prior project and now curator of the Amazonian herbarium at the Genaro Herrera field station (Instituto de Investigaciones de la Amazonia Peruana [IIAP])) won an EU Alban scholarship with the assistance of Toby Pennington to enable her to study for the University of Edinburgh-RBGE MSc in Taxonomy and Biodiversity of Plants (2005-06). This will strengthen links with IIAP when Euridice returns to her post in October 2006.

During his stay in Peru, Toby Pennington made contact with Jeremy Flanagan (Darwin project "DarwinNet"). Toby Pennington also liased with William Milliken and Oliver Whalley (RBG Kew) during the development of their recently funded Darwin project *Habitat Restoration and Sustainable use of Southern Peruvian Dry Forest*, in which Carlos Reynel is a principal Peruvian partner.

Carlos Reynel has continued to forge links with the increasing number NGO and governmental projects that are focused on agroforestry and reafforestation in the central Andes of Peru. For example, he has liaised with a new INRENA project, “the recuperation of soils of the Chanchamayo region”, which is lead by a colleague from the Universidad Agraria, José Rios. Discussions with the NGOs Pronaturaleza (Benjamin Kroll) and PRODAPP (Fernando Witting), which are active in agroforestry in the Central Andes has lead to the addition of extra species to the identification manual. Carlos Reynel, Aniceto Daza and José-Luis Marcelo have been involved in fieldwork of the NatureServe project “Andes-Amazonia” that aims to highlight areas of montane forest that merit conservation in the Andes of Bolivia and Peru (see http://www.natureserve.org/aboutUs/latinamerica/andes_amazon.jsp)

7. Impact and Sustainability

Profile and interest

Impact and profile of the Peru-UK team and its outputs continue to be supported by the results of the prior project, especially the dissemination of the user-friendly guide to useful Amazonian trees. 400 additional copies were printed with support of ICRAF, and all but 50 have already been distributed.

The improved herbarium continues to attract more users. In particular, the number of undergraduate and MSc students using it for their thesis research is rising. One new user group is forest concessionaires (see “Exit strategy” below), who are now consulting the herbarium and its staff to identify forest tree species. These concessionaires are legally obliged to obtain inventory information for the forests that they manage.

Exit strategy

The MOL herbarium is used as a source of identification of Peruvian forest trees by University researchers, forest concessionaires, NGOs, INRENA, petrochemical companies and the general public. Furthermore, it is used as an educational tool for forestry undergraduate students, of which the annual intake is 150. The provision of a well-curated and databased collection at MOL will benefit these user groups for many years, and the number of potential users will increase with the availability of data on-line. We are on schedule to mount and incorportate the backlog of unmounted specimens that existed at MOL, placing the herbarium on a firm foundation for the future. The provision of teaching herbaria in the Chanchamayo region will also facilitate teaching of student plant identification courses and plant diversity studies in the region.

Although the impact of the user-friendly identification and silviculture manual to Andean trees may not be immediate, it will enable organisations such as APRODES that are working in the Peruvian Andes to better deliver projects in conservation, reafforestation and improving the livelihoods of local people via sustainable use of native Andean plants. The reviewer clearly questioned this assertion (under the “scientific and technical assessment” of their review), but we believe it is made more probable by recent changes in the laws in Peru related to forestry and land tenancy. The Peruvian government is now granting concessions of forest for both conservation and sustainable forestry to organisations that they assess as able to properly care for and manage these areas for the duration of the long leases that have been granted (up to 40 years). An example is a conservaton concession of 4000 Ha of Andean forest in the Chanchamayo region granted to APRODES in 2005, which has been one of the key field sites for this project. These legal changes are designed to stimulate both forestry and conservation, and it appears that they are having the desired effect as evidenced by the inceasing number of NGOs operating in agroforestry and conservation in the Andes of Peru. Many of these organisations are already aware of our work, and some (e.g., Pronaturaleza, PRODAPP, Centro Mallqui) have persuaded us to increase the scope of the manual by including more species. This is clearly because they intend to use the identification manual in their future work. We therefore believe that the manual will positively impact upon future projects in the Peruvian Andes that involve agroforestry and reafforestation.

8. Outputs, Outcomes and Dissemination

(i) Additional outputs (see also 3 above)

Completion of construction of an additional teaching herbarium in the Chanchamayo region at the Universidad Nacional Agraria’s field station in Satipo.

Toby Pennington’s six month stay in Peru enabled increase and diversification in training and fieldwork outputs as outlined in 4 (“Progress”) above.

(ii) Outputs partly achieved

All outputs were achieved.

(iii) Dissemination activities in Peru

An important dissemination activity is the circulation of the user friendly identification and silviculture manual to tree species from the Peruvian Amazon with economic potential (*Árboles útiles de la Amazonía peruana y sus usos*) that resulted form the prior project. Demand in Peru continues to be high and has resulted in the distribution of 350 of 400 extra copies that were printed in 2005. This is important publicity for the current work because recipients are aware that it is producing a partner volume covering Andean tree species.

Other dissemination activities in Peru are the new project website, and Carlos Reynel's attendance of the Ecodialogo 2006 conference in Iquitos in February 2006.

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

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	TOTAL
4A	Teaching in plant systematics/biogeogeography for Peruvian undergraduates	5	45			
4B	Teaching in plant systematics for Peruvian undergraduates	2 days	4 days			
4A	Work experience and training in herbarium curation for Peruvian undergraduates	5	11			
4B	Work experience and training in herbarium curation for Peruvian undergraduates	32 weeks	52 weeks			
6A	Workshop in use of new version of botanical database (BG-BASE) used by the project for 5 Peruvians (2 technicians, one graduate, 2 undergraduate)	5				
6B	Workshop in use of new version of botanical database (BG-BASE) used by the project for Peruvian technicians, graduate and undergraduate students	3 days				
6A	Peruvian scientists, technicians and students trained in field techniques/plant identification	6	7			
6B	Peruvian scientists, technicians and students trained in field techniques/plant identification	6 weeks	9 weeks			

8	Weeks spent by UK project staff in Peru	8	23
12B	Specimens databased	1 collection (2100 records)	1 collection 3000 records)
13B	Specimens mounted and added to MOL collection	1 collection (6000 specimens)	1 collection (7500 specimens)
14B	Conferences attended		1
15A	National press release in Peru	1	
15C	National press release in UK	1	
15D	Local press release in UK	1	
16A	Updated website	1	1
23	Additional resources raised for project: US$2500 for reprinting of user-friendly guide to Amazonian trees (World Agroforestry Centre) Free labour for construction of Andean herbaria (Universidad Nacional Agraria), allowing construction of extra facility at Satipo	c.US$3500	

Table 2: Publications

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (e.g. contact address, website)	Cost £
Website	Carlos Reynel/Toby Pennington (2006)		www.darwintreediversity.org.pe	
Website	Toby Pennington (2004; updated)		http://www.rbge.org.uk/rbge/web/science/research/tropdivers/perueng.jsp	
Website	Toby Pennington/ Reynaldo Linares (2004; updated)		*and* http://www.rbge.org.uk/rbge/web/science/research/tropdivers/perusp an.jsp	

9. 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
Rent, rates, heating, overheads etc			
Office costs (e.g. postage, telephone, stationery)			
Travel and subsistence			
Printing			
Conferences, seminars, etc			
Capital items/equipment			
Others			
Salaries (specify)			
Terry Pennington			
Carlos Reynel			
Aniceto Daza			
Rocio Ravello			
Student trainees			
Total salaries			
TOTAL			

10. Monitoring, Evaluation and Lessons

MOL and APRODES staff in the field

The key objective for this first phase of field training is that all participants should be able to collect and correctly process plant specimens independently. Terry Pennington, Carlos Reynel and Toby Pennington have supervised this monitoring. The indicators of achievement are high-quality specimens suitable for illustration for the field guide, and these have been produced. The success of this element of the project is vital for achieving part of the purpose of the project: to build capacity to survey Andean forests and their tree species.

MOL technicians and students employed in the herbarium

The key objectives for the second phase of herbarium work were that participants should be efficiently using the new version of BG-BASE (specimen database) and rapidly mount and curate specimens. The indicators of achievement are the numbers of specimens mounted and databased, and targets have been reached. Carlos Reynel and Toby Pennington supervise this monitoring.

Peruvian undergraduate students

Undergraduate and MSc students who attended courses in plant systematics and biogeography are monitored through formal examinations on taxonomy and biodiversity, and by thesis research. Dr Carlos Reynel supervises this monitoring.

Internal and external evaluation

The project has been monitored by the RBGE internal assessment system, with financial assessment monitored by the RBGE Finance Division. External evaluation has been carried out by the Scottish Executive Environment and Rural Affairs Department (SEERAD). SEERAD are the main sponsor organisation for RBGE, and have monitored the project alongside other RBGE research projects.

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

Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2005/2006

Project summary	Measurable Indicators	Progress and Achievements April 2005-Mar 2006	Actions required/planned for next period
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 • 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			
Purpose To build capacity in Peru to survey, conserve and sustainably use Andean forests and their tree species, with particular emphasis in the Central Andean Chanchamayo region	Previously un-utilised species and new knowledge of silvicultural requirements incorporated into agroforestry systems and reafforestation projects in Central Peru. More tree diversity surveys in Andean forests, with identifications using improved herbaria and identification manual		
Outputs			
Partner organisation MOL able to deliver accurate information about the identification and distribution of Peruvian trees	Backlog of fully identified specimens mounted, databased and incorporated into MOL collection; new teaching herbarium in Chanchamayo built; 24 undergraduates taught plant systematics	7500 specimens mounted at MOL 3000 specimens databased at MOL 1500 specimens digitally imaged at MOL Courses in plant systematics and biogeography for Peruvian students 11 MOL students received on-the-job training in herbarium curation MOL assistant professor, technician	Mount 2500 specimens Database 1000 specimens

		and student received field training in collection and identification of Andean trees 2 Teaching herbaria in Andean Peru completed	
Partner organisation APRODES delivers improved agroforestry systems and reafforestation	Greater range of tree species used in APRODES agroforestry systems and reafforestation projects	APRODES scientists and technicians received field training in collection and identification of Andean trees	
User friendly identification and silviculture guide published and distributed	Manual reviewed by potential user groups; publisher identified and distribution arrangements made. 500 copies distributed	Species list increased in response to user needs Descriptions of 120 species; illustrations of 125 species; bibiliographic information repatriated from UK to Peru for 100 species	Publication and distribution of manual
Publications and presentations	2 press releases in UK; 2 in Peru; One conference presentation; 2 papers published in scientific journals; website	Article in *National Parks International Bulletin* Website updated	Update website Press releases in UK and Peru 2 scientific papers submitted

Note: Please do NOT expand rows to include activities since their completion and outcomes should be reported under the column on progress and achievements at output and purpose levels.