Darwin Initiative for the Survival of Species

Annual Report

Tree Diversity and Agroforestry Development in the Peruvian Amazon

1.   Darwin Project Information

Project title	**Tree diversity and agroforestry development in the Peruvian Amazon**
Country(ies)	Peru
Contractor	Royal Botanic Garden Edinburgh
Project Reference No.	09/017
Grant Value	166,685
Start/Finishing dates	Oct 2000/Oct 2003
Reporting period	1.10.2000 to 31.3.2001

2.   Project Background

Peru is a resource poor country containing c. 10% of the world's plant species (equivalent to the whole of Central America). The most important habitat, both socio-economically, and in terms of numbers of species is the rain forest of the Amazon Basin. The International Centre for Research in Agroforestry (ICRAF), a key collaborator in this project, is developing small scale agroforestry systems for resource-poor farms using native tree species as a means of slowing the destruction of virgin forest by slash and burn, conserving genetic resources of trees and improving the livelihoods of poor farmers. ICRAF surveyed farmers to determine their preferred tree species for agroforestry, and compiled a list of 150 species that are widely used and have potential for various agroforestry systems. However, many of these priority tree species have not been scientifically identified, and are known only by their Spanish vernacular names. Until their scientific names are discovered with certainty, nothing will be known of existing data relating to their uses nor about related species of economic use. Furthermore, ICRAF is unable to collect seed from across their range for proper evaluation in growth trials. This project will name these species, provide a user-friendly guide for their identification, and a database of information on their distribution, uses and ecology. In the process, it will build the capacity of the Peruvian National Forest Herbarium (MOL), the other collaborator in the project, by providing training of local personnel, new equipment and repatriated information from the Royal Botanic Gardens Edinburgh (RBGE) and Kew (RBG Kew).

3.   Project Objectives

- State the purpose and objectives (or purpose and outputs) of the project. Please include the Logical Framework for this project (as an appendix) if this formed part of the original proposal or has been developed since, and report against this.

1. Training in Peru of scientists, technicians and students in taxonomy, field collection and identification skills, and curation and databasing techniques.

2. Training Peruvian scientists in the UK.

3. Collect and accurately identify 150 priority tree species selected by local farmers in the Peruvian Amazon as economically beneficial; prepare a database on these species using collections in herbaria at MOL, RBGE and RBG Kew, that will be available through the www; and produce a user-friendly identification manual in Spanish for these and related species.

4. Repatriate specimen data and important literature relating to priority species from UK to MOL.

5. Improve the capacity of MOL by supplying the basic equipment for running and curating its herbarium.

6. Promote awareness of Peruvian forest biodiversity issues locally, nationally and internationally

- Have the objectives or proposed operational plan been modified over the last year and have these changes been approved by the Darwin Secretariat?

No changes have been made to the agreed project schedule

4. Progress

- Please provide a brief history of the project to the beginning of this reporting period. (1 para.)

N/A – This report covers the first six months of the project

- Summarise progress over the last year against the agreed baseline timetable for the period. Explain differences including any slippage or additional outputs and activities.

Progress over the first six months of the project (October 2000 – March 2001) has been very good, and we are in line with the agreed schedule. All the new equipment has been purchased for MOL herbarium. A highlight was the week-long databasing course in Peru. MOL is now running the database independently, and have already databased c. 800 specimens, and mounted 2300 specimens. A MOU has been signed between the Universidad Agraria, La Molina and the Royal Botanic Garden Edinburgh.

All key milestones have been met, with the single exception that ICRAF staff were not available for the first field training in September/October due to commitments to other ICRAF projects. Their place was taken by staff from two Government organisations: INIA (Instituto Nacional de Investigaciones Agrarias) and IIAP (Instituto de Investigaciones de la Amazonia Peruana). The missed training for ICRAF staff will be accommodated in later field trips of the project.

The objectives have been expanded to include gathering information on seed storage and germination for some of our priority species for which no information exists. This will be gathered as research projects by undergraduate students under the supervision of ICRAF and UK staff. These research projects will be formally assessed as part of the student's degree course.

- Provide an account of the project's research, training, and/or technical work during the last year. This should include discussion on selection criteria for participants, research and training methodologies as well as results. Please **summarise** techniques and results and, if necessary, provide more detailed information in appendices (this may include cross-references to attached publications)

Field research and training

Two field trips of four weeks (8 weeks total) were carried out in the Peruvian Amazon, lead by Dr Terry Pennington. Their principal objective was to collect specimens from our list of 150 priority tree species using standard botanical collection techniques, and to train Peruvian participants in these techniques and in plant identification skills. We have now collected specimens from c. 100 of these species, and permanently marked 81 trees of 76 species. These marked trees can now be relocated to enable future collections of flowers and fruit. This will ensure accurate scientific identification, and also high quality specimens suitable for illustration for a field guide.

These field trips were attended by one technician from MOL, two staff from ICRAF and staff from two Government organisations: INIA (Instituto Nacional de Investigaciones Agrarias) and IIAP (Instituto de Investigaciones de la Amazonia Peruana). The trainees were selected because they have permanent contracts with their organisations, and will therefore be able to pass on plant collection and identification skills beyond the end of the Darwin project.

Two subsidiary trips of two weeks in total, lead by Toby Pennington and Sam Bridgewater (RBGE), provided the MOL technician, and a MOL undergraduate student, with botanical collection and identification training. The undergraduate student is carrying out a botanical inventory project as part of her degree course, and we hope to have made a significant contribution to the success of her work.

Database and curation training

A one-week, full-time course in BG-Base, the database purchased for MOL, was lead by Dr Kerry Walter and Toby Pennington (RBGE). Dr Walter was in Peru for two weeks, and outside of course time worked with undergraduate and MSc students at MOL discussing specific databasing issues relating to their research projects.

The training course was attended by two MOL technicians (including the fieldwork trainee), and eight undergraduate students. The selection criteria were that the two MOL technicians have permanent positions and will thus be able to pass on skills beyond the end of the Darwin project. All the students are involved in research projects based in botanical inventory, and will thus be collecting new botanical specimens, which require databasing, identification and curation within the MOL herbarium. Teaching these students curation and databasing skills will enable them to understand and use the herbarium correctly. MOL staff and students have since databased c. 800 specimens. Dr Kerry Walter has translated 6000 existing specimen records from an Excel spreadsheet into BG-Base, and translated 17,000 plant names from a text file of the Checklist of the Flora of Peru. MOL therefore already has a substantial database in place.

Improvement of Facilities at the MOL herbarium

We have spent £19250 improving facilities at the MOL herbarium. The principal purchases have been:

Computer, printer and new database

Digital camera (for recording images of specimens in database)

74 new specimen cabinets

Freezer for killing insect pests on specimens

2 new microscopes, 6 renovated microscopes, 30 handlenses

New plant drying facility

New field collecting equipment (climbing spikes, long-arm pruners, aluminium corrugates, GPS, binoculars)

Basic literature

New lighting

4000 sheets of mounting paper

- Discuss any significant difficulties encountered during the year.

The only difficulty encountered was the lack of availability of ICRAF staff for the first field training in September/October due to their commitments to other ICRAF projects. Their place was taken by staff from two Government organisations: INIA (Instituto Nacional de Investigaciones Agrarias) and IIAP (Instituto de Investigaciones de la Amazonia Peruana). The missed training for ICRAF staff will be accommodated in later field trips of the project.

A major concern is the US dollar – pound exchange rate. Due to the instability of the Peruvian currency, all large costs in Peru (e.g., salaries) are paid in US dollars. The budget was calculated using an exchange rate of £1 = $1.6, which had been the rate for the past few years. However, the rate is now £1 = $1.4, which means that funds available for travel in Peru, and Peruvian salaries have been cut by 12.5%.

- Has the design of the project been enhanced over the last year, e.g. refining methods, indicators for measuring achievements, exit strategies?

The principal area of discussion has been training at MOL. Carlos Reynel, our principal collaborator at MOL has indicated that some of the most valuable training will be via one-on-one interaction with undergraduate students. These students carry out a year-long research project as part of their degrees. Dr Reynel is supervising a series of forest inventory projects throughout Peru. These contribute new specimens to augment the MOL herbarium, and new knowledge of Peruvian forest biodiversity. Because these projects draw heavily upon, and add collections to the MOL herbarium, it is vital that the students understand how the collection is curated. Curation training through the project will now be principally in the form of one-to-one training with students by Terry and Toby Pennington. Carlos Reynel reports a 100 percent employment record (in NGOs government environmental agencies) of his students, and thus these students will carry this knowledge on to relevant posts beyond their University training.

We are also developing new student research projects, to be supervised by ICRAF staff, which will focus upon the germination and growth requirements for some of our priority species. This information is essential to ICRAF's future use of these species, and will increase the value of our planned field manual. Toby Pennington is also liasing with other scientists in the UK and elsewhere (Dr Colin Hughes, University of Oxford; Professor Janet Sprent, University of Dundee, Dr Matt Lavin, Montana State University, USA), who may be working in Peru during the time of the Darwin project, and who may be able to be involved in supervising undergraduate student research projects

- Present a timetable (workplan) for the next reporting period.

2001/2002		
April	6A/B	Darwin fellow to receive database training at RBGE (one week)
May	4A/B	One week course in taxonomy and biodiversity for 12 undergraduates takes place
May	15A/B	Local and National press releases in Peru
May	6A/B	Curation training for 2 MOL technicians (1 week)
August	3	Darwin fellow attends RBG Kew herbarium techniques course
August	15D	Local press release (RBG Kew/London)
September	14B	Presentation at Systematics Association International Biennial Conference (London)
September	6A/B	Field training 2 ICRAF and 1 MOL technician (identification; 4-6 weeks)
September	6A/B	Curation training for 2 MOL technicians (1 week)
September	19C	Local radio feature in Peru
October	19A	National radio feature in UK

5. 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

Collaboration has been excellent. Project staff have been in Peru for four of the first six months of the project, which has been the major reason for success. When not in Peru, we are in regular e-mail contact, and short phone calls have proved a very valuable means of communication.

The majority of contact has been with staff at MOL. Toby Pennington has been principally involved in discussing with Carlos Reynel (Project co-ordinator at MOL) the evolving training elements of the project in relation to MOL staff and students. He has also spent time with MOL students advising on research projects, and providing taxonomic and curation training. This direct contact has been very useful in gaining a greater understanding of training needs early in the project.

Terry Pennington has co-ordinated the collaborative fieldwork element with ICRAF and MOL staff, and has discussed with ICRAF the kind of information that they require about the priority tree species. He has also been involved with MOL staff and students in curation training.

- Has the project been able to collaborate with similar projects in the host country or establish new links with / between local or international organisations involved in biodiversity conservation?

One field trip was attended by staff from two Government organisations: INIA (Instituto Nacional de Investigaciones Agrarias) and IIAP (Instituto de Investigaciones de la Amazonia Peruana).

6.   Impact and Sustainability

- Discuss the profile of the project within the country and what efforts have been made during the year to promote the work. What evidence is there for increasing interest and capacity for biodiversity resulting from the project? Are satisfactory exit strategies for the project in place?

Toby Pennington made visits in Lima to the British Embassy and British Council to inform them that the project was underway, and to discuss whether they had any additional funding for student involvement during the project in Peru. It is hoped that links with these organisations will aid the profile of the project within Peru in the future.

There is a great interest in the project from students within MOL (for example, more students wished to attend the databasing course than we had places available). Our shift in some of the training emphasis to direct involvement with student research projects reflects this interest. This will certainly ensure that the project does have a lasting legacy because these students currently have a 100% employment record in Government Agencies and NGOs one they leave MOL.

7.   Outputs, Outcomes and Dissemination

- Please expand and complete Table 1. **Quantify** project outputs over the last year using the coding and format from the Darwin Initiative Standard Output Measures (see website for details) and give a brief description. Please list and report on appropriate Code Nos. only. The level of detail required is specified in the Guidance notes on Output Definitions which accompanies the List of Standard Output Measures.

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

Code No.	Quantity	Description
6A	10 weeks	8 Peruvians trained in field botany techniques
6A	1 week	10 Peruvians trained in botanical databasing
6A	1 week	4 Peruvians trained in herbarium curation and identification techniques
8	16 weeks	16 weeks spent in Peru by UK project staff
12A	1	1 computer database established in host country
15C	1	National UK press release
15D	1	Local Edinburgh press release
20	£19250	Herbarium facilities improved with £19250 of new equipment, facilities and software

- Explain differences in actual outputs against those agreed in the initial 'Project Implementation Timetable' and the 'Project Outputs Schedule', i.e. what outputs were not achieved or only partly achieved? Were additional outputs achieved?

All outputs have been achieved as set out in the Project Schedule

- In Table 2, provide full details of all publications and material produced over the last year that can be publicly accessed, e.g. title, name of publisher, contact details, cost. Details will be recorded on the Darwin Monitoring Website Publications database which is currently being compiled. Mark (*) all publications and other material that you have included with this report

NA – Due to the project being only 6 months old

Table 2: Publications

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

- Provide details of dissemination activities in the host country during the year. Will these activities be continued by the host country when the project finishes, and how will this be funded and implemented?

NA – Due to the project being only 6 months old

8. Project Expenditure
- Please expand and complete Table 3.

Table 3: Project expenditure during the reporting period

Item	Budget	Expenditure

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

The overspend on travel and subsistence reflects that a fieldtrip, originally planned for 2001-2 was brought forward (this was agreed with Darwin Secretariat).

The underspend on capital items is caused by receipts being received from Peru in the second week of April 2001. All capital items (to the full value of the budget) were purchased in Peru before March 31st 2001.

Overall, the budget is well on track, despite the loss of revenue caused by the US$ - £ exchange rate.

9. 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 indicators of achievements (both qualitative and quantitative) and how are you measuring these?

1. Peruvian undergraduate students: by the ability to collect and properly process plant specimens; through formal examinations of thesis research. Dr Carlos Reynel will supervise this monitoring, but it is too early in the project to measure these outputs.

2. MOL and ICRAF staff in the field: all participants should be able to collect and properly process plant specimens independently. Terry Pennington is supervising this monitoring, and he confirms by observation on his field visit (Jan-Feb 2001) that all participants can collect and process specimens properly. This was

confirmed in the case of the MOL technician by him visiting one of our field sites independently in December and collecting high-quality plant specimens.

3. MOL technicians and students in the herbarium: participants should be able to use BG-Base (specimen database) and to mount and curate specimens independently. This is confirmed by c. 1000 specimens databased, and 2300 mounted in the first 6 months of the project.

- Are there lessons that you learned from this years work and can you build this learning into future plans?

Frequent communication is vital. In many cases a brief phone call from the UK can be very valuable to avoid misunderstandings.

10.   Author(s) / Date

Toby Pennington/30 April 2001