

Year 1 Annual Report

Taxonomic training for a
neglected biodiversity hotspot
within Lao PDR

163/13/007



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Darwin Initiative for the Survival of Species

Annual Report

1. Darwin Project Information

Project Ref. Number	163/13/007
Project Title	Taxonomic training for a neglected biodiversity hotspot within Lao PDR
Country(ies)	Lao PDR
UK Contractor	Royal Botanic Garden Edinburgh
Partner Organisation(s)	Forest Research Center (National Agriculture and Forestry Research Institute – NAFRI) National University of Lao PDR, IUCN Lao
Darwin Grant Value	£156,022
Start/End dates	1 April 2004 - 31 March 2007
Reporting period (1 Apr 200x to 31 Mar 200y) and report number (1,2,3..)	Year 1 Annual Report
Project website	http://www.rbge.org.uk/rbge/web/science/research/tropdivers/laos.jsp
Author(s), date	M.Newman, P.Thomas, S. Ketphanh & K.Sengdala 30 April 2005

2. Project Background

Lao PDR is an extreme case of a country that is rich in biodiversity but poor in resources. Over 40% of the primary forest remains but is under increasing pressure. 75% of the population depend directly on natural resources - as population increases, pressures for development and exploitation also increase. A major problem is that floristic diversity is poorly known, even though Lao PDR is identified as a Centre of Plant Diversity and a Global 200 priority area. Surrounding countries (Thailand and Vietnam) have documented floras in excess of 10 000 species but only about 2 000 have been recorded from Lao PDR - botanical work has been almost absent since World War 2. Available botanical information is mainly in French, a language no longer used by many Laotians. A shortage of trained taxonomists is a principal factor inhibiting implementation of biodiversity conservation and utilisation strategies. Taxonomic training, institutional capacity building and collaborative projects involving transfer of skills and knowledge to Laotians, creation of a national species and threatened plant database are all priorities in the draft Biodiversity Action Plan. These aspects were highlighted during a preliminary visit by the UK project leader in 2002, at the invitation of the Forest Research Center (FRC), National University of Lao PDR (NUoL) and IUCN Lao PDR. The aim was to assess taxonomic training needs, design an extended program of training and agree an MoU – this project is the result of that consultation. The project will train up to 30 Laotian counterparts over 3 years in tropical taxonomy through an integrated programme of field work and herbarium based work, using specimens collected in National Biodiversity

Conservation Areas (NBCA). It will include staff from the FRC, the NBCAs, lecturers and students from NUoL. It will promote collaboration between national conservation and research agencies, by focussing the work on key NBCAs such as Nakai Nam Theun. This NBCA is identified by the Lao PDR as a target area for integrated research; one output will be a preliminary checklist. Other key outputs include the foundation of a national species database and threatened plant list, incorporating repatriated data from European herbaria as well as integrating data from previous projects. The threatened plant list will also provide useful data to assist Lao PDR in implementing its obligations under the international treaties and conventions to which it is a signatory.

3. Project Purpose and Outputs

3.1 Project Purpose : To assist Lao PDR to implement CBD obligations and BAP objectives by providing training in tropical botanical taxonomy to staff in key institutes. To establish the foundation for a National Species Database and Threatened Plant List.

3.2 Project Outputs: Multilingual botanical dictionary, National Species Database, National Threatened Plant List; NBCA Plant checklist; Incorporation of collections into herbaria; Report to GTI; 3 Scientific papers

3.3 Changes and Modifications

Several aspects of the original operational plan and timetable have been changed or modified during the first year. All relevant changes and modifications were agreed with the Secretariat and a modified Stage 2 schedule was submitted and approved by the Secretariat. The changes are as follows:

- **Changes in Staff and Roles of Partners:** the staff from FRC that were named on the Stage 2 proposal had all been replaced or promoted by the time the project was approved by the Darwin Secretariat. New staff were identified by FRC and introduced to UK staff during the planning visit in July 2004. They include people who were involved in the only previous Darwin project in Lao PDR – the successful ‘Biodiversity and Sustainable use of Rattans’. During the July visit it was also agreed by all parties that the IUCN country office would be responsible for financial management of transferred project funds. Dr Colin Pendry took up a permanent post at the RBGE and was replaced by Ms Kate Armstrong. She will fulfil the same role as Dr Pendry.
- **Changes to Visit schedules:** An additional visit by UK staff to Lao PDR was undertaken in July 2004. The first year’s Training and field work visit was delayed until January 2005. This was partly in response to the introduction of new procedures for obtaining permission to work in the National Biodiversity Conservation Area (NBCA). The visit to the UK by senior Lao partners was delayed until Year 2 (July 2005). The portion of the Year 1 budget allocated for the visit has been carried forward to Year 2. The number of staff from the Lao organisations due to visit the UK has increased from 2 to 3. Additional finance has been secured from the Royal Society of Edinburgh.
- **Modifications to databases:** In the original proposal, the database would have been an Access based application developed by the RBGE over recent years (PADME). This will be replaced by the BRAHMS system as part of the collaboration with the BIOTIK project. Further details are in the section on collaboration.

4. Progress

Approval for the project was received from the Darwin Secretariat at the end of May 2004. In July 2004, UK staff met counterparts from the BIOTIK project in Paris. BIOTIK is an EU funded project that will focus on the development of computer aided identification systems for tree species of Lao PDR and the Western Ghats of India (see section on collaboration for further details). In July 2004, UK staff also travelled to Lao PDR for consultation and planning with Lao counterparts. The summary of the report from this visit is included as Appendix 1. This also involved a one week visit to Thailand to purchase equipment. In December 2004,

senior Lao staff organised a 3 day workshop for the trainees who had been selected to take part in the first training visit by UK staff. A report from that workshop is included as Appendix 2. That visit took place between 25th January and 12th March 2005 and involved a 2 week field trip to Nakai Nam Theun NBCA and 3 weeks of formal botanical training. Other activities in the first year included

- successful negotiation of the extension of the existing MoU between RBGE and NAFRI until 2009 to cover the current project and a possible follow up project.
- successful application to the Nam Theun Water Management Protection Authority (WMPA) for permission to work in the NBCA over the course of the project.
- preparation of the botanical glossary due to be published at the end of Year 2. More than 2000 botanical terms have been identified in French and English. Staff from NUoL have started translation into Lao.
- preparing a draft of a '*A guide to plant identification resources for use in Lao PDR*' based on Thonner's analytical key to the identification of plant families (included as Appendix 3) for use during the training. Botanical literature for Lao PDR is incomplete, out of date and scattered. The purpose of this guide is to lead the reader to the most suitable revision, once the family has been identified. An earlier version, entitled "Non-timber Forest Products Project. Botanical Handbook" was published by Vichit Lamxay in 2000 but was not widely circulated and is difficult to find. During the second year, this will be expanded to include the published floras of Vietnam and China
- development of the National Species and Threatened Plants database.
- continued work at the RBGE on the identification of the specimens collected during the field work. 90% have been identified to family level and almost 50% to species level. 33 taxa that are not recorded in the most recent checklist for Lao PDR have been identified. One collection may represent a new species in the Euphorbiaceae. Work at the RBGE will be restricted for the first 6 months of the second year due to major renovations to the herbarium. NUoL staff are also working on the identification of the Orchidaceae that were collected.
- Successful application to the Royal Society of Edinburgh for a grant to support a visit to the UK by Madame Bouakhaykhone Svengsuksa, Dean of the Faculty of Science at NUoL in the second year of the project
- publication of a profile of the project in the RBGE's newsletter (Appendix 4)

4.1 Pre training Course December 27-29

The aim of the pre-training course was to assess potential trainees for the field work and taxonomic training that was planned for February and March and to ensure that trainees would have the same minimum level of botanical knowledge. A report of the training was produced by Mr Khamphone Sengdala and is included as Appendix 2

4.2 Field Work and field training (February 10-23, 2005)

Field work was undertaken in the Ban Mak Pheuang area in the Nakai Nam Theun NBCA. The field team consisted of 3 UK staff, 1 consultant from NUoL, 2 assistant trainers (the project coordinator and his assistant) and 4 post graduate trainees from FRC and NUoL and 2 trainees from the NBCA. All trainees except the NBCA staff attended the pre-training course in December. The team was accompanied by guides from the village.

The aim of the field work was

- to provide training in
 - field identification of vascular plants,
 - botanical field work,
- to collect specimens for the National Species database and the checklist of plants for the NBCA.

By the end of the training, each trainee was expected to be proficient in the following competencies

- Understand and use a GPS to record locality data
- Record an accurate, systematic description of each collection including locality data, main vegetation/forest type, form (tree, shrub liana etc) dimensions, bark, foliage characters. Flower/fruit characters
- Maintain an accurate field book

- Manage a systematic field numbering system
- Prepare specimens for pressing/ Schweinfurth treatment
- Be able to identify at least three of the commonest families based on field characters (Fagaceae, Dipterocarpaceae and Leguminosae).

4.2.1. Field Training and Field Work Results

The field team consisted of up to 18 people – 5 trainers (3 UK staff and 2 Lao staff), 10 trainees and 3 local guides.

Seven localities, representing a range of vegetation types were visited and a total of 356 collections made, usually in sets of 6, (a total of 2157 specimens). Additional collections were made to provide material for the training in Vientiane.

Local names and uses were also recorded. A survey of village trees was also carried out.

These trees were part of the original forest and had been retained for their medicinal or edible properties. Amongst them were several specimens of important medicinal trees known locally as ‘bong’. These are mainly from the family Lauraceae and are among the most valued trees in Lao. Previous NTFP surveys teams have had considerable difficulty identifying them correctly. If the team is successful in naming them, then the information will be relayed back to the NBCA staff and NTFP teams and the trees in the village labelled. All specimens were preserved in alcohol and dried at the university after the team returned. For the duration of the field work, the trainers ensured that all trainees undertook the full range of activities. In the last 2 days of the field work the trainees were responsible for the organisation of the field work. At the end of the field work, all trainees were proficient in the majority of the competencies listed above. The trainees from the NBCA lacked formal botanical knowledge and were not as proficient in identification of the common families as the other students.

4.3 Formal Taxonomic training (February 22 – March 8, 2005)

The principal aim of the formal training was to teach trainees how to systematically identify vascular plants to family, genus and species level through the use of internationally recognised family keys and regional floras. A secondary aim was to familiarise trainees with herbarium procedures. Training took place in the laboratories of NUoL. Twelve trainees from FRC, NUoL and the Department of Forestry participated including all those who participated in the field work. The training was mainly delivered by Dr Mark Newman, Kate Armstrong with a roster system for Dr Bouakhaykhone Svengsuksa, Vichit Lamxay (NUoL) and Sounthone Ketphanh (project leader FRC). At least one Lao trainer proficient in French and English was present each day. For the majority of the training the ratio of trainers to trainees was 1:3. Further support was given by Mr Khamphone Sengdala (FRC project coordinator) and Mr Banxa Thammavong (FRC project assistant).

4.3.1 Formal Taxonomic Training Methodology

Initially, specimens to be identified were collected from the University grounds. As soon as the specimens that had been collected from the NBCA were dried, they were used for the training. The specimens were chosen to represent a wide range of plant structures, e.g. simple vs. compound leaves, free sepals and petals vs. fused ones, superior vs. inferior ovaries, apocarpous vs. syncarpous ovaries. They included some of the most common families encountered in SE Asian forests (Lauraceae, Leguminosae, Rubiaceae) as well as more unusual families that are frequently mistaken for common families e.g. Connaraceae for Leguminosae. Family level identification was done using *Thonner's analytical key to the families of flowering plants* (in English). Each trainee received a copy of this work. Genus and species level identifications were done using originals and photocopies of the *Flore générale de l'Indo-Chine* (In French), the *Flore du Cambodge, du Laos et du Viêt Nam* (in French) and the *Flora of Thailand* (in English). These are the three key reference works relating to the flora of Lao PDR. Their use involves initially working in English (Thonner's key), followed by French (Fl. Generale and FCLV) or English (Flora of Thailand) against a background of Lao and Thai explanations. As none of the trainees are fluent in French, it was a time-consuming process even though the trainers were familiar with French botanical literature. Dissection techniques and the use of the keys in each of the reference works were demonstrated by trainers. Each student's work was closely supervised by the trainers and problems were dealt with at either an individual or group level. The last hour of each day was devoted to group discussion about the specimens used during the day. This session served to fix in the trainees' minds the main characters of the families we had treated. Frequent repetition of this

information is essential in the learning process. All students were required to keep detailed notes about the specimens examined and the families represented.

On the second last day students were asked to identify a specimen without supervision as a way of monitoring progress. The final day was devoted to reviewing the training and awarding certificates of attendance at a closing ceremony attended by senior staff of NAFRI, NUoL, FRC and IUCN.

4.3.2 Formal Taxonomic Training Results

Over the period, 23 of the collections from Nakai Nam Theun and 5 collections from the university grounds were identified. Ten of these represent species that are not listed in the most recent checklist of Lao plants (Callaghan 2004)

By the end of the training, all twelve trainees had demonstrated considerable improvement in their identification skills. None of the trainees successfully identified the test specimen to species level although several were able to identify the correct family and genus. The NBCA trainees were hampered by their lack of fluency in English and French and of formal botanical knowledge and required considerable assistance. Despite this they worked hard and made good progress.

One major problem that is restricting progress is the lack of a comprehensive guide to the French botanical terms used in the regional floras. The draft version of the French-Lao-English glossary will be available for the second year of the project. Four of the trainees have demonstrated the potential to act as assistant trainers in the second and third year of the project. They could also be suitable candidates for MSc level training, possibly in the UK. This would depend on suitable sources of funding being identified and would also require further training in written and spoken English. Depending on the progress of the project, an application to the Darwin Scholarship scheme may be submitted.

4.4 Trainers and trainees

Participants for Pre training Course 27th -29th December 2004			
	Trainers	Organisation	Position
1	Mr Sounthone Ketphanh	FRC (Deputy Director)	Darwin Project Leader (Lao PDR)
2	Khamphone Sengdala	FRC (Head of NTFP Unit)	Darwin Project Coordinator (Lao PDR)
3	Dr Bouakhaykhone Svengsuksa	NUoL (Dean, Faculty of Science)	Consultant
4	Mr Vichit Lamxay	NUoL	Lecturer
Trainees		Organisation	Position
1	Ms Nyom Chanthalangsy	FRC	Forester Technician
2	Mr Phayvone Phonphanom	FRC	Forester Technician
3	Mr Souny Phomduangsy	FRC	Forester Technician
4	Mr Banxa Thammavong	FRC	Forester Technician
5	Ms Montha Namsena	NUoL Faculty of Forestry	Lecturer
6	Ms Phetlasy Soulardet	NUoL Faculty of Forestry	Lecturer
7	Mr Phoyphet Southavong	NUoL Faculty of Science	Lecturer
8	Mr Soulianh Lanosavanh	NUoL Faculty of Science	Lecturer
9	Mr Bounheuang Sengvilay	Department of Forestry	Forester Technician
10	Mr Sipaseuth Insixiangmay	Department of Forestry	Forester Technician
Participants for Field Work in Nakai Nam Theun NBCA 8th – 22nd February 2005			
	Trainers	Organisation	Position
1	Dr Mark Newman	RBGE	Darwin Project Leader (UK)
2	Philip Thomas	RBGE	Darwin Project Coordinator (UK)
3	Kate Armstrong	RBGE	trainer
4	Khamphone Sengdala	FRC (Head of NTFP Unit)	Project Coordinator (Lao)

6	Mr Vichit Lamxay	NUoL Faculty of Science	Lecturer
	Trainees	Organisation	Position
5	Mr Banxa Thammavong	FRC	Project Assistant/trainee
7	Mr Singkone Saynhalat	FRC	Researcher
8	Ms Phonevilay Sichanthongthip	FRC	Researcher
9	Ms Phetlasy Soulardet	NUoL Faculty of Forestry	Teacher
10	Mr Soulivanh Lansavanh	NUoL Faculty of Science	Teacher
11	Mr Bounkeut Sisoukhalath	Nakai Nam Theun NBCA	Researcher
12	Mr Chanthalaphone Nanthavong	Nakai Nam Theun NBCA	Researcher

Participants for Formal Training in Vientiane 23rd February – 8th March 2005

	Trainers	Organisation	Position within Organisation
1	Dr Mark Newman	RBGE	Project Leader
2	Philip Thomas	RBGE	Coordinator
3	Kate Armstrong	RBGE	trainer
4	Mr Sounthone Ketphanh	FRC	Darwin Project Leader (Lao PDR)
5	Mr Khamphone Sengdala	FRC	Darwin Project Coordinator (Lao)
6	Dr Bouakhaykhone Svengsuksa	NUoL	Consultant
7	Mr Vichit Lamxay	NUoL	Lecturer
	Trainees	Organisation	Position
1	Mr Banxa Thammavong*	FRC	Project Assistant
2	Mr Singkone Saynhalat*	FRC	Researcher
3	Mr Phayvone Phonphanom	FRC	Researcher
4	Mr Nynhom Chanthalagshy	FRC	Researcher
5	Ms Phonevilay Sichanthongthip*	FRC	Researcher
6	Ms Phetlasy Soulardet*	NUoL Faculty of Forestry	Teacher
7	Ms Phoyphet Southavong	NUoL Faculty of Science	Teacher
8	Mr Soulivanh Lanosavanh*	NUoL Faculty of Science	Teacher
9	Mr Thongluang	NUoL Faculty of Science	Teacher
10	Mr Bounhouang Sengvilay	DoF Forestry Inventory	Forester
11	Mr Sipaseuth Insixienggmay	DoF Forestry Inventory	Forester
12	Ms Montha Namsena	NUoL Faculty of Forestry	Lecturer
13	Mr Bounkeut Sisoukhalath	Nakai Nam Theun NBCA	Researcher
14	Mr Chanthalaphone Nanthavong	Nakai Nam Theun NBCA	Researcher

* trainees identified as potential assistant trainers for Year 2 and 3

4.5 Year 2 proposed timetable

TIME PERIOD	LOCATION	ACTIVITY
April – July 2005	RBGE	Identification of specimens from Year 1 Master Database enhancement Seminars and publicity outputs Year 1 annual report
April –July 2005	Lao PDR	Preparation of Lao translations for Botanical Glossary
July 2005	France, UK, Ireland	Study tour by senior partners from NUoL,
Aug-Sep 2005	RBGE	Draft version of French-Lao-English Botanical Glossary printed for testing during 2 nd training visit
Aug-Sep 2005	Lao PDR	Planning for Year 2 training visit
Oct – Dec	Lao PDR	2 nd training visit to Lao PDR by UK team
January- Mar 2006	RBGE	Identification of specimens from Year 1 & 2 Master Database enhancement
March 2006	UK/Lao PDR	Publication of French-Lao-English Botanical Glossary Preparation of Year 2 reports

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

This is the first annual report to be submitted for review

6. Partnerships

6.1 RBGE, FRC, NUoL and IUCN

The project involves three partners in Lao PDR. FRC are the main partner and are jointly responsible for monitoring and implementing the project. NUoL (Faculty of Science) are providing training venues and materials; lecturers and students are involved in training and fieldwork as trainees and trainers. IUCN Lao are primarily responsible for financial management of transferred funds and for facilitating communications.

Collaboration between all partners has been excellent. The only problems that have arisen so far have been related to the relatively poor communication infrastructure within Lao PDR. Most of the Lao staff have been forced to rely on private hotmail accounts and have only had sporadic access to internet-capable computers. The project bought two PCs during the first visit in July 2004. One of these has been given to FRC while the second has been set up at the IUCN office where broadband connections are available. The IUCN has made this available to project staff from other institutions. In the last three months of the first year the telecommunication infrastructure within NUoL has been upgraded so that communications between the UK and Lao have improved considerably.

6.2 Collaboration with other projects

6.2.1 Biodiversity Informatics and co-Operation in Taxonomy for Interactive shared Knowledge base (BIOTIK)

This is an EU-funded project concentrating on the development of a computer based species identification system IDAO (IDentification Assistée par Ordinateur) that will be used to produce two CD-ROMs of a selection of tree species from the Western Ghats (India) and the Annamite Mountain Range (Lao PDR). The partners are the National Herbarium Nederland (NHN-Leiden), University of Leiden, the National University of Laos, Lao PDR and CIRAD, Montpellier. The project started work in Lao PDR in January 2005, with the first period of field work taking place from March to May 2005.

Collaboration: there are many potential areas for collaboration between the Darwin project and the BIOTIK project, some of which were reported in the half year report. One of the main areas relates to the database to be used in Lao. There is an agreement that the BRAHMS system would be used by both projects and that the BIOTIK project would be responsible for database development. UK staff have obtained a copy of BRAHMS and have also undertaken training in its use at Leiden. Further details are in the half year report.

Since January 2005, the BIOTIK team have changed the focus for their field work from 2 NBCA sites in the north and south of the Annamites to concentrate on Nakai Nam Theun NBCA. There is an opportunity for the projects to coordinate the field work and extend the botanical exploration of that NBCA beyond what would be possible for either project alone. This should result in a more comprehensive checklist. However, it also means that there will be fewer collections from other parts of Lao PDR to support the expansion of the National Species Database. The Darwin team are investigating other possibilities to counter this. The Faculty of Science at NUoL is a partner for both the Darwin and BIOTIK projects. Both projects have a limited budget for improving the technical resources of NUoL so there is also an opportunity to collaborate on the purchase of herbarium supplies, botanical texts and other equipment. This aspect should become clearer early in the second year.

6.2.2 Sustainable Forestry and Rural Development Project (SUFORD)

This project is mainly concerned with establishing sustainable forestry practices within lowland production forests in the southern parts of Lao. One aspect of their work involves monitoring the effects of different logging/harvesting regimes on biodiversity within their areas. The project is in the process of identifying which aspects of biodiversity will be monitored.

Collaboration: During the first year of the Darwin project several discussions were held to discuss various options for collaboration. These included joint field work aimed at formally identifying key tree species that are currently only known by common names, undertaking baseline surveys in monitoring plots, using the SUFORD project to provide extra field work/experience for trainees from the Darwin project as well as providing training for staff from the SUFORD project. Collaboration will depend on the strategy adopted for biodiversity monitoring by SUFORD.

6.2.3 Mekong River Commission (MRC).

This is a multinational institution responsible for collaboration and management of the Lower Mekong area with its headquarters in Vientiane. One of their major programmes is the Mekong Wetlands Biodiversity Programme. As part of this programme they have developed broad scale vegetation maps of wetland areas and are seeking to develop identification guides to aquatic and riverine plants. During the main visit by UK staff in early 2005, several meetings were held to discuss potential collaboration on the production of field guides. In the short term, there is an opportunity to broaden the coverage of the National Species database and provide extra practical training for the Darwin project's trainees. The MRC has also expressed an interest in assisting the development of proposals for a National Herbarium.

6.2.4 The World Bank and the Water Management and Protection Authority (WMPA)

The World Bank is playing a key role in the development of the Nam Theun 2 Hydroelectric scheme and the development of the Nakai Nam Theun NBCA. One aspect of this has been the establishment of the WMPA. They are responsible for approving, coordinating and assisting all scientific research within the Nam Theun area, including the NBCA. The Darwin project's application for permission to work in the NBCA provided the first opportunity for the WMPA to test its protocols for this aspect of their work. The WMPA provided 2 trainees for the field work and the training in Vientiane as well as logistical support during the field work. A report on the field work, including the results from the village tree survey will be submitted. The WMPA will be closely involved in the field work over the next two years.

6.2.5 ECOLAO

This is a consultancy organisation based in Lao PDR that undertakes a range of biodiversity work on behalf of other NGOs and the Lao PDR Government. In January 2004 they produced a 'Checklist of Lao Plant Names' (Callaghan 2004) that contains almost 4500 records of the Latin and common names used for native and cultivated plants in Lao PDR. The author of the checklist has provided a copy of their database for use by the Darwin project. In return, the Darwin project will check the list for synonymy and update their list.

6.2.6 World Conservation Society (WCS) and World Wildlife Fund (WWF)

Both of these NGOs have extensive programmes in Lao, mainly directed at protected area development and large mammal conservation (e.g. tiger, saola). In the first year, the Darwin project has had little contact with these organisations although both are aware of the Darwin project and have indicated an interest in collaboration. WCS is due to start a new programme of monitoring large mammals in Nakai Nam Theun NBCA in late 2005. They are also due to start a World Bank-funded project in the Nam Kading NBCA. This area is close to Nakai Nam Theun and there may be opportunities for joint field work. Collaboration will develop in the second year.

6.3 General Comments on Collaboration

There is a wide range of organisations and projects working on biodiversity related issues in Lao PDR. Many require general botanical expertise and are being hampered by the lack of trained staff in Lao PDR. Only two projects are attempting to address this problem, however – the Darwin project and BIOTIK. Both these projects have limited staff and resources. Additionally, our Lao partners (FRC, NUOL and IUCN) are involved in a range of other projects that require considerable commitments from their staff. It will require careful planning and management to achieve the greatest impact on the shortage of in-country botanical expertise in Lao PDR

7. Impact and Sustainability

7.1 Project Profile

During the first visit in July 2004, UK staff met all the project partners and the following people and organisations

- Regional head of the IUCN
- Vice director of the National Agriculture and Forest Research Institute (NAFRI)
- Vice President of NUOL
- Director General of the Research Institute, Science, Technology and Environment Agency (STEA)
- Director General of Department of Environment, STEA, Prime Ministers Office (CBD focal point)
- Staff from the United Nations Development Programme (UNDP)
- SUFORD
- Staff from the Department of Forestry and Department of Conservation

During the second visit, project staff met representatives of the following organisations

- Mekong River Commission
- World Bank
- BIOTIK in country coordinators

At each meeting the aims of the project were explained and copies of project documents handed over. During the second year, update meetings will be held at relevant organisations. The project has been included in the strategic plan for the IUCN and WMPA. One article has been published in the RBGE's magazine and a short description placed on the RBGE's website. One seminar was held during the first visit in Lao PDR. In April 2005, UK staff gave a seminar on the project at the RBGE – this will be reported in the next half year report. The project's profile will increase in the second year.

7.2 Increasing interest and capacity for biodiversity resulting from the project

As this is only the first year of the project, it would be premature to expect significant developments in terms of increasing interest and capacity for biodiversity resulting from the project. One possible development is the application by Vichit Lamxay for a PhD at Uppsala University. His study will focus on the genus *Amomum* (Zingiberaceae). It is possible that the project's trainees will undertake field work with other collaborating projects in the second and third year e.g. baseline surveys for SUFORD as part of the projects strategy to leave a lasting legacy.

7.3 Exit strategy

At this stage of the project, the original exit strategy detailed in the accepted application is still valid.

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

Not applicable at this stage

9. Outputs, Outcomes and Dissemination

9.1 Outputs and Publications

Differences between the actual outputs for the first year and those agreed in the initial 'Project Implementation Timetable' and the 'Project Outputs Schedule' are explained in the relevant section of Table 1. No specific publications were planned for the first year.

Table 1. Project Outputs for Year 1

Code No./Qty	Description	Achieved quantity	Additional / Slippage
4C/ 10	post-graduate trainees for (5 for field work and 5 for laboratory training)	18 people	a) Pre Training course:- 10 post graduates for 3 days each b) Field work:- 5 postgraduates including 4 from pre-training course, 2 weeks each c) laboratory work:- 12 postgraduates, 2 weeks each (including same 5 from field work)
4D/ 35	5 people for 4 weeks and five people for 3 weeks	40 weeks	$10 \times 0.6 + 5 \times 2 + 12 \times 2$
6A/ 7	5 NBCA/local staff trained; 2 senior staff to UK	2 NBCA staff	2 NBCA staff trained Slippage - other NBCA staff unavailable during the visit by UK staff; visit to UK postponed to Year 2
6B/ 21	15 + 6 wks ; 5 NBCA staff for 3 wks (=15), 2 senior staff for 3 wks (=6)	8	2 NBCA staff in field work and laboratory work (2x2+ 2x2) Slippage - other NBCA staff unavailable during the visit by UK staff visit to UK postponed to Year 2
7/ 1 or2	Training materials e.g. data forms for Nat. Species Database	2	1) Training materials produced by Lao staff for pretraining workshop. 2) Botanical resource pointer produced by UK staff for main training

8 / 24	3 UK staff for 8 wks each	23	1 visit for 2 weeks by 2 staff; second visit for 7 weeks by 2 staff and 5 weeks by 1 staff (4+14+5)
12A / 2	1 National Species Database, 1 Threatened Plants Database	2	1 National Species Database, 1 Threatened Plants Database
13B / 3	herbarium collections enhanced at FRC, NUOL, RBGE	6	Herbarium collections enhanced at FRC, NUOL (2), RBGE. Specimens for Paris and Leiden also exported with RBGE set
14A / 2	seminars; 1 in Lao PDR, 1 in UK	2	1 seminar at the end of the first visit and 1 at the end of the second visit
15A / 1	publicity articles national press releases in host country	0	Slippage: deferred to Year 2; general article providing overview on completed and planned work in Nakai Nam Theun to be drafted
15C / 1	publicity articles national press releases in UK	1	Article in RBGE's Botanics newsletter
15D / 1	publicity articles local press releases in UK	0	Slippage: deferred to Year 2
XX / 3	articles on websites	1	Article on RBGE website http://www.rbge.org.uk/rbge/web/science/research/tropdivers/laos.jsp Other websites will include project profiles in Year 2 and update on completed and planned work in Nakai Nam Theun to be drafted for main Nam Theun website
20	database/computers herbarium collecting materials references	Ca £9260	computers, herbarium/ collecting materials, references

Table 2: Publications

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (e.g. contact address, website)	Cost £
newsletter	Trouble in Paradise, Autumn 2004, p4-8	RBGE	RBGE	Free

*hardcopy enclosed as Appendix 4

9.2 Dissemination activities

Dissemination activities have focussed on making sure that key government departments are aware of and approve the project. NGOs with active and relevant programmes have also been made aware of the project. Dissemination will increase as the project starts to generate more results

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

- £4000 T&S Carry forward to 2005/06 agreed with Darwin Initiative.
- £450 Others Carry forward to 2007/08 agreed with Darwin Initiative.
- £2677 overspend on T&S offset against underspend on salaries and others agreed with Darwin Initiative.

11. Monitoring, Evaluation and Lessons

11.1 Monitoring and Evaluation

The overall purpose of the training is to improve the capacity of Lao botanists and institutes to identify native vascular plants so that Lao PDR can implement specific CBD obligations and BAP objectives such as the production of a National Species Checklist and Database as well as a Threatened Plant List.

One aspect of improving the capacity of the institutes to undertake this type of work means ensuring that they have access to, or possess, relevant published regional and national floras. The project has supplied two complete sets of the out-of-print *Flore générale de l'Indo-Chine* (In French) 2 complete sets of the *Flore du Cambodge, du Laos et du Viêt Nam* (in French) and the *Flora of Thailand* (in English). It has also provided several of the most up to date botanical reference books. Herbarium equipment such as archive quality mounting paper, glues, packets has been supplied along with new computers and field equipment such as GPSs, long handled pruners and herbarium collecting bags.

The project's methodology involves periods of field and laboratory based training and work. The field training was based around a set of competencies that the trainers would expect trainees to be proficient in order for them to be able to work unsupervised. Trainees were responsible for the organisation of the final two days field work. The number and quality of specimens made during that time were comparable to those made under the supervision. A more robust assessment will be made in the early stages of the next field visit.

The monitoring and evaluation of the laboratory training involved constant supervision, daily reviews and discussions with trainees. At the end of the training a mini exam was set as a way of evaluating progress.

The first year's outputs are all directly related to the overall outputs that contribute to the project's purpose. Field work is providing verified records for the NBCA checklist. These records, along with the botanical information from other sources that is being collated and evaluated are being integrated into the National species database. Staff are being trained and the technical resources of their institutes enhanced so that the work can continue after the end of the project. Good progress is being made on specific outputs such as the French-Lao-English botanical glossary. Senior staff from NUoL and FRC will be attending the Flora of Thailand conference in Dublin in July 2005 and this will help to raise the profile of Lao's biodiversity at a regional level. Overall, the project is running well and progress is good.

At a wider level, monitoring of the project's progress has been undertaken through reference to the logical framework, the implementation timetable and through the development of timetables for specific outputs such as the botanical glossary. Communication between UK and Lao organisations has been slow at times but technical problems have recently been overcome and there is now a free flow of information between the partners. Relations between all partners are excellent.

11.2 Lessons from the first year

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

The field work in February 2005 provided the first opportunity for the project team to visit Nakai Nam Theun NBCA. Some logistical problems in organising, managing and transporting a single group of up to 20 people were encountered. To be able to collect from a range of vegetation types and produce a preliminary checklist for the NBCA as well as fulfilling the project's training commitments, a different strategy will be used during the remaining visits. A group of up to 5 people (1 UK trainer, 1 Lao trainer and 3 trainees) will work at higher altitudes in remoter parts of the NBCA while the main training group concentrates on 2-3 targeted localities in lower parts of the NBCA. The amount of time allocated to field work and the formal taxonomic training in Vientiane will be reduced from the total of 8 weeks stated in the logframe to a more realistic 6-7 weeks out of the 8 weeks that are due to be spent in Lao PDR by UK staff.

LOGICAL FRAMEWORK March 2005

<i>Project summary</i>	<i>Measurable indicators</i>	<i>Means of verification</i>	<i>Important assumptions</i>
<i>Goal:</i>			
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 <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 			
<i>Purpose</i>			
To assist Lao PDR to implement CBD obligations and BAP objectives by providing training in tropical botanical taxonomy to staff in key institutes. To establish the foundation for National Species Database and Threatened Plant List	Up to 30 Laotians from FRC, NBCAs, NUOL trained in tropical botanical taxonomy Collection of 3-4000 identified specimens National Species List and Threatened Plant List published	Assessment and evaluation records of trainees at end of each training period Specimens in herbaria Databases established within 2 institutes; printouts available after Yr 1	That key areas in the draft NBSAP will form part of the final plan. That all specimens will be identified; Lao PDR flora is poorly known so new species may be found that may take longer to describe
<i>Outputs</i>			
Multilingual botanical dictionary Nat. Species Database Threatened Plant List NBCA Plant checklist Incorporation of collections into herbaria Report to GTI 3 Scientific papers	Publication of dictionary by end of Yr2 Printouts from database checklist available Representation of Lao PDR flora in herbaria increased by 25% by Yr 3 Report submitted Papers written	Publication completed; copies available National Species List and Threatened Species List widely available Specimens in herbaria Report acknowledged Papers published	Linguistic expertise available within the project team
<i>Activities</i>	Activity Milestones (Summary of Project Implementation Timetable)		
3 x 3-4 week field training sessions in NBCA Identification of specimens 3 x 3-4 week taxonomy training sessions Collation of data ex-Lao PDR; Collation of data within Lao PDR Seminars in Lao PDR and UK	<p>Year 1: Collation of data from published Flore du Cambodge du Laos et du Viet Nam completed; first 2 month training visit to Lao PDR (field and herbaria, database installation; project planning meeting); collation of Lao PDR data commenced; visit to UK by Laotian counterparts (training, liaison)</p> <p>Year 2: Collation of other data ex Lao PDR completed; 2nd 2 month training visit to Lao (field and herbaria project progress meeting); collation of data in Lao PDR continues; publication of botanical dictionary in Laotian</p> <p>Year 3: Final 2 month visit (field and herbaria training); National Species and Threatened Plant List published; scientific papers written and submitted</p>		

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 			
Purpose (insert original project purpose statement) To assist Lao PDR to implement CBD obligations and BAP objectives by providing training in tropical botanical taxonomy to staff in key institutes. To establish the foundation for National Species Database and Threatened Plant List	(insert original purpose level indicators) Up to 30 Laotians from FRC, NBCAs, NUOL trained in tropical botanical taxonomy Collection of 3-4000 specimens National Species List and Threatened Plant List published	(report impacts and achievements resulting from the project against purpose indicators – if any) 1 Pre training workshop (Dec 2004) Main Training visit by UK staff (Jan-March 2005) Year 1 fieldwork (Feb 2005). 356 collections, 2000+ specimens Database set up	(report any lessons learned resulting from the project & highlight key actions planning for next period) Key Actions for Year 2
Outputs (insert original outputs – one per line) Nat. Species Database and Threatened Plant List	(insert original output level indicators) Printouts from database	(report completed activities and outcomes that contribute toward outputs and indicators) Available electronic and printed data sources identified. Collation in progress	(report any lessons learned resulting from the project & highlight key actions planning for next period) Key Actions for Year 2 Continue data collation and input; continue training in database management Agree format for plant list; undertake training in conservation assessment and agree criteria for listing of threatened plants
Multilingual botanical dictionary (French – Lao – English)	Publication of dictionary by end of Yr2	2000+ English and French terms identified; Lao translation in progress	Key Actions for Year 2: First draft to be ready for testing during second training visit October-December 2005; publication by march 2006

NBCA Plant checklist	checklist available	Existing information sources identified and assessed. 95% of specimens collected during first visit identified to family level, 75% to genus level and 45% to species level	Key Actions for Year 2: integrate information from year 1 into main database; identify specimens from year 2 field work
Incorporation of collections into herbaria	Representation of Lao PDR flora in herbaria increased by 25% by Yr 3	Herbarium mounting materials purchased Preparation for mounting of specimens from Year 1	Key Actions for Year 2 Mount specimens from Year 1 Prepare specimens from year 2 for mounting
Report to GTI	Report submitted	Discussions with relevant Lao counterparts	Key Actions for Year 2: Visit to RBGE and Flora of Thailand conference by Lao counterparts. Prepare draft report by March 06
3 Scientific papers	Papers written	Initial discussions with Lao counterparts	Key Actions for Year 2; identify subjects, prepare outlines

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.

Taxonomic Training for a Neglected Biodiversity hotspot in Lao PDR

Report of Project Planning Mission to Lao PDR
11th - 26th July 2004



Dr Mark Newman and Philip Thomas
9 August 2004

1. Summary

1.1 Project Application and current status

- Stage 1 submitted October 2003; Stage 2 submitted January 2004
- UK Government Approval May 2004
- Duration 3 year duration starting April 1 2004, finishing March 31 2007
- UK government approval given
- Submission of proposal to Nakai Nam Theun and WMPA Management committee by September 2004
- Formal ratification and extension of existing MoU by NAFRI and MAF by December 2004

1.2 Participants and Roles:

- RBGE: Grant Holder, overall management, training; Dr Mark Newman – Principal Investigator, Philip Thomas - UK project coordinator
- ERC: the main implementing organisation in Lao PDR.
 - Lao Project leader – Mr Sounhone Ketphanh
 - Lao project coordinator – Mr Khamphone Sengdala
 - Coordinator's assistant 1 – Mr Banxa Thammavong
- NUOL: botanical consultants for training workshops, botanical dictionary, compilation of National Species Database, selection of trainees from existing undergraduates and recently graduated students
- IUCN: Main contact – Mme Latsamay; responsible for financial control within Lao PDR, administration, monitoring, coordination, coordination with the development of new proposals for biodiversity work in Lao PDR; Coordinator's assistant 2 – to be specified by Mme Latsamay.
- NNT Watershed Management Protection Authority: field work coordination, logistical support for fieldwork and the selection of trainees from NBCA of WMPA. This depends on acceptance of the project by the WMPA in September 2004.

1.3 Major National and Regional Outputs

- Up to 12 weeks intensive taxonomic training for up to 30 trainees over 3 years
- Up to 12 weeks intensive botanical field training for up to 15 trainees over 3 years

- Foundation of National Species List and National Threatened Species List and Databases
- French-Lao-English Botanical Glossary
- Scientific papers co-authored by Lao staff and trainees
- Preliminary Checklist of higher plants from NNT and guides to specific plant groups in NNT

1.4 Training

Three training periods are planned – one in each year of the project in different seasons to allow a wider range of plants to be collected and identified. Training is divided into two sections – practical field training within the NBCA and formal training.

- Year 1 – six week period starting at the end of January. The field training component will be for a maximum of 3 weeks in early February (including travel to and from field site). The formal training in Vientiane (either at FRC or at NUOL) will take place after the field work and last for 2 or 3 weeks.
- Year 2 - 8 week period between October and December 2005
- Year 3 - 8 week period in April-June 2006

1.5 Trainees

- Numbers: the total number of trainees in the proposal is ‘up to 30’. Within this total there should be a core group that will be available to participate throughout the time of the project. By the end of the project these trainees should be able to train others in the future.
- The main sources for trainees will be the FRC, NUOL and WMPA/NNT NBCA staff.
- FRC will be responsible for coordinating the selection of the trainees.
- Some trainees may only be involved in the fieldwork, others may only be involved in the formal training. The core group should be involved in both.
- Maximum number of trainees travelling from areas outside the NBCA for field training in each year will be 5.
- The maximum number involved in each formal training session in Vientiane will be between 10 and 15
- Per diem rates of up to US\$15 will be paid to trainees participating in field work or formal training in Vientiane
- Training opportunities may be offered to staff/students from other institutions and organisations
- Trainees will be expected to complete a set of pre-training exercises before the arrival of the RBGE team in January 2005. The content of these exercises will be prepared by the RBGE staff in consultation with senior Lao staff and sent to partners in Lao by 1 October 2004. (See Appendix 2 for draft outline).

1.6 Selection criteria of trainees

- Trainees will either be undergraduates, recent graduates or professionals involved with biodiversity work. They should have some experience in botany or field work and should be available for the duration of the training period. A core group should be available throughout the duration of the project so that they receive sufficient training to be able to train others after the completion of the project.
- Trainees who successfully complete training tasks in field work and formal training will be awarded a certificate by the project. Criteria for successful completion will be determined by RBGE trainers in consultation with senior Lao project staff.
- During the course of the project, FRC will be responsible for ensuring that trainees complete 'pre-training' exercises (See 1.5) and any further training exercises specified by the RBGE staff in consultation with senior Lao staff.

1.7 Other National and Regional Outputs

- National Species Database and Preliminary National Threatened Species and Lists: RBGE staff to produce a workplan before the next visit to Lao in January 2005.
- The databases will use the BRAHMS system. This system is widely used in SE Asia and will enable regional sharing of biodiversity information in the future. The development of the National Species Database is likely to involve close collaboration with the BIOTIK project. The acquisition and accumulation of data will mainly be done by the RBGE staff who will retain the master copy until the end of the project. Copies of this software and training in its use, will be provided to FRC, NUoL and IUCN by the RBGE staff in collaboration with staff from the BIOTIK project.
- Before the end of the project, a decision about which institution holds the master copy will have to be made. The other partners will have back-up copies. A protocol for regular updating of the master copy and the back-up copies also needs to be developed during the course of the project.
- French-Lao-English Botanical Glossary: format and content to be decided by RBGE/FRC in consultation with NUOL. Draft of English French sections to be produced by RBGE staff before January 2005. Publication deadline March 2006 (end of Year 2)
- Guides to specific plant groups in NNT: to be determined in consultation with WMPA and NBCA staff

1.8 Study Visit to RBGE

- The project has funding for a 3 week study visit for two senior people from the main Lao partner institutions (FRC and NUOL) in the second year
- Letters of invitation from the RBGE's Regius Keeper (Professor Steven Blackmore) or Head of Science (Dr Mary Gibby) will be sent to NAFRI inviting project staff from each institution (FRC and NUOL) to the UK. To be copied to Director of FRC and Mme Bouakhaykhone.

1.9 Proposed Implementation Timetable

Darwin Initiative Preliminary Work Programme 2004 - 2007				
	April - June	July - September	October - December	Jan - March
Year 1 2004- 2005	UK approval	Planning mission	Project ratification (NAFRI/MAF)	1st Field work and training (6 weeks)
		NNT WMB submission/approval	Working towards national and regional outputs	
Year 2 2005-2006	Working Visit by 2 Lao staff to RBGE and herbaria (3 weeks) Annual Report to Donor and Lao partners		2nd field work and training visit (8 weeks)	Publication of glossary
	Working towards national and regional outputs			
	3rd field work and training visit (8 weeks)	Working towards national and regional outputs		
Year 3 2006-2007	Annual Report to Donor and Lao partners Working towards national and regional outputs		Publications of National Lists, papers and guides Development of New Projects Final Reports to Donor and Lao partners	

Project 163/13/007 Year 1 Annual Report Appendix 1

Draft March 2005 – final document submitted with final report

A guide to plant identification resources for use in Lao PDR

Vichith Lamxay & Mark Newman

Royal Botanic Garden Edinburgh

National University of Laos

Forest Research Centre, National Agriculture and Forestry Research Institute

IUCN Lao PDR

Darwin Initiative project (163/13/007)

Taxonomic training in a neglected biodiversity hotspot in Lao PDR

(April 2004-March 2007)

4 logos to add