



**ECTF**

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## ***Darwin Initiative for the Survival of Species***

### ***Annual Report***

#### **1. Darwin Project Information**

<i>Project title</i>	Preservation, rehabilitation and utilisation of Vietnamese montane forests
<i>Country(ies)</i>	Vietnam
<i>Contractor</i>	Royal Botanic Garden Edinburgh
<i>Project Reference No.</i>	162/10/017
<i>Grant Value</i>	£227,801 (Darwin £ 161 899)
<i>Start/Finishing dates</i>	June 2001 – June 2004
<i>Reporting period</i>	<i>June 2001 – June 2002</i>

#### **2. Project Background**

• *Briefly describe the location and circumstances of the project and the problem that the project aims to tackle.*  
Viet Nam is among the most biologically diverse countries in the world. However, the forested areas with the highest biodiversity have been destroyed through conflict and overexploitation so that only 28% survive. These are mainly concentrated in the montane areas of the southern highlands, centered around Dalat and in the north and northwest. Deforestation has also resulted in fluctuations of up to 50% in the annual rice crop through flooding and erosion. The Vietnamese government recognises the difficulty of implementing reforestation and conservation programmes due to the lack of the training and resources. The aim of this project is to provide Vietnamese with knowledge, skills and confidence, which will equip them to contribute positively to the sustainable management of the montane forests.

#### **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.*

**Project purpose :** To provide Vietnamese researchers and field staff with the knowledge and skills to enable them to undertake the sustainable management of the remaining montane forests through an integrated programme of training in theoretical and practical aspects of biodiversity assessment and utilisation.

**Project objectives :** This will be achieved by: 1) training in the accurate identification of threatened conifer taxa and their associated mycorrhiza; 2) assessment of the conservation status according to the current IUCN guidelines and in

line with the recommendations of the recently published Conifer Action Plan (IUCN, 1999); 3) assessment of potentially economically useful threatened conifer taxa and their associated mycorrhiza and 4) development of appropriate methods for their propagation and utilisation within reforestation and rehabilitation projects in montane forests

*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 occurred to the proposed objectives as stated in the Agreed Schedule. The operational plan was modified slightly so that the visits by the mycologists and the conifer specialists ran concurrently.

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

The project started in June 2001, two months later than originally planned. The first visit by UK staff took place from the 23 August to the 23<sup>rd</sup> September. Three staff took part – Martin Gardner (project coordinator, RBGE), Philip Thomas (conifer specialist, RBGE) and Philip Mason (mycologist, CEH).

At the request of our Vietnamese collaborators field work and training were based at in the Central Highlands of southern Vietnam over a five week period. Successful meetings were held with local Vietnamese government agencies such as the People's Committee, the Forest Protection Service and the Forest Inventory and Planning Department to inform them about the aims of the project. In January 2002, Dr Jan Dick, the UK propagation specialist visited Vietnam for two weeks, during which she conducted practical training workshops in Dalat and in Lang Son in northern Vietnam. The workshops involved a total of 27 GOs, NGOs, and international aid projects. She also met with various other projects including the DANIDA Vietnam Tree Seed Project as well as members of the IUCN office and staff from the British Embassy. As a result of her visit, a proposal was submitted to the Foreign Office's Environment Fund for a project relating the conservation and utilisation of two threatened conifer taxa. The proposal was rejected in May 2002, but will be revised and resubmitted either to the Foreign Office or an alternative donor. In April and May 2002, two key Vietnamese collaborators (Mr Luu, the conifer coordinator and Ms Thanh, the mycorrhizal coordinator) spent four weeks in Scotland undergoing intensive training relating to the mycorrhizal, taxonomic and conservation components of the project. Forward work plans were drafted and are currently under discussion. Outline plans for the production of three manuals as well as various scientific papers were also agreed during their visit. Collaborative projects with other organisations in Vietnam (including the FFI Darwin Initiative based in the Hoang Lien Mountains) were also discussed and are currently being developed.

Following the visits of the UK specialists to Vietnam, Vietnamese staff of the Forest Enterprise and the Central Forest Seed Company continued work on the three main aspects of the project. Successful field surveys for important threatened conifers in the northern provinces of Ha Giang and Lang Son were undertaken using the methods and techniques demonstrated during the first visit of the conifer specialists. Cultures of eight mycorrhizae were established in the Dalat Forest Enterprise laboratory using the methods and techniques demonstrated during the visit of the mycorrhizal specialist. Propagation material for several threatened conifers in both northern and southern provinces was collected and propagation trials for those species were initiated. The successful continuation of the work following the visits by the UK specialists is evidence of the success of the project in meeting its primary goal of *'providing Vietnamese researchers and field staff with the knowledge and skills to enable them to undertake the sustainable management of the remaining montane forests through an integrated programme of training in theoretical and practical aspects of biodiversity assessment and utilisation.'*

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

<i>Date June 2001 – June 2002</i>	<i>Agreed Baseline Timetable</i>	<i>Progress to date</i>
<i>Aug-Sept 2001, Jan 2002</i>	UK team to Vietnam – 3 separate visits	Mycological and conifer visit combined at the request of the Vietnamese and also to ensure the familiarity of project participants with the requirements of these two closely linked aspects of the project
Aug 2001	Collection of fruit-bodies produced by mycorrhizal fungi for identification of latter for resource and reference commenced	ca 100 samples collected during field work. Reference collection in Dalat and RBGE/CEH started. Mycorrhizal cultures established by Vietnamese personnel after departure of UK staff
Aug/Sep 2001	Survey work on selected threatened conifer species commenced (South Vietnam)	Surveys carried out by UK conifer specialists and Vietnamese staff and trainees. Surveys continued in northern Vietnam after departure of UK staff
Aug-Oct 2001	Conifer and Mycorrhizal surveys for 5 selected species or in 5 selected areas undertaken	Populations of five conifer species from 8 localities surveyed for mycorrhizal work. Four other conifer species surveyed
<i>Oct 2001</i>	Collection of herbarium voucher specimens of selected species completed (S.Vietnam)	ca 220 vouchers processed and mounted, duplicates ready for return to Vietnam
Oct 2001	Work commenced on field guide of threatened conifers	Outline plan drawn up. Work schedule agreed in principal during visit by Vietnamese staff
Jan 2002	Propagation workshop	2 workshops undertaken at 2 centers. Materials for workshop collected prior to visit by UK staff. Propagation trials continued after departure of UK staff.
Feb – May 2002	May 2004 Proposal with commercial firms for propagation of trees and edible mushrooms or other non-timber forest products drawn up	Proposal (£50k) submitted for evaluation project that would act as pilot project for larger proposal aimed at commercial sponsor
April-May 2002	Vietnamese personnel to UK	Visit successfully carried out

- 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 **summarize** techniques and results and, if necessary, provide more detailed information in appendices (this may include cross-references to attached publications)

## Research

### **Mycorrhizal.**

One hundred samples were collected during the field work in August and September 2002. The majority represented either edible fungi that the Vietnamese are interested in utilizing within plantations or fungi that are otherwise associated with plantation or natural populations. Samples were collected from two threatened pine species (*Pinus dalatensis* and *P. krempfii*) that had never had their mycorrhizal associates characterized before. Preliminary identification was done in the field and in the laboratory in Dalat. Fruit bodies and root samples were exported to the UK to provide training material for the graduate students who visited in April May 2002. Results are still being collated. Early results indicate differences in species assemblages, numbers of edible fungi present and the age and

composition of the plantation and or natural stand. This information may be useful in formulating management plans for those areas.

Training in Mycorrhizal identification, culturing and inoculation. Practical training in field identification and collection was given to five post-graduate Forest Enterprise staff at the start of the fieldwork. Staff members were selected on the basis of the applicability and usefulness of the training within their current jobs. Two key staff were identified on the basis of their previous work with mycorrhiza. Following an accident to the UK staff member, the training emphasis changed to laboratory work – methods for handling, drying, preparing and identifying specimens through the use of taxonomic keys were demonstrated to two of the original trainees. Field collections continued to be made by those Forest Enterprise staff that had already received some training. The Vietnamese staff also successfully isolated and cultured eight mycorrhizae following the UK specialist's visit. A second period of intensive training was delivered during the visit to the UK of two of our Vietnamese collaborators (Mr Luu and Ms Thanh).

### **Propagation**

Two workshops, each of four days duration, were held at Dalat Forest Enterprise in the Central Highlands and at Lang Son Forest Enterprise in the north east region. Each workshop involved participants from other institutions and projects that were involved in the propagation of plants – this was the main criteria used for selecting participants. The main themes were methods for vegetative propagation of threatened and potentially useful conifers as well as cone induction techniques for those and other species. An assessment of experimental methodologies currently being used by the participants in the course of their work and identification of the major problems that they were encountering was also made. As a result of this, experiments to be carried out prior to the second visit by UK staff were initiated. These were designed to solve the problems that had been identified. Training was delivered via a series of demonstrations followed by group exercises. Each workshop was evaluated by a questionnaire. The results of the first questionnaire were used to improve the delivery of the second workshop – they will also be used to design future workshops.

### **Conifer Taxonomy and Conservation**

The visit by the UK conifer specialists represented the first visit by the UK Project Leader, Martin Gardner and the UK coordinator – Philip Thomas. Consequently a significant proportion of the visit was spent discussing the arrangements for the project and meeting with other relevant Vietnamese government officials. The visit was also combined with that of the mycologist to ensure that all participants understood how these two closely related elements would work together. Despite these additional commitments a significant amount of field work and training was given.

Training in conifer taxonomy and biology for four graduate level Forest Enterprise staff concentrated on practical field skills learnt through active collecting of herbarium specimens of conifers and their associated species. Sites to be visited were determined after consultation with Vietnamese collaborators and included areas known to contain threatened conifers as well as those that had not been fully documented. During these visits an emphasis was also placed on the value of conifers as indicators of species rich areas and of the importance of conifers in a wider ecological sense. Emphasis was also put on the value of the remaining fragments of natural forest that exist within plantations and managed forests. In the course of the field work in this type of area, a new genus in the Gesneriaceae was collected. Assessments of the conservation status of several taxa were undertaken during the course of the visit. Five taxa were selected on the basis of their distribution, the perceived degree of threat and their potential for utilisation (*Taxus wallichiana*, *Glyptostrobus pensilis*, *Keteleeria evelyniana*, *Pinus dalatensis* and *Pinus krempfii*). These assessments will form part of the scientific papers that will be produced during this project. This type of work was continued by CFSC and Forest Enterprise staff in northern Vietnam after the visit of the UK specialists

A one day workshop attended by fifteen Forest Enterprise staff used locally collected specimens of conifers and associated species to demonstrate methods of identifying and formally naming taxa. They were also used to illustrate the problems that can arise from misidentification or through the use of common names and synonyms. The relationship of taxonomy to conservation (where the conservation status of a taxon is primarily dependant on its correct naming) was also demonstrated using locally collected materials. The workshop also provided an opportunity to demonstrate how conservation status ratings are determined.

During the visit permission was sought to gain access to one of the principal nature reserves (Bidoup) which contained conifer species that had not been sampled during the visit. Due to political sensitivities, UK staff were unable to gain access. Two Vietnamese collaborators were sent so that an assessment could be made of the effectiveness of the training delivered up to that point. Both staff members fulfilled their objectives beyond expectations.

A second period of training in conifer conservation and taxonomy was carried out during the visit to the UK by the Vietnamese coordinator and the principal mycology trainee. Training involved herbarium techniques, principles of data recording for living plant collection (both forestry and botanical) management. It also involved visits to commercial

nurseries involved in the supply of forestry plants for commercial and conservation projects within Scotland as well as visits to the Forestry Commissions research center at Roslin and to their field research station at Kilmun, Argyllshire.

- *Discuss any significant difficulties encountered during the year.*

Two main problems were encountered during the first visit by the conifer and mycology team. The mycologist was injured during the first day of field work when a falling branch injured his eye. He was unable to work for several days and as a result stayed in Vietnam for an extra week. Access to certain areas of the southern highlands was restricted due to political unrest – this meant that the conifer team was unable to visit all the areas that had been targeted, resulting in only partial surveys being undertaken for some species. There have also been some problems with the processing of payments within the project, due to staff turnover and shortages in the finance section at the RBGE. This has been resolved through the recent appointment of a dedicated Projects Finance Officer.

A significant part of the first years work has involved the establishment of good relationships between the coordinators in the UK and within Vietnam. With hindsight, it may have been better if there had been a short preliminary visit by the UK coordinators to establish personal relations with key Vietnamese personnel.

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

The overall design of the project remains the same as when it started. Management and coordination within Vietnam has been improved through the appointment of people to manage each of the three main parts of the project. This should make the collation of results and the monitoring of the effectiveness of the training easier.

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

### Provisional Work Schedule 2002/2003

<b>Section 1 Mycology</b>		
Period	Staff	Activity
Jun – September 2002	Vietnamese counterparts	Continuation in Dalat region of work on identification of fruit bodies and root samples. Preparations for second visit by UK staff
September 2002	Second visit by UK expert accompanied by Vietnamese counterparts	Target area – pine forest in NW Vietnam; collecting and identification of mycorrhiza from Pinus forests
October to January 2003	Vietnamese counterparts	Continuation of work on identification of fruit bodies and root samples collected during second visit by UK staff
January 2003 (provisional)	UK staff and Vietnamese counterparts	UK staff training Vietnamese counterparts in UK
February to June 2003	UK staff and Vietnamese counterparts	Initial preparations of drafts for manuals
February – June 2003	Vietnamese counterparts	Continuation of work on identification of fruit bodies and root samples collected during second visit
<b>Section 2 Propagation</b>		
Period	Staff	Activity
June 2002- May 2003	UK staff and Vietnamese counterparts	Continued liaison with Dalat and Lang Son staff re experiments initiated during first visit. Collation of results
Jan – Feb 2003	UK staff and Vietnamese counterparts	UK staff to Vietnam for continuation of training
June 2002- May 2003	UK staff and Vietnamese counterparts	Preparation of outline plan for propagation manual
<b>Section 3 Conifer Conservation</b>		
Period	Staff	Activity
June – September 2002	UK staff and Vietnamese counterparts	Preparation for second visit to Vietnam
Oct – Nov 2002	UK staff and Vietnamese counterparts	Second visit by UK specialists. Workshops in Hanoi followed by field work and practical training for Vietnamese counterparts.
April – May 2003 (provisional)	Vietnamese counterparts	Second visit to UK for further training and manual production
Feb – June 2003	UK staff and Vietnamese counterparts	Preparation of training manuals and scientific papers

## 4. 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 between the UK partners and the Central Forest Seed Company (CFSC - Vietnam) has been positive and constructive over the past year. Communications (generally by email) during the time that UK staff are not in Vietnam has been frequent and all participants have been kept informed of plans and progress achieved to date. This is a

reflection of the good relations between the UK partners (CEH and the RBGE) and the previously existing relationship between CEH and the CFSC.

- *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?*

A new link has been formed with Professor Kiet from the College of Natural Sciences in Ho Chi Minh City. Professor Kiet is supervising two Vietnamese PhD students who are researching the taxonomy, distribution and status of the podocarp *Dacrydium pierrei* throughout Vietnam. Information from their research will be fed into the Darwin Project. In return, the RBGE members have provided access to information held at the RBGE relating to research on other members of this family as well as information relating to other aspects of SE Asian biodiversity.

A strong, new link has been formed with a project funded by the Netherlands Embassy. The project is run by the Hanoi Association for Decorative Organisms. Its main remit is to select and study native endangered species and introduce them into cultivation to raise people's awareness of their environment. Staff from this project attended propagation workshops and a joint conservation and utilization project for the recently described new genus *Xanthocyparis* is being developed. This conservation project will also involve collaboration with the Forest Inventory and Planning Department and the Institute for Ecological and Biological Resources (Hanoi).

A project involving the Indochina Seed Programme (DANIDA), the Forest Inventory and Planning Department, the Institute for Ecological and Biological Resources (Hanoi) and Flora and Fauna International's Darwin Initiative is being developed. The aim of the project will be to implement an integrated programme for the conservation and utilization of a recently discovered population of the globally threatened conifer *Taiwania cryptomerioides*.

In the first three months of this year, a link with the British Embassy in Hanoi as well as a link with the University of Strathclyde in the UK was established. This has enabled the drafting and submission of a new project aimed at the conservation and utilisation of two threatened conifers (*Cupressus torulosa* and *Xanthocyparis vietnamensis*).

The second and third years of the project should see an increase in the extent of collaboration with both national and international organisations within Vietnam.

## **5. 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?*

The project has been promoted within the country through meetings with other local and national Vietnamese government departments as well as other foreign organisations working within Vietnam. The profile of the project will increase as outputs increase. As this is the first year it is premature to judge the impact of the project in terms of increasing interest and capacity for biodiversity. The exit strategies for this project are the same as in the proposal and are detailed below.

As the seminar/ workshop approach is aimed at the university personnel and field specialist exchanging techniques with the UK specialists, the project will continue in two directions. The university staff will incorporate the knowledge gained into their teachings and the local field technicians will teach these techniques to members of their staff continuing the work of improving propagation techniques. At a national level, the Vietnamese government will continue with the strategy of rehabilitating montane forests in line with their Biodiversity Action Plan and their reforestation plans. In addition, a proposal will be developed for a commercial company to fund the commercialisation/domestication of specific trees for products such as resin, Taxol and edible mushrooms.

## 6. Outputs, Outcomes and Dissemination

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

<i>Project Section</i>	<i>Scheduled Code No.</i>	<i>Achieved Code. No</i>	<i>Scheduled Quantity</i>	<i>Achieved outputs</i>	<i>Description</i>
Combined	8		12	13	UK staff – extra week in Vietnam by Mycologist
Conifer work (Vietnam)	4A	4C	7	6	6 Vietnamese postgraduates trained for conifer identification and conservation assessment. Length of training varies from 1-4 weeks per person
	4B	4D	6	14	sum of the number of training weeks provided
	13B		1	1	specimens deposited in host country and at RBGE
	14A		0	1	seminar on conifer identification, diversity, taxonomy and conservation for 15 Vietnamese staff from the CFSC and Forest Enterprise
Conifer work (UK)	4A	4C	2	1	Two Vietnamese were scheduled to spend 4 weeks training at the RBGE. This was changed so that one of them (Ms Thanh) received 4 weeks intensive training at CEH
	4B	4D	8	4	
Mycology work (Vietnam)	4A	4C	5-10	5	Two Vietnamese trained in field and laboratory work for two weeks over a three week period; 3 others trained in field work
	4B	4D	2	2	2 weeks training spread over a 3 week period
	13A	13A	1	1	Reference collection of fungal fruiting bodies established at Dalat
Mycology work (UK)		4C	0	1	one Vietnamese postgraduate trained for 4 weeks in mycology at CEH
		4D	0	4	
Propagation	4A	4A	10	42	Two four day training workshops held in Dalat (S Vietnam) and Lang Son (N Vietnam)
	4B	4B	1	1	
General			15C	3	Fitzroya, Newsletter of the IUCN Conifer Specialist Group; Vietnam Report, Issue 25 Third Quarter, 2001
			14B	1	European Tropical Forestry Research Network Newsletter 34/2001 Presentation to the Ecological Society of Edinburgh University

- 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?

Additional dissemination outputs that were not specified in the Agreed Schedule have been achieved. The number of dissemination outputs should increase in the second year as results from the project become more tangible.

- 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

**Table 2: Publications**

<b>Type *</b> (e.g. journals, manual, CDs)	<b>Detail</b> (title, author, year)	<b>Publishers</b> (name, city)	<b>Available from</b> (e.g. contact address, website)	<b>Cost £</b>
Newsletter <i>European Tropical Forestry Research Network</i> (ETFRN)	Thirty years of vegetative propagation research on tropical trees in Scotland. Dr J. Dick 2002	ETFRN	<a href="http://www.etfrn.org/etfrn/newsletter/news34/index.html">http://www.etfrn.org/etfrn/newsletter/news34/index.html</a>	0
Journal <i>Fitzroya</i>	Conifer Conservation in Vietnam, NDT Luu and P. Thomas	<i>IUCN Conifer Specialist Group Secretary, c/o RBGE, Scotland</i>	<i>M.F.Gardner, 20A Inverleith Row Edinburgh EH3 5LR Scotland</i>	0
Journal <i>Fitzroya</i>	Conservation and Utilisation of <i>Xanthocyparis veitnamensis</i> , NDT Luu and P. Thomas	<i>IUCN Conifer Specialist Group Secretary, c/o RBGE, Scotland</i>	<i>M.F.Gardner, 20A Inverleith Row Edinburgh EH3 5LR Scotland</i>	0

- 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?

The major dissemination activities have involved inviting members of related government departments, other institutions and other conservation projects based in Vietnam to attend practical workshops and meetings. The details are mentioned in other parts of the report. We expect that the collaboration promoted through the Darwin Initiative will continue after the end of the project. It is too early in the project to determine how these aspects will be funded and implemented.

## 7. Project Expenditure

- Please expand and complete Table 3.

**Table 3: Project expenditure during the reporting period**

Item	Budget £	Expenditure
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\*\*money for computer and GPS carried forward

\*\*\* 100% of money for web design carried forward, remaining monies from herbarium equipment field accessories etc total carried forward = £3105 (less than 10% of budget)

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

## 8. 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?

The purpose of the project is to provide Vietnamese researchers and field staff with the knowledge and skills to enable them to undertake the sustainable management of the remaining montane forests. The methods that have been employed to monitor and evaluate the project in its first year have involved group discussions between UK staff and key Vietnamese collaborators during their visit to the UK and an evaluation of the progress made with tasks and experiments that were agreed during visits to Vietnam. Tasks involved the continued collection of fruiting bodies for the mycorrhizal work, the collection of specimens for the conifer work and the continuation of experiments set up during the visit by the propagation specialist. These tasks and experiments cannot be properly evaluated until the second visit by the respective specialists. However, there is evidence that good progress is being made. Preliminary reports from Forest Enterprise staff at both of the centres where propagation training took place indicate that the work is being carried out. Additionally, the principal Vietnamese counterpart for the conifer work brought a selection of good quality specimens to the RBGE during his visit. The principal Vietnamese counterpart for the mycorrhizal work demonstrated that she had been doing further work on the identification and culturing of fruiting bodies and root samples that were collected during the first visit. It is obvious that the visits by the UK staff and the practical and theoretical training that was given has had a positive effect.

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

The first year of this project has led to a greater understanding between all the partners of the limits and strengths of each participating organization. As a result, workshop formats have been modified and training method have been altered. The good personal relations that have been established should ensure that the final two years of the project will be even more productive than the first.

## 9. Author(s) / Date

Martin Gardner  
Dr Nguyen Duong Tai  
Philip Thomas  
Ngueyn Duc To Luu  
Jan Dick  
Philip Mason

Appendix 1 Logical Framework

**Table A**

Project summary	Measurable indicators	Means of verification	Important assumptions
<p><b>Goal</b> To assist countries that are rich in biodiversity but poor in resources with the conservation of biological diversity and the implementation of the Biodiversity Convention</p>	<ol style="list-style-type: none"> <li>1. Team available with skills for managing montane forests</li> <li>2. Tools available for managing montane forests</li> </ol>		
<p><b>Purpose</b> To provide Vietnamese researchers and field staff with the knowledge and skills to enable them to undertake the sustainable management of the remaining montane forests through an integrated programme of training in theoretical and practical aspects of biodiversity assessment and utilisation.</p>	<ol style="list-style-type: none"> <li>1. Development of a publication identifying the long-term conservation status of the montane forests of Viet Nam based on the initial assessment</li> <li>2. Twenty seven Vietnamese scientists, foresters, nurserymen trained in and able to display the knowledge and skills necessary to rehabilitate and sustainably manage the threatened conifer component of the montane forests of Viet Nam</li> <li>3. Production of publications and manuals containing data-sets, assessments and the technology amassed by UK and Vietnamese project staff for wide dissemination to Vietnamese foresters/ organisations</li> </ol>	<p>Workshops</p> <p>Reports of Workshops</p> <p>Illustrated training field guides/manuals given to each Vietnamese person attending workshops</p> <p>Annual visits by UK experts</p> <p>Oral presentations by Vietnamese personnel</p> <p>Data collected and assessed by Vietnamese personnel and discussed with UK experts during visits</p> <p>Final Report</p>	<p>Able to visit montane forests to undertake observations, make assessments and provide training</p>
<p><b>Outputs</b></p> <ol style="list-style-type: none"> <li>1. Assessment of the conservation status of the montane forests of Viet Nam and establishment of a long term monitoring framework</li> <li>2. Capacity building for conservation, sustainable exploitation and restoration of the montane forests of Viet Nam</li> <li>3. Joint application with a</li> </ol>	<ol style="list-style-type: none"> <li>1. Vietnamese personnel able to assess and monitor the long term conservation status of the montane forests of Viet Nam</li> <li>2. Twenty seven Vietnamese personnel able to utilise the information/ technology transferred during workshops and seminars organised by UK experts for sustainably managing montane forests of Viet Nam</li> <li>3. Development of a collaborative link and joint</li> </ol>	<p>Annual visits by UK experts</p> <p>Oral presentations by Vietnamese personnel</p> <p>Final seminar</p> <p>Submission of papers</p> <p>Submission of joint application with commercial company</p> <p>Final Report</p>	<p>Able to visit montane forests to make assessments and provide training</p>

<p>commercial company for commercial development of non timber forest products e.g. taxol, mushrooms</p>	<p>application with a commercial company for commercial development of non timber forest products e.g. taxol, mushrooms</p>		
<p>Activities</p> <p>1. Monitoring of threatened conifer taxa and their associated mycorrhizal fungi</p> <p>2. Establishment and maintenance of compact mycological herbaria containing reference collections of named mycorrhizal fungi and the associated hosts</p> <p>3. Assessment of the conservation status according to the current IUCN guidelines and in line with the recommendations of the recently published Conifer Action Plan (IUCN, 1999) and the Biodiversity Action Plan for Viet Nam (Hanoi 1994)</p> <p>4. Assessment dissemination and uptake of conservation priorities and strategies for the montane forests</p> <p>5. Assessment dissemination and uptake of options for sustainable and participative small scale exploitation by local communities</p> <p>6. Assessment and uptake of sustainable exploitation of non timber forest products with a commercial company e.g. Taxol, mushrooms</p> <p>7. Assessment dissemination and uptake of options for restoration of degraded areas through the development of appropriate methods of plant propagation</p>	<p>1. Recording and creating a data base of occurrence and <b>diversity</b> of threatened conifer taxa and their associated fungi at selected sites</p> <p>2. Deposition of reference collections of named mycorrhizal specimens and fruitbodies together with specimens of the associated threatened conifer taxa,</p> <p>3. Publication identifying the <b>conservation status</b> of threatened conifers and their associated mycorrhizal flora</p> <p>4. Evaluation of <b>conservation strategy</b> applicable to the montane forests of Viet Nam</p> <p>5. Development of a strategy for sustainable and participative small scale <b>exploitation</b> by local communities (especially edible mushrooms)</p> <p>6. Development of a joint application with a commercial company for commercial development of non timber forest products</p> <p>7. Development of propagation technology for <b>restoring</b> threatened conifer taxa to montane forests</p>	<p>Publications</p> <p>Web Page</p> <p>Reference collections of named mycorrhizal specimens and fruitbodies deposited in herbaria together with specimens of the associated threatened conifer taxa,</p> <p>Database of trees sampled and assessed for their mycorrhizal fungi (on Web Page)</p> <p>List of conifer taxa sampled (on Web Page)</p> <p>List of mycorrhizal fungi identified (on Web Page)</p> <p>List of edible fungi recorded (on Web Page)</p> <p>Propagation methods appropriate to each conifer taxa placed on Web Page and in Final Report</p> <p>Stocks of threatened conifers established in Central Forest Seed Company Nurseries</p> <p>Submission of joint application with commercial company</p> <p>Final Report.</p>	<p>Able to visit montane forests to undertake field work</p> <p>Suitable climatic conditions for general plant growth and the production of the appropriate material e.g. Fruitbodies formed by mycorrhizal fungi during life of project</p>

**Table D**

<b>PROJECT IMPLEMENTATION TIMETABLE</b>	
<b>Date</b>	<b>Key milestones</b>
<b>2001/2002</b>	
Aug, Sept 2001, Jan 2001	UK team to Vietnam – 3 separate visits
April-May 2002	Vietnamese personnel to UK
Aug/Sep 2001	Survey work on selected threatened conifer species commenced (South Vietnam)
Oct 2001	Collection of herbarium voucher specimens of selected species completed (S.Vietnam)
Oct 2001	Work commenced on field guide of threatened conifers
Aug 2001	Collection of fruit-bodies produced by mycorrhizal fungi for identification of latter for resource and reference commenced
Aug-Oct 2001	Conifer and Mycorrhizal surveys for 5 selected species or in 5 selected areas undertaken
Jan 2002	Propagation workshop
<b>2002/2003</b>	
Sep – Oct 2002	Survey work on selected threatened species commenced (North Vietnam)
Sep – Oct 2002	Collection of herbarium voucher specimens of selected conifer species completed (N.Vietnam)
July-Aug 2002	Comparison of mycorrhizal diversity of threatened conifers with those in undisturbed habitat takes place
July-Aug 2002	Collection of fruit-bodies produced by mycorrhizal fungi for identification of latter for resource and reference. Collection includes root samples
Aug/Sep 2002	Survey work on selected threatened conifer species commenced (South Vietnam) Survey for 5 species completed
July 2002	Production of illustrated booklet on mycorrhizal diversity commenced
Jan 2003	Nursery booklet on plant propagation commenced
May-June 2002	Establishment of field plots
Jan 2003	Propagation workshop
<b>2003/2004</b>	
Jan 2004	Final seminar takes place to disseminate findings with stakeholders
May 2004	Proposal with commercial firms for propagation of trees and edible mushrooms drawn up
May 2004	Publication of illustrated booklet on mycorrhizal diversity
May 2004	Publication of illustrated booklet on conifers
May 2004	Publication of booklet on plant propagation (dual language)
<b>May 2004</b>	Report on Conservation status of conifer taxa for IUCN Conifer Specialist Group produced