

Darwin Initiative for the Survival of Species

Final Report

1. Darwin Project Information

Project Reference No.	13026
Project title	Field Guide to the Forest Trees of Southern Thailand
Country	Thailand
UK Contractor	Royal Botanic Gardens, Kew
Partner Organisation (s)	The Forest Herbarium, Bangkok, Thailand
Darwin Grant Value	£53755
Start/End date	1/1/2005–31/12/2007
Project website	n/a
Author(s), date	T. Utteridge, S. Gardner, P. Sidisunthorn, April 2008

2. Project Background/Rationale

The project is based in Southern Thailand (a geo-political region including the provinces of Krabi, Chumphon, Trang, Nakhon Si Thammarat, Narathiwat, Pattani, Phang Nga, Phatthalung, Phuket, Yala, Ranong, Songkhla, Satun and Surat Thani).

To provide a Field Guide to the forest trees found in the biodiverse rich area of Southern Thailand, using a similar protocol and format as previously employed in the publication of the Field Guide to the Forest Trees of Northern Thailand.

To date, only the partially completed, and English-language technical publication the Flora of Thailand is available for identifying trees in the region. This Darwin project will produce user-friendly, non-technical, but scientifically rigorous identification guide that will enable a larger audience to identify biodiversity, which currently does not exist for Southern Thailand.

The project was initiated after the enthusiastic response to the publication of the Field Guide to Forest Trees of Northern Thailand in 2000. The guide is being used by a wide range of groups including foresters, natural resource managers, ethnobotany projects, landscape architects, horticulturalists, amateur naturalists and tourists as well as by professional botanists and as a textbook by university students. The guide has also been used by conservation projects in Laos, Vietnam and Cambodia. The local partners are Kongkanda Chayamarit (Curator, The Forest Herbarium, Bangkok), who hosted project development meetings, agreed a partnership with Kew; and Simon Gardner – a consultant botanist with The Forest Herbarium who is the project co-leader based in Thailand, and developed the main project proposal in conjunction with BKF and Kew, secured match funding. In addition Simon Gardner is the co-author of Field Guide to Forest Trees of Northern Thailand, and will be following that format for the Field Guide to the Forest Trees of Southern Thailand. Kew and BKF have a continuing long-term commitment to study and conserve the biological diversity of Thailand through an ongoing Memorandum of Understanding and collaboration on the Flora of Thailand.

3. Project Summary

- What were the purpose and objectives (or outputs) of the project? (From the log frame at end of the report).

The purposes of the project were to enhance the conservation of the forest biodiversity of Southern Thailand through the production of a tool for improved identification and monitoring of forest tree species, and improved capacity to collect and study botanical diversity. The outputs of the project were as follows:

- Field guide to the Forest Trees of Southern Thailand published
 - Field work
 - Photographs and illustrations of species made
 - Specimen collection
 - Taxonomic verification
 - Conservation status of forest tree species assessed
 - Partners trained in assigning IUCN categories
- Were the original objectives or operational plan modified during the project period?
No.
 - Which of the Articles under the Convention on Biological Diversity (CBD) best describe the project? Articles 7, 8, 12, 13 and 18.
 - Briefly discuss how successful the project was in terms of meeting its objectives. What objectives were not or only partly achieved, and have there been significant additional accomplishments?

The project has met the following objectives: fieldwork, specimen collection, photographs and illustrations of species, partners trained in assigning IUCN categories. The project has partly met the following objective: taxonomic verification. The project has yet to meet the following objectives: publication of the Field Guide, assessment of conservation status of tree species. Additional accomplishments are: training in taxonomic, identification and herbarium methodology; publication of new species in taxonomic journals; 30 new species records for Thailand collected during fieldwork.

4. Scientific, Training, and Technical Assessment

- Please provide a full account of the project's research, training, and/or technical work.
- **Research** - this should include details of staff, methodology, findings and the extent to which research findings have been subject to peer review.
- **Specimen naming and identification:**

A broad cadre of international botanists was used to name and identify the specimens in addition to the identifications undertaken at the time of collection and subsequently by the project team in Thailand. Identification by these international experts is a form of peer-review for the species names. As the field guide will be based on the correct taxonomic name for each species this part of the project underpins the subsequent writing up of the Field Guide. It must be remembered that naming specimens accurately is a time-consuming process which has been undertaken in-kind by most of the botanists listed below (which would have accounted for a huge financial cost if all the time was fully budgeted for).

The methodology for naming specimens is as used by all botanical inventory

projects. Specimens were collected during periods of fieldwork, each one numbered and with several duplicates which were sent to both BKF, Kew and Leiden. Experts either examined the specimens at BKF or Kew, or a set of duplicates were sent direct to experts. A total of 2902 specimens were collected. Of these c. 70% have been named to species.

The international experts are listed below with their family expertise used in the Darwin project listed behind them:

K. Chayamarit (Anacardiaceae), P. Chalermglin (Annonaceae), C. Pengkhlai (Ebenaceae, Elaeocarpaceae, Fagaceae, Meliaceae, Tiliaceae, Sterculiaceae)), P. Chantaranothai (Myrtaceae, Sapotaceae, Lecythidaceae), W. de Wilde (Myristicaceae), H. Esser (Araliaceae, Rutaceae), P. van Welzen (Euphorbiaceae, Sapindaceae), T. Utteridge (checking all specimens to family level, Flacourtiaceae, Icacinaceae, Olacaceae, Rosaceae, Rubiaceae, Simaroubaceae), C. Niyomdham (Leguminosae), R. Harrison (Moraceae), Ding Hou (Celastraceae, Rhizophoraceae), C. Berg (Moraceae), R. Pooma (Dipterocarpaceae), V. Chamchumroon (Rubiaceae), F. Adema (Leguminosae, Connaraceae), C. Puff (Rubiaceae), S. Andrews (Aquifoliaceae), D. Middleton (Apocynaceae), R. de Kok (Verbenaceae/Lamiaceae), G. Bramley (Gesneriaceae, Verbenaceae/Lamiaceae), S. Suddee (Verbenaceae/Lamiaceae), C.M. Pannell (Meliaceae), C. Pendry (Polygalaceae), R. Kiew (Oleaceae), A.P. Davis (Rubiaceae), M. van Balgooy (checking specimens to family level), M.J.E. Coode (Elaeocarpaceae), Shi-xiong Yang (Theaceae), Yvonne Su (Annonaceae), P. Kessler (Annonaceae), S.E.C. Sierra (Euphorbiaceae), R.M.K. Saunders (Annonaceae), T. Chaowasku (Annonaceae), J. De Muria (Violaceae), H. Ballard (Violaceae), F. Slik (Euphorbiaceae).

- **Training and capacity building activities:**

- **Training in specimen collection and processing, May 2005.**

Tim Utteridge visited the collaborators in Thailand for 10 days in Southern Thailand (Simon Gardner and Pindar Sidisunthorn based at Thung Khai Botanical Garden, Trang; 16th to 25th May). Field procedures (collecting techniques, photography etc.) were discussed and reviewed, and time was spent with the project team in identifying unidentified material to family level using spot characters used in the herbarium. Specimens are of a high quality, 2902 specimens have been collected and distributed. Without high quality specimens in flower and fruit naming is difficult; the project has greatly increased our knowledge of the flora of Southern Thailand through the extensive collection programme.

- **Tropical Plant Identification Course, 17th – 21st October 2005.**

The training week in taxonomic identification and methodology (as listed in the Activities section of the log frame), was expanded to include a large element of Plant Identification and was called a Tropical Plant Identification Course. This was discussed and finalised during a visit by Kongkanda Chayamarit to the Royal Botanic Gardens, Kew in April 2004. (Kongkanda Chayamarit is the project's co-ordinator in the host country and is Director of the Office of the Forest Herbarium, Bangkok and, as such, was able to suggest the best training methodology for the trainees on the course). The trainees were selected in-country by BKF as detailed in the original Stage 2 application. There were a total of 31 trainees from BKF, Kasetsart and Mahidol Universities, all selected by BKF because of their roles in contributing to the Field Guide (in specimen identification) and the Flora of Thailand. Several permanent members of staff from the Forest Herbarium participated in this course and contributed to the course especially during practical identification sessions. See attached timetable at the end of the report. Website:

http://www.dnp.go.th/botany/Image/events/Darwin%20course/ident_course.htm

- **Darwin Initiative Tropical Plant Identification and Introduction to IUCN Course,**

20th– 24th November 2006.

Drawing on the success of the 2005 training course, the training week planned for 2006 in IUCN conservation was expanded to include a large element of plant identification and was called the 'Darwin Initiative Tropical Plant Identification and Introduction to IUCN Course'. This was discussed and finalised during a visit by Tim Utteridge to the Forest Herbarium with Kongkanda Chayamarit and Rachun Pooma. (Rachun Pooma is the Head of the Herbarium and was more closely involved with the running of the course in 2006). As for the 2005 course, Kongkanda and Rachun were able to suggest the best training methodology for the trainees on the course (as 2005, course participants were selected by BKF as detailed in the original Stage 2 application). There were a total of 20 trainees from the National Park, Wildlife and Plant Conservation Department (DNP) including several field-based members of the DNP selected for their roles in contributing to the conservation in National Parks. Several permanent members of staff from the Forest Herbarium contributed to the course especially during practical identification sessions. Details of the course, including the timetable, can be found on the following website:

<http://www.dnp.go.th/botany/Image/events/Darwin2006/main.html>

5. Project Impacts

- What evidence is there that project achievements have led to the accomplishment of the project purpose? Has achievement of objectives/outputs resulted in other, unexpected impacts?

The primary output of the project is the published Field Guide and to date this has yet to be completed, and once the Field Guide is published then the project's outcome/purpose will start to be realised. The collecting programme has resulted in the discovery of several new species, including the publication (or near publication) of the following new species:

ST2717 *Ficus thailandica* C.Berg & S.Gardner

ST2613 *Wrightia siamensis* D.Middleton

ST0757 *Milusa intermedia* Chaowasku & Kessler

ST1116 *Milusa thailandica* Chaowasku & Kessler

In addition there are approximately 30 new records for Thailand collected during the collecting programme.

- To what extent has the project achieved its purpose, i.e. how has it helped the host country to meet its obligations under the Biodiversity Convention (CBD), or what indication is there that it is likely to do so in the future? Information should be provided on plans, actions or policies by the host institution and government resulting directly from the project that building on new skills and research findings.

The project's outputs will help the host country meet the following CBD targets in the future through the use of critically named specimens in the herbarium (for workers using herbarium resources to undertake identification), and the Field Guide for those workers based in the field: articles 7, 8, 12, 13 and 18. However, as of yet, the project has not contributed to plans, actions or policies published by the host institution or government.

- If there were training or capacity building elements to the project, to what extent has this improved local capacity to further biodiversity work in the host country and what is the evidence for this? Where possible, please provide information on what each student / trainee is now doing (or what they expect to be doing in the longer term).

The courses have helped BKF to build capacity for enhancing the identification and

monitoring forest biodiversity, especially as the courses have taught staff not only undertaking taxonomic work but also field based conservation in National Parks. The courses include a large amount of printed materials which have been deposited at BKF for use by staff in the future. Unfortunately, the project has not monitored what each student/trainee is now doing, but as many of them were government workers they are probably still in post using their skills learnt during the course. In addition, the critically named specimens placed in the herbarium in Thailand are an invaluable resource to naming and identifying the flora of Southern Thailand. Once the Field Guide is published this will further enhance local capacity to further biodiversity work.

- **Discuss the impact of the project in terms of collaboration to date between UK and local partner.**

The project has enhanced collaboration between RBG Kew and BKF with several visits to BKF by staff from RBG Kew during the training courses, as well as additional visits by T. Utteridge during 2005, 2006 and 2007 before and after fieldwork, meetings etc. in the region. The two annual courses have been received very well and both institutes would like to continue them after the Darwin project, funding permitting. There are plans to run a Herbarium Techniques Course in Thailand, based in BKF using the format developed during the Darwin Initiative courses. The project has not monitored impacts made on local collaboration within Thailand, and has no information on this.

- **In terms of social impact, who has benefited from the project? Has the project had (or is likely to result in) an unexpected positive or negative impact on individuals or local communities? What are the indicators for this and how were they measured?**

The project has not measured this, and it was not really a part of the project's purpose.

6. Project Outputs

- **Explain differences in actual outputs against those in the agreed schedule, i.e. what outputs were not achieved or only partly achieved? Were additional outputs achieved? Give details in the table in Appendix II.**

With regard to the outputs as detailed in the original Stage 2 application, all outputs were achieved, or will be achieved except for the presentation at the Flora Malesiana conference in the Philippines (this was not done as the project had yet to be funded), and the presentation at the Flora of Thailand conference in Dublin (this was not done because the UK project leader could not attend due to a broken leg). The Field Guide has yet to be published; however some of the project team from Thailand (Simon Gardner and Pindar Sidisunthorn) will visit the RBG, Kew for two weeks in June to finalise the book. However considering the project's initial funding uncertainties and the late funding of the project, the outputs were all pushed back and the publication of the Field Guide was initially to be by end of May 2007 and this had to be rescheduled to February 2008 and as such will hopefully not be delayed too long after the project team come to the UK in June 2008. In addition the project has been very successful with the collection programme with at least 4 new species and 30 new records for the country (see section 5 above). A total c. 2900 specimen numbers have been collected amounting to nearly 6000 herbarium specimens, plus 13,111 photographs have been taken of species from the region.

- **How has information relating to project outputs and outcomes been disseminated, and who was/is the target audience? Will this continue or develop after project completion and, if so, who will be responsible and bear the cost of further information dissemination? As yet, no dissemination activities have been undertaken by the project.**

7. Project Expenditure

- Tabulate grant expenditure using the categories in the original application/schedule. Where project expenditure differs from the proposed budget in the proposed budget is placed in brackets.

	2004/2005	2005/2006	2006/2007	2007/2008	TOTAL
Rents, rates, heating, lighting, cleaning, overheads					
• Darwin funding					
• other funding					
Office costs e.g. postage, telephone, stationery					
• Darwin funding-					
• other funding					
Travel and subsistence					
• Darwin funding					
• other funding					
Printing					
• Darwin funding					
• other funding					
Conferences, seminars etc					
• Darwin funding					
• other funding					
Capital items/equipment (please break down)					
• Darwin funding					
Computing equipment/supplies					
• other funding					
Other costs (please specify and break down)					
• Darwin funding					
Field equipment; photographic consumables					
• other funding					
Salaries					
• Darwin funding					
• other funding					

- Explain any variation in expenditure where this is +/- 10% of the budget.

The variation in expenditure is +/- 10 for 'office costs' and 'conference, seminars etc.' The difference for office costs was higher postage costs for posting specimens etc., and the difference in the conference money was that the money budgeted for 2006/7 was to be used for the IUCN course but extra funding was obtained (TOBU) the money was to be used for a visit by one of the project team late in 2007 to visit Kew, unfortunately this did not happen at the time.

8. Project Operation and Partnerships

- How many local partners worked on project activities and how does this differ from initial plans for partnerships? Who were the main partners and the most active partners, and what is their role in biodiversity issues? How were partners involved in project planning and implementation? Were plans modified significantly in response to local consultation? The project was co-ordinated through BKF (the main partner), in addition the National Parks were involved in the project through organisation of fieldwork, and a total of 10 local staff have been involved in specimen naming and identification. This is more than were originally proposed in the Stage 2 application.

The most active partners were those listed in the original Stage 2 application:

- Kongkanda Chayamarit (The Forest Herbarium, Bangkok; roles: project and training workshop co-ordinator in Thailand, allocation of funds to project staff, naming of Anacardiaceae, overseeing specimen distribution from Thailand);
- Simon Gardner (consultant botanist with BKF, roles: project co-leader in Thailand, specimen collector, photographer, author of main body of text, development of identification keys, distribution of duplicates, database co-ordinator, secured match funding); and
- Pindar Sidisunthorn (consultant with BKF, roles: local finance controller, artist, specimen collector, author of parts of text, Thai translation, secured match funding).

In addition to the main local partners listed above, the following local staff have spent much time in specimen naming:

- C. Pengkhilai
- P. Chantaranothai
- C. Niyomdham
- V. Chamchumroon

In addition to the main local partners listed above, the following BKF staff spent much time in helping to organise and run the training courses at BKF

- C. Niyomdham
- R. Pooma
- Somran Sudee
- Thawatchai Wongprasert
- Nannapat Pattharahirantricin

All of the main local partners were closely involved in project planning and implementation. The initial Stage 1 and Stage 2 applications were written with all the local partners input, especially Simon Gardner (project implementation) and Pindar Sidisunthorn (financial aspects). The project has been running successfully because of the hard work by Simon and Pindar. Fieldwork was conducted with much consultation from the various National Parks staff in those Parks that were visited. Plans for the training courses were modified after consultation with local partners.

- During the project lifetime, what collaboration existed with similar projects (Darwin or other) elsewhere in the host country? Was there consultation with the host country Biodiversity Strategy (BS) Office? There was no collaboration with similar projects in the host country and the BS office.
- How many international partners participated in project activities? Provide

names of main international partners. The following international partners participated in the project activities, especially naming the plant collections: W. de Wilde, H. Esser, P. van Welzen, Ding Hou, C. Berg, F. Adema, C. Puff, S. Andrews, D. Middleton, R. de Kok, G. Bramley, C.M. Pannell, C. Pendry, R. Kiew, A.P. Davis, M. van Balgooy, M.J.E. Coode, Shixiong Yang, Yvonne Su, P. Kessler, S.E.C. Sierra, R.M.K. Saunders, T. Chaowasku, J. De Muria, H. Ballard, and F. Slik. The following international partners participated in the project activities, especially organising and running the plant identification courses and IUCN workshop: Rogier de Kok, Alison Moore, Gemma Bramley and Clare Drinkell.

- **To your knowledge, have the local partnerships been active after the end of the Darwin Project and what is the level of their participation with the local biodiversity strategy process and other local Government activities? Is more community participation needed and is there a role for the private sector?** The local partners Simon Gardner and Pindar Sidisunthorn will carry on with the Field Guide and see it through to publication. The Forest Herbarium in Bangkok will carry on its botanical research programme. To name the specimens and publish the Field Guide it is unlikely that community participation is needed. The private sector has been involved in the project from the start with match funding guaranteed by Toyota.

9. Monitoring and Evaluation, Lesson learning

- **Please explain your strategy for monitoring and evaluation (M&E) and give an outline of results. How does this demonstrate the value of the project? E.g. what baseline information was collected (e.g. scientific, social, economic), milestones in the project design, and indicators to identify your achievements (at purpose and goal level).** For the courses the students were tested on their plant identification skills at the end of each course and given IUCN problems to solve during the IUCN workshop. The students generally scored well in the ID tests and the IUCN problems were solved. For the collecting programme, outputs were monitored by the specimens received both at BKF and at Kew. All specimens received were tallied with the species database that was sent by the collecting team in Thailand. All specimens collected were received either at BKF or Kew with the collection numbers running from 1–2902, each with several duplicates (at least two, however, note that obviously not all specimens were sent to Kew if there was only a unicate), thus totalling c. 6000 herbarium specimens collected. For the Field Guide, the monitoring has been in two stages: the number of identifications completed at the various taxonomic levels (first family, then genus and finally species); and the production of species pages. The results, to date, of the identification process is as follows: 69% have been named down to species (2007 specimen numbers), 24% named only to genus (696 specimen numbers), 6% named only to family (178 specimen numbers), and the remaining 1% are unidentified (note that some of these will be unicates that have not been seen at Kew or Leiden). To date 832 draft specimen accounts have been compiled (out of a total of a revised target of 1800).
- **What were the main problems and what steps were taken to overcome them?** The main problems in the running of the project were seemingly minor but contributed to knock on effects in the processing of specimens and especially in the communication between the project in Thailand and the UK. Specimens were sent with mothballs and this added a considerable time lag to specimen processing in the UK (they are considered a health and safety risk). There were constant e-mail problems, especially with the project team in Thailand, with the e-mail contact dropping out continually. A recent problem with the species accounts is the incompatibility of computer files. The project team have been working on Pagemaker 6.5 files, and the format sent to the UK at the end of last year could not unfortunately be used. They will bring the files in another format when visiting the UK in June.

- During the project period, has there been an internal or external evaluation of the work or are there any plans for this? There has been no internal or external evaluation of the work and there are no plans for this.
- What are the key lessons to be drawn from the experience of this project? We would welcome your comments on any broader lessons for Darwin Initiative as a programme or practical lessons that could be valuable to other projects, as we would like to present this information on a website page.

The key lessons are: structure and delimitation of the project's outcomes, structure of staff levels within the project.

The delimitation of the outputs has increased during the lifetime of the project (especially within the second half of the last year, this has been driven by the success of the project in the number of specimens and photographs etc. that have been generated by the project, resulting in an enlarged Field Guide (it will be two volumes) and a larger number of species to be covered (a revised target of 1800). The key lesson here is to undertake a preliminary research phase to structure the project and to keep to that structure. This project has greatly increased our knowledge of the region and will produce a fantastic resource for field workers, but this has resulted in a slightly longer production cycle for the Field Guide. However, this has been necessary to maintain the integrity of the project in regard to the rich biodiversity of the region; without expanded the Field Guide to include additional species it will be more difficult to use in the field because it will have some species omitted.

Naming of specimens has caused some problems as it draws on professional botanists outside the project who have their own project and are doing the naming in kind. If a botanist is busy or unable to spend time on naming then the naming can be slowed up. This has 'knock-on' effects on the production of treatments for the Field Guide. The project could have increased the budget to employ a professional botanist in the last year of the project to concentrate solely on naming of specimens, this may be the case in other projects where a collection programme is to be undertaken in a species-rich area.

10. Actions taken in response to annual report reviews (if applicable)

- Have you responded to issues raised in the reviews of your annual reports? Have you discussed the reviews with your collaborators? Briefly summarise what actions have been taken over the lifetime of the project as a result of recommendations from previous reviews (if applicable). Attempts have been made to respond to issues in the annual reports. Reviews have been discussed with local partners, in particular with Simon Gardner and his team. One of the recurrent themes from the annual reports was that the project hasn't connected with practical conservation attempts and has no real dissemination strategy for launching the Field Guide. For example from the latest review of the 2007 annual report it was stated within the project "no attempt has been made to consider how its use could be developed to make a more effective contribution to the project purpose (forest biodiversity conservation)", and this is reflected in the comments in the annual report concerning the dissemination of the knowledge in the Field Guide. Whilst the project team agree that conservation is best achieved through a practical approach and a dissemination strategy would be very beneficial (perhaps the UK Darwin Initiative team including website, publicists etc. could help in dissemination of this, and all project's outputs?), the aim of this project was to produce a Field Guide for identification of trees through collection, naming and writing up of species accounts - and the project's funds have covered this; as the same reviewer later remarked: "the project needs to be considered as a one-off". The project's funds are limited but have been used to great success to undertake a collecting programme, a set of training courses, and writing to produce a Field Guide – there were no funds budgeted for in the initial proposal to promote the book, to advertise the book, to employ someone to analyse the data contained in the book, undertake practical conservation efforts etc. etc. but if now viewed as a flaw in the project it should be noted that none of these issues were flagged at the application stage or once the funding had been granted. As proposed,

and funded in part by the Darwin Initiative, the project is on the path to being very successful. To undertake dissemination and practical conservation strategies in Southern Thailand is another entirely different project to be undertaken and funded, however, such a project would be greatly facilitated by the outputs from this project.

11. Darwin Identity

- What effort has the project made to publicise the Darwin Initiative, e.g. where did the project use the Darwin Initiative logo, promote Darwin funding opportunities or projects? Was there evidence that Darwin Fellows or Darwin Scholars/Students used these titles? The Darwin Initiative has been widely publicised in Thailand with this project. It is colloquially known as the Southern Trees Darwin project, and the training courses are called the Darwin Courses. The logo was used during the production of the labels, so there are now approximately 6000 specimens all with labels with the Darwin logo on in herbaria both in Thailand and in international herbaria. The Darwin name was used for the training courses, with the logo prominently displayed both on course materials, the course certificate and the websites:

http://www.dnp.go.th/botany/Image/events/Darwin%20course/ident_course.htm

<http://www.dnp.go.th/botany/Image/events/Darwin2006/main.html>

(There were no Darwin Fellows or Scholars on this project.)

- What is the understanding of Darwin Identity in the host country? Who, within the host country, is likely to be familiar with the Darwin Initiative and what evidence is there to show that people are aware of this project and the aims of the Darwin Initiative? In the host country the people who will be aware of the Darwin Initiative through this project are those who have worked with the project team in the field (so National Park, Wildlife and Plant Conservation Department staff and associates from the Southern Thailand region), and those that have undertaken the training courses.
- Considering the project in the context of biodiversity conservation in the host country, did it form part of a larger programme or was it recognised as a distinct project with a clear identity? The project was recognised as a distinct with a clear identity.

12. Leverage

- During the lifetime of the project, what additional funds were attracted to biodiversity work associated with the project, including additional investment by partners? Many additional funds were donated to the project. These included costs for packing and sending specimens through both BKF's and RBG Kew's courier partner; photocopying and library resources from RBG Kew. However, the greatest funds were those associated with the amount of time spent on the project, especially for naming specimens. The partner in the UK (Tim Utteridge) has spent up to 20% of his time on the project (rather than 10%) and this is very expensive for Kew. £2000 was raised from the TOBU fund at RBG Kew for an additional 3 Kew staff members travelling to Bangkok, and administrative costs for the training course in October 2005.
- What efforts were made by UK project staff to strengthen the capacity of partners to secure further funds for similar work in the host country and were attempts made to capture funds from international donors? No attempts were made to capture funds from international donors.

13. Sustainability and Legacy

- The project achievements that will endure are:
 - The c. 6000 herbarium specimens deposited in major herbaria around the globe (including BKF, K, L, and E). Herbarium specimens, if cared for and stored in a protective environment, will last for several hundred years. The specimens collected from Southern Thailand during the Darwin Initiative project will be a resource that will be used for many many years to come by botanists, ecologists and biodiversity workers studying both the flora of Thailand and the flora of the Malay Peninsula.
 - The published Field Guide will be an enduring legacy of the project. It will be an essential resource for the conservation professionals in Southern Thailand and SE Asia. In addition, many of the families and genera to be included in the Field Guide are found across the western Malesian floristic region and the Field Guide will be used throughout the region as an identification tool, especially in Malaysia.

Some project staff will remain in their posts in BKF and Kew (Kongkanda Chayamarit and Tim Utteridge), whilst Simon Gardner and Pindar Sidisunthorn, as consultants, will be staying in SE Asia and will be carrying on with finishing the Field Guide before looking for a new project to undertake.

Partners will keep in touch: BKF and Kew are closely linked (e.g., several Kew staff, including Tim Utteridge, are on the editorial board of the Thai Forest Bulletin published through BKF), in addition BKF and Kew are planning to run a two week herbarium techniques course next year (following the format of the Darwin Initiative courses); the other partners (Simon Gardner and Pindar Sidisunthorn) will visit RBG Kew in June 2008.

The project did not seek to make conclusions or suggestions to be 'applied', however, the outputs will be able to facilitate future decisions for the conservation of Southern Thailand, as well as inform botanists undertaking taxonomic and floristic work in the future. However, it is also possible to view the outputs as 'stand-alone' which will have no 'application' as such.

- Are additional funds being sought to continue aspects of the project (funds from where and for which aspects)? To date, no.

14. Value for money

- Considering the costs and benefits of the project, how do you rate the project in terms of value for money and what evidence do you have to support these conclusions? The project has been excellent value for money, especially for the Darwin Initiative considering it funded the project for c. £53000 pounds for three years. The amount of critically named specimens, the photographs, the databases, the training courses and the soon to be published Field Guide have been undertaken by the project members with great success. For such a small set of funds the outputs will be a very long lasting resource, which will still provide great value for money as they will be used greatly in the future. It is worth nothing that many additional expenses that will be carried or absorbed by the project partners have not been passed on to the Darwin Initiative. For example, none of the costs for mounting specimens, the materials used for mounting specimens, the time spent by mounting staff, curation staff to put them away, and the storage costs were not detailed in the budget. This is approximately £15 per specimen for incorporation into a herbarium and would equate to c. £45000 just for the 3000 duplicates at Kew, with a similar expense incurred by BKF. In addition, the botanists who have named specimens 'in kind' would have added a great financial burden to the project if fully costed and budgeted for, e.g., a senior botanist spending a day naming (on approximately 10 specimens a day) would cost c. £600 to £750 per day depending on grade.

15. Appendix I: Project Contribution to Articles under the Convention on Biological Diversity (CBD)

Please complete the table below to show the extent of project contribution to the different measures for biodiversity conservation defined in the CBD Articles. This will enable us to tie Darwin projects more directly into CBD areas and to see if the underlying objective of the Darwin Initiative has been met. We have focused on CBD Articles that are most relevant to biodiversity conservation initiatives by small projects in developing countries. However, certain Articles have been omitted where they apply across the board. Where there is overlap between measures described by two different Articles, allocate the % to the most appropriate one.

Project Contribution to Articles under the Convention on Biological Diversity		
Article No./Title	Project %	Article Description
6. General Measures for Conservation & Sustainable Use		Develop national strategies that integrate conservation and sustainable use.
7. Identification and Monitoring	48	Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities that have adverse effects; maintain and organise relevant data.
8. In-situ Conservation	10	Establish systems of protected areas with guidelines for selection and management; regulate biological resources, promote protection of habitats; manage areas adjacent to protected areas; restore degraded ecosystems and recovery of threatened species; control risks associated with organisms modified by biotechnology; control spread of alien species; ensure compatibility between sustainable use of resources and their conservation; protect traditional lifestyles and knowledge on biological resources.
9. Ex-situ Conservation		Adopt ex-situ measures to conserve and research components of biological diversity, preferably in country of origin; facilitate recovery of threatened species; regulate and manage collection of biological resources.
10. Sustainable Use of Components of Biological Diversity		Integrate conservation and sustainable use in national decisions; protect sustainable customary uses; support local populations to implement remedial actions; encourage co-operation between governments and the private sector.
11. Incentive Measures		Establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.

12. Research and Training	19	Establish programmes for scientific and technical education in identification, conservation and sustainable use of biodiversity components; promote research contributing to the conservation and sustainable use of biological diversity, particularly in developing countries (in accordance with SBSTTA recommendations).
13. Public Education and Awareness	9	Promote understanding of the importance of measures to conserve biological diversity and propagate these measures through the media; cooperate with other states and organisations in developing awareness programmes.
14. Impact Assessment and Minimizing Adverse Impacts		Introduce EIAs of appropriate projects and allow public participation; take into account environmental consequences of policies; exchange information on impacts beyond State boundaries and work to reduce hazards; promote emergency responses to hazards; examine mechanisms for re-dress of international damage.
15. Access to Genetic Resources		Whilst governments control access to their genetic resources they should also facilitate access of environmentally sound uses on mutually agreed terms; scientific research based on a country's genetic resources should ensure sharing in a fair and equitable way of results and benefits.
16. Access to and Transfer of Technology		Countries shall ensure access to technologies relevant to conservation and sustainable use of biodiversity under fair and most favourable terms to the source countries (subject to patents and intellectual property rights) and ensure the private sector facilitates such assess and joint development of technologies.
17. Exchange of Information	14	Countries shall facilitate information exchange and repatriation including technical scientific and socio-economic research, information on training and surveying programmes and local knowledge
19. Bio-safety Protocol		Countries shall take legislative, administrative or policy measures to provide for the effective participation in biotechnological research activities and to ensure all practicable measures to promote and advance priority access on a fair and equitable basis, especially where they provide the genetic resources for such research.
Total %	100%	Check % = total 100

16. Appendix II Outputs

Please quantify and briefly describe all project outputs using the coding and format of the Darwin Initiative Standard Output Measures.

Code	Total to date (reduce box)	Detail (←expand box)
Training Outputs		
1a	Number of people to submit PhD thesis	
1b	Number of PhD qualifications obtained	
2	Number of Masters qualifications obtained	
3	Number of other qualifications obtained	
4a	Number of undergraduate students receiving training	
4b	Number of training weeks provided to undergraduate students	
4c	Number of postgraduate students receiving training (not 1-3 above)	
4d	Number of training weeks for postgraduate students	
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification(i.e not categories 1-4 above)	
6a	Number of people receiving other forms of short-term education/training (i.e not categories 1-5 above)	55
6b	Number of training weeks not leading to formal qualification	3
7	Number of types of training materials produced for use by host country(s)	All of the course material were photocopied and left with the host country, and the powerpoint presentations were deposited there too.
Research Outputs		
8	Number of weeks spent by UK project staff on project work in host country(s)	11
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (s)	
10	Number of formal documents produced to assist work related to species identification, classification and recording.	
11a	Number of papers published or accepted for publication in peer reviewed journals	2
11b	Number of papers published or accepted for publication elsewhere	
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country	2
12b	Number of computer-based databases enhanced (containing species/genetic information) and handed over to host country	
13a	Number of species reference collections established and handed over to host country(s)	3000 specimens as part of the collecting programme (these are duplicated deposited in BKF)

Code	Total to date (reduce box)	Detail (←expand box)
13b	Number of species reference collections enhanced and handed over to host country(s)	

Dissemination Outputs		
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	
14b	Number of conferences/seminars/ workshops attended at which findings from Darwin project work will be presented/ disseminated.	
15a	Number of national press releases or publicity articles in host country(s)	
15b	Number of local press releases or publicity articles in host country(s)	
15c	Number of national press releases or publicity articles in UK	2
15d	Number of local press releases or publicity articles in UK	
16a	Number of issues of newsletters produced in the host country(s)	
16b	Estimated circulation of each newsletter in the host country(s)	
16c	Estimated circulation of each newsletter in the UK	
17a	Number of dissemination networks established	
17b	Number of dissemination networks enhanced or extended	
18a	Number of national TV programmes/features in host country(s)	
18b	Number of national TV programme/features in the UK	
18c	Number of local TV programme/features in host country	
18d	Number of local TV programme features in the UK	
19a	Number of national radio interviews/features in host country(s)	
19b	Number of national radio interviews/features in the UK	
19c	Number of local radio interviews/features in host country (s)	
19d	Number of local radio interviews/features in the UK	
Physical Outputs		
20	Estimated value (£s) of physical assets handed over to host country(s)	£1000
21	Number of permanent educational/training/research facilities or organisation established	
22	Number of permanent field plots established	
23	Value of additional resources raised for project	£53000

17. Appendix III: Publications

Provide full details of all publications and material 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 that is currently being compiled.

Mark (*) all publications and other material that you have included with this report

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (e.g. contact address, website)	Cost £
Journal article	C.C. Berg & S. Gardner. 2007. A new species <i>Ficus</i> subg. <i>Ficus</i> (Moraceae) from Thailand and two new records of <i>Ficus</i> species. <i>Thai Forest Bulletin (Botany)</i> . 35: 31--33.	The Forest Herbarium, National Park, Wildlife and Plant Conservation Department, Bangkok, Thailand.	The Forest Herbarium, National Park, Wildlife and Plant Conservation Department, Bangkok, Thailand. http://www.dnp.go.th/botany/pdf/Thai%20Forest%20Bulletin/TFB35.pdf	NA
Journal article	S.Gardner, P. Sidisunthorn & K. Chayamarit. 2007. New and interesting Magnoliaceae records from Peninsular Thailand. <i>Thai Forest Bulletin (Botany)</i> . 35: 69--72.	The Forest Herbarium, National Park, Wildlife and Plant Conservation Department, Bangkok, Thailand.	The Forest Herbarium, National Park, Wildlife and Plant Conservation Department, Bangkok, Thailand. http://www.dnp.go.th/botany/pdf/Thai%20Forest%20Bulletin/TFB35.pdf	NA
Journal article (using a collection from the project to describe a new species).	D.J. Middleton. 2007. A new species of <i>Wrightia</i> (Apocynaceae: Apocynoideae) from Thailand. <i>Thai Forest Bulletin (Botany)</i> . 35: 80--85.	The Forest Herbarium, National Park, Wildlife and Plant Conservation Department, Bangkok, Thailand.	The Forest Herbarium, National Park, Wildlife and Plant Conservation Department, Bangkok, Thailand. http://www.dnp.go.th/botany/pdf/Thai%20Forest%20Bulletin/TFB35.pdf	NA

18. Appendix IV: Darwin Contacts

To assist us with future evaluation work and feedback on your report, please provide contact details below.

Project Title	Field Guide to the Forest Trees of Southern Thailand	
Ref. No.	13026	
UK Leader Details		
Name	Tim Utteridge	
Role within Darwin Project	Project co-ordinator at UK end.	
Address	RBG Kew, Richmond Surrey.	
Phone		
Fax		
Email		
Other UK Contact (if relevant)		
Name		
Role within Darwin Project		
Address		
Phone		
Fax		
Email		
Partner 1		
Name		
Organisation	National Park, Wildlife & Plant Conservation Dept.	
Role within Darwin Project	Project co-ordinator at Thailand end.	
Address	The Forest Herbarium, Bangkok, Thailand	
Fax		
Email		
Partner 2 (if relevant)		
Name		
Organisation		
Role within Darwin Project		
Address		
Fax		
Email		

Project summary	Measurable indicators	Means of verification	Important assumptions
<p>Goal:</p> <p>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 			
<p>Purpose</p> <p>To enhance the conservation of the forest biodiversity of Southern Thailand through the production of a tool for improved identification and monitoring of forest tree species.</p> <p>Improved capacity to collect and study botanical diversity.</p>	<p>Ability to identify the trees of Southern Thailand enhanced.</p> <p>Species of high priority for conservation identified using IUCN categories.</p> <p>New knowledge of the trees of Southern Thailand generated and shared.</p>	<p>Field guide published.</p> <p>Conservation status of species assessed and published, <u>and distributed to relevant agencies.</u></p> <p>Herbarium specimen holdings increased at institutions; <u>new photographs, illustrations, scientific information published.</u></p>	<p><u>Easier identification of biodiversity components allows conservation workers to better conserve Southern Thailand's forest biodiversity.</u></p> <p>IUCN ratings convey information to direct conservation needs.</p> <p>Critically named herbarium specimens are a valuable conservation reference resource.</p>
<p>Outputs</p> <p>Field guide to the Forest Trees of Southern Thailand.</p> <p>Field work, photographs and illustrations of species made, specimen collection and taxonomic verification undertaken.</p> <p>Conservation status of forest tree species assessed; <u>partners trained in assigning IUCN categories.</u></p>	<p>Field guide to 1000 species published.</p> <p>Critically named specimens deposited in partner's herbaria; training in collection and preparation of herbarium specimens undertaken.</p> <p>IUCN categories produced.</p>	<p>Field guide peer reviewed; field guide distributed; copies of all publications sent to Darwin Initiative.</p> <p>Fieldwork reports; database produced of collections made; determinations distributed to partners; training attendance records and quality specimens received in herbaria.</p> <p>Participant attendance records; forest tree species IUCN ratings published in the field guide.</p>	<p>Partners & fieldworkers interested in using a field guide; publishers interested and available.</p> <p>Scientifically rigorous taxonomic work presented in a user-friendly manner, together with named herbarium specimens make identification easier for non-specialists.</p> <p>Interested parties use IUCN ratings as an internationally recognised standard.</p>
<p>Activities</p> <p>Publications.</p> <p>Fieldwork programme.</p> <p>Training.</p>	<p>Activity Milestones (Summary of Project Implementation Timetable)</p> <p>Yr.1: Publication format discussed and agreed upon (October 2004); initial species reports written and reviewed (c. 200 species). Yr. 2: Species reports continued (c. 300 species); page proofs generated and agreed upon (March 2006). Yr. 3 Final species reports written; proofs sent to reviewers; and field guide ready for publication (May 2007).</p> <p>Yr. 1: Field protocols, dates and survey area agreed (June 2004); surveys carried out (144 days). Yr. 2: second phase of surveys (144 days). Yr. 3: Final phase of surveys (72 days).</p> <p>Yr. 1 Training in specimen collection and processing (October 2004). Yr. 2: Training in taxonomic, identification and herbarium methodology (September 2005). Yr. 3: IUCN conservation workshop (May 2006).</p>		

Darwin Initiative Tropical Plant Identification Course: 17 th October to 23 rd October 2005					
	Mon. 17 th October	Tues. 18 th October	Wed. 19 th October	Thurs. 20 th October	Fri. 21 st October
9:00 – 9:30	Introduction	SE Asia Overview	Ebenaceae Sapotaceae	Lamiaceae Acanthaceae	Pteridophytes
09:30 – 10:30	Morphology	Annonaceae Myristicaceae Lauraceae	Theaceae Ericaceae	Gesneriaceae Bignoniaceae	Cucurbitaceae Convolvulaceae Vitaceae
Am break					
11:00 – 12:00	Rubiaceae Apocynaceae	Burseraceae Sapindaceae	Leguminosae	Euphorbiaceae	Moraceae Urticaceae Fagaceae
Lunch					
13:00 – 14:00	Intro. to Monocots Araceae Zingiberaceae Palmae	Meliaceae Dipterocarpaceae	Identification tools	Guttiferae Rutaceae	Identification practice, general sort and revision.
14:00 – 15:00	Orchidaceae Dioscoreaceae Poaceae Cyperaceae	Myrtaceae Combretaceae Melastomataceae	Collecting Techniques and equipment	Anacardiaceae Araliaceae	
Pm break					
15:30 – 16:30	Practical session	Practical session	Practical session	Practical session	Course evaluation