

Darwin Initiative Annual Report

Submission deadline 30 April 2008

Darwin Project Information

Project Ref Number	14-037
Project Title	Building University Capacity to Train Future Cambodian Conservationists
Country	Cambodia
UK Contract Holder Institution	Fauna & Flora International
UK Partner Institution(s)	The Harrison Institute, The Natural History Museum, Frontier, Cambridge University, and Royal Botanic Gardens, Edinburgh are collaborating on certain project activities.
Host country Partner Institution(s)	Royal University of Phnom Penh (RUPP), Ministry of Environment (MoE) and Ministry of Agriculture, Forestry & Fisheries (MAFF).
Darwin Grant Value	£ 154,484
Start/End dates of Project	1 June 2005 to 1 October 2008
Reporting period and annual report number	1 Apr 2007 to 31 Mar 2008: Annual Report No. 3
Project Leader Name	Jenny Daltry, PhD
Project website	http://www.conservationcambodia.org http://www.fauna-flora.org/cambodiauniversity.php
Author(s), date	Jenny Daltry, PhD (Project Leader) and Callum McCulloch (Project Coordinator), 30 April, 2008

1. Project Background

There is a severe lack of capacity within Cambodia to conserve wildlife and ensure that post-war development is environmentally sustainable. Many new jobs have opened in the fields of biodiversity conservation and natural resource management in Cambodia, but the shortage of qualified nationals has resulted in a dependency on short-term, foreign experts. The National Biodiversity Strategy and Action Plan highlighted the urgent need for more Cambodians to develop the necessary knowledge and tools to manage their biodiversity. This project is therefore working to build that capacity and is addressing a number of underlying problems and constraints to effective biodiversity conservation in this country:

- There are limited training or educational opportunities within Cambodia, and the cost of going overseas to study is prohibitive for most Cambodians.
- There has been very little exchange of information or experience among the universities, government and NGO sectors, or with scientists overseas.
- Cambodia's university departments conduct little or no original research. Most lecturers are underqualified and have little or no practical experience.
- The lack of biodiversity research aids available to Cambodians, e.g., technical books, survey equipment or any form of herbarium or zoological reference collection.

2. Project Partnerships

2.1 Project Partners

Fauna & Flora International's principal partner for this Darwin Project is the **Royal University of Phnom Penh (RUPP)**. The FFI-RUPP Steering Committee meets every month to ensure smooth implementation and joint ownership of the project. Day-to-day activities on the ground are handled by two coordinators: one (Callum McCulloch) employed by FFI, and the other (Rath Sethik) representing RUPP. The coordinators report back to their parent organisations every week or as often as needed.

The content of the Masters curriculum has largely been directed by FFI, with input from expert trainers from a wide range of institutions (see below). The integration of the students and curriculum into the university system is under the direction of RUPP, but FFI has introduced precautionary measures to ensure that the students will be awarded degrees on merit alone. For example, decisions on which students qualify to enter the Masters programme are made jointly by the RUPP/FFI Steering Committee, not by any single individual, and based on academic prowess alone. Students are anonymously denoted by reference numbers to avoid risk of nepotism.

This programme has become well integrated into the wider university structure. For example, the Masters students now have official university student cards (not previously issued to postgraduates), which gives them access to the main library and other facilities. Many aspects of student administration have moved from the project office to the appropriate departments within the university, which we believe to be important for enhancing sustainability and local ownership.

The development of office rooms and the reference collection rooms (quarantine area, herbarium and zoological collection) has been a joint effort, with RUPP staff taking an active role in selecting the rooms and approving structural changes. The project office, together with affiliated rooms at RUPP, have been officially named the "Centre for Biodiversity Conservation", and there has been a proposal from within RUPP to upgrade the Centre to a new Department for Biodiversity Conservation. The staff clearly view the Darwin project as the beginning of a long term programme.

Our other main project partners – the two ministries most directly involved in biodiversity management in Cambodia – have also been closely involved, and a number of trainers and trainees have been enrolled from each. From the **Ministry of Agriculture, Forestry and Fisheries**, the Phnom Thmao Wildlife Rescue Centre has provided an invaluable resource for students to learn about Cambodian wildlife, especially large mammals. Many of our students have conducted short research topics at the Centre. The Director of Forestry Administration granted permission to establish the herbarium and zoological reference collection, and the Forestry Administration provides supervision to ensure the collection meets national rules and requirements. The **Ministry of Environment's** Deputy Director for Environmental Impact Assessments personally developed and delivered the EIA course of the Masters programme, while staff from the Department of Nature Conservation and Protection have had a major input into the design of the national herbarium and donation of botanical and zoological specimens. The involvement of both ministries in this project will increase as more students conduct field research for their theses in collaboration with various departments, and through the forthcoming *Cambodian Journal of Natural History*.

2.2 Other Collaborations

During Year 3, project staff also facilitated research visits and capacity building in Cambodia by the following international organisations and specialists: **Harrison Institute**: Dr Paul Bates (supporting and supervising bat research in Thailand and Cambodia for students of our programme); **Murdoch University**: Dr Brad Pettit (Integrated Natural Resource Management lecturer); **Cambridge University**: Richard Paley (Protected Area Management and Project Cycle Management lecturer); **Copenhagen University**: Dr Knod Hellar (Data Recording and Applied Statistics lecturer);

Conservation International: David Emmett (tutoring curator and supplying specimens to the museum facility, supervision of student research), Ben Rawson and Annette Olson (supervising student research on mammals); **Frontier (UK)** (supporting and supervising student research); **La Sierra University:** Dr Lee Grismer (Ecological Survey Techniques lecturer, field research with Darwin Scholars); **Wildlife Conservation Society:** Hannah O’Kelly (supervising student research); **University of Queensland:** Ms Carly Starr (doctoral student studying the ecology of Slow Loris in Cambodia and mentor to the students of the programme); and **Muséum National d’Histoire Naturelle (Paris)/ Sud Plantes Expertes:** Mr Loic Cecilio (supervising botanical research and training curator staff).

FFI and RUPP also collaborated with the following national institutions: **Ministry of Environment** (see 2.1); **Ministry of Agriculture Forestry and Fisheries** (see 2.1); **Royal Government of Cambodia Senate** (Environmental Law course); **Ministry of Education, Youth and Sports** (granted permission to establish Masters course and contributes regularly to monitor student performance); and **Mlup Baitong** (field trip for students to study community-based ecotourism).

Students enrolled on the course included recent graduates and young professionals from a number of Cambodian government, non-governmental and private institutions, including: **Department of Fisheries, Forestry Administration; Ministry of Environment; Department of Education; Royal University of Agriculture** (recent graduates); **Royal University of Phnom Penh** (current lecturers and recent graduates); **Conservation International (Cambodia); World Wide Fund for Nature (Cambodia); Fauna & Flora International (Cambodia); PACT Cambodia; Men Sarun Flour Factory, Apsara Authority,** and **British American Tobacco.**

3. Project progress

3.1 Progress in carrying out project activities

Output 1 - 12-week Bridging Course developed and delivered every year. Two-year MSc curriculum developed and delivered to students who pass the Bridging Course. 20 students selected to be junior research officers ('Darwin Scholars').

The change from a conservation Diploma (as planned in our original proposal) to MSc programme was agreed with the Darwin Secretariat in 2005, and the number of training weeks per student has risen significantly from 15 (original proposal) to more than 70 (a 12-week Bridging Course, c. 30 weeks of taught course work in two semesters, and 1 year of supervised thesis research). The taught components of the Bridging Course and Masters curriculum proceeded as planned in Year 3 except for one subject, Species Conservation, which was postponed to the third semester due to lecturer availability. The progress is summarised in **Annex 3 (i)** in chronological order. Note that in addition to our first cohort of students (enrolled in 2005/06) and the second group (enrolled in 2006/07), a third cohort began their studies in the Bridging course and first semester in Year 3. By the start of 2008, the project was running at full capacity, with the first cohort submitting their final theses, the second cohort beginning their research theses, and the third cohort undertaking their first year. **Annex 3 (ii)** summarises the numbers of students that have participated in the Bridging Course and MSc curriculum to date, while **Annex 3 (iii)** and **(iv)** presents the names and grades of students who have enrolled on the Masters curriculum.

There are currently 14 designated Darwin Scholars (Hourt, Thy, Thou, Sethik, Saveng, Saravuth, Norong, Vichheka, Horn, Channa, Vuthy, Kannitha, Sothea and Elyan). All are exceptional young Cambodians with at least a Bachelors degree (several have a Masters degree or will soon graduate from our MSc programme) and a demonstrated interest in ecology, conservation and education. More scholars will be identified and supported to conduct original research and assist with teaching during the remainder of this project.

Output 2 - The Royal University obtains essential field equipment, research facilities and hardware to conduct conservation research projects. Cambodia's first zoological and botanical reference collections and basic library facilities initiated, with databases and trained curators.

Additional field equipment was purchased for use by the students and Darwin Scholars at RUPP, including various navigational and survey equipment (e.g., GPS units, dissecting kits, compasses, thermohygrometers, and binoculars) and camping gear (e.g., hammocks, backpacks and tarpaulins). The students have learned how to use these tools as part of the *Ecological Survey Techniques* course. Importantly, the project has also provided the students and scholars with access to computers and the Internet through the project library, and enabled them to access a large number of online journals to aid them in their research.

As well as assisting with teaching the Masters students (as part of our strategy towards reducing this programme's dependency on international trainers), the Darwin Scholars have been conducting various lines of research of their own. For example, Darwin Scholar Neang Thy has researched and drafted an excellent first field guide to the amphibians of Cambodia.

More progress was also made on furnishing and equipping the new herbarium and zoological reference collection and library at the university. The Animal Specimen room has been completed, together with a Herbarium and Quarantine Room on the same floor as the project office. The three rooms are fitted with air conditioners and cabinets, and have been sealed from the elements to ensure proper storage of wet and dry specimens. Shelving, jars, and other hardware have been purchased for these reference collection rooms, under guidance from Dr Simon Loader (The Natural History Museum, London). Darwin Scholar Ith Saveng has been appointed as the Head Curator for the museum. The collection currently contains over 200 animal specimens and several hundred plant specimens, principally donated by FFI, Ministry of Environment, Conservation International, and Forestry Administration.

The Muséum National d'Histoire Naturelle (Paris) and the French Government has launched the programme "Sud Plantes Expertes: Flore du Cambodge, du Laos et du Vietnam". Under this programme, a full time botanist, Loic Cecilio, is now working in the new Herbarium in collaboration with the Darwin Project, Ms Yok Lin (Head of Botany at RUPP) and Dr Eric Chenin (Sud Plantes Expertes). With the assistance of this new programme, over 2,000 plant specimens in Paris will be repatriated to Cambodia and placed in the Darwin Project herbarium.

The Biodiversity Conservation Reference Library that we have established at RUPP has also continued to develop with approximately 30 more book titles added plus back issues of various journals. The library currently holds more than 230 titles, including several important course books donated by the UK's Natural History Book Service.

Finally, during the last twelve months we have also established a Research Laboratory in the Department of Biology for use by the Masters students and other faculty staff. (This output is additional to those planned in our original proposal).

Output 3 - The development of new inter-institutional partnerships to implement conservation-oriented research and education projects in Cambodia.

Having started from a position of almost zero interaction between the universities, NGOs and ministries in Cambodia, there has been striking progress in this output during the course of this Darwin Project. The long list of collaborating institutions shown in Section 2 includes almost all the most prominent groups involved in environmental education and management in Cambodia, as well as a growing network of British and other international supporting organisations.

Annex 3 (v) presents the collaborative research topics that our Masters students are currently conducting for their theses. The students also undertake a number of small research studies as part of their first year coursework. Other examples of new collaborative research and education

initiatives include: student Kannitha Lim visited Denmark to undertake training at Odense University in the use of digital recording techniques (she used this training to great effect in recording the calls of different populations of the yellow-cheeked gibbons in Cambodia); and Darwin Scholar and Head Curator Ith Saveng travelled to the Prince of Songkhla University in Hat Yai, Thailand, to work with staff and students on bat taxonomy to develop his research and curator skills.

Output 4 - Publication of newsletter and field guides to disseminate original research and lessons learned. The first issue of the Cambodian Journal of Natural History launched, published and distributed (final year of project).

The first issue of the *Cambodian Journal of Natural History* is under preparation to be published shortly. Significant progress was made during Year 3 of this project, with the establishment of the Editorial Team (Dr Jennifer Daltry, Dr Carl Traeholt, Callum McCulloch) and an International Editorial Board. The nine board members are: Dr Stephen J. Browne, Fauna & Flora International, Cambridge, UK; Dr Martin Fisher, Editor of *Oryx – The International Journal of Conservation*; Dr L. Lee Grismer, La Sierra University, California, USA; Dr Knud E. Heller, Nykøbing Falster Zoo, Denmark; Dr Sovanmoly Hul, Muséum National d'Histoire Naturelle, Paris, France; Dr Andy L. Maxwell, World Wide Fund for Nature, Cambodia; Dr Jörg Menzel, University of Bonn, Germany; Dr Bradley Pettitt, Murdoch University, Australia; and Dr Campbell O. Webb, Harvard University Herbaria, USA.

The Editorial Team has developed and disseminated instructions to contributors for the journal as well as instructions for peer-reviewers. These instructions have been closely modelled on the UK-based *Oryx – International Conservation Journal*, and credit Darwin Initiative's support. The new journal will publish original research by (a) Cambodian or foreign scientists on any aspect of Cambodian natural history, including fauna, flora, habitats, management policy and use of natural resources, and (b) Cambodian scientists on studies of natural history in any part of the world. The Journal will especially encourage material that enhances understanding of conservation needs, and has the potential to improve conservation management in Cambodia. Several manuscripts have already been received and are undergoing rigorous peer-review. Additional manuscripts are being prepared by our Darwin Scholars and students who have completed their thesis.

3.2 Progress towards Project Outputs

This Darwin Project has been very productive during the year April 2007 to March 2008. The project is meeting its intended outcomes, and there has been negligible deviation from the original schedule or much need to revise the assumptions outlined in the Darwin Initiative proposal. The target outputs are listed below. Based on current progress against the project's logical framework (see **Annex 1**), all of the planned outputs should be met, if not exceeded, by the end of the project. Note that the logical framework has undergone some changes in line with requests from our last reviewer (see Section 5).

Output 1 - 12-week Bridging Course developed and delivered every year. Two-year MSc curriculum developed and delivered to students who pass the Bridging Course. 20 students selected to be junior research officers ('Darwin Scholars').

The Bridging Course and Masters curriculum were launched in Year 1 and have been sustained every year since. Since the start of this project, 108 students have been accepted into the 12-week Bridging Course, 59 have conducted the first semester of the Masters course (8 weeks), 30 the second semester (9 weeks) and 28 embarked on the third semester (**Annex 3 ii**). Note that students also spend a considerable amount of time on supervised assignments outside of class. 22 students have commenced the second year of the Masters curriculum, which involves on the job

training while they conduct their thesis research. A total of 19 Darwin Scholars have been selected and supported since the start of this project (14 currently active).

Output 2 - The Royal University obtains essential field equipment, research facilities and hardware to conduct conservation research projects. Cambodia's first zoological and botanical reference collections and basic library facilities initiated, with databases and trained curators.

Significant resources have been established at the Royal University of Phnom Penh, most of which were procured or constructed during the first two years of the project. A programme office (Centre for Biodiversity Conservation) has been constructed and furnished, computers and printer purchased, and internet installed. A wide range of field research equipment has been procured (e.g., GPS, hammocks, cooking materials, backpacks, dissection kits, compasses, relief maps, first aid kits, binoculars), the national herbarium and zoological reference museum have been constructed, specimen storage materials purchased, and a reference library established with more than 230 titles, all recorded on a library database. The specimen collections have databases and curators, and are in daily use. In addition, a research laboratory has been established for student and staff use.

Output 3 - The development of new inter-institutional partnerships to implement conservation-oriented research and education projects in Cambodia.

To date, this project has involved at least 10 Cambodian governmental units (departments and ministries), 9 Cambodian non-governmental organisations, and 15 international organisations (including groups involved in guest lecturing, study tours, reference collection development and student research placements). The Masters students and Darwin Scholars have embarked on more than 20 collaborative research projects, involving multiple organisations: see **Annex 3 (v)** for examples.

Output 4 - Publication of newsletter and field guides to disseminate original research and lessons learned. The first issue of the Cambodian Journal of Natural History launched, published and distributed (final year of project).

The Darwin Project has already developed a newsletter and its first field guide (see previous report). Other recent scientific publications are shown in Table 2 below. The first issue of the new journal will be published and distributed in May or June 2008 (two months later than shown on the original work plan, but this small delay has not affected the project budget or other outputs).

3.3 Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned
4C (4D)	Postgraduate students conduct bridging course prior to MSc course.	44 (10)	40 (12)	24 (12)	108 (34)	90-120
4C	Postgraduate students undertaking two-year MSc course in biodiversity conservation.	26	19	14	59	60
6A	Curators trained	0	4	0	4	4
7	New training courses (modules) developed and delivered, all with supporting materials: <i>Bridging course: English for Academic Purposes, Introduction to Ecology, Biology and Genetics, Ecology and Evolution, Statistics for Biologists, Computer Applications; Year 1, Semester 1: Integrated Natural Resource</i>	10	7	2	19	5

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned
	<i>Management, Environmental Impact Assessments, Environmental Law, GIS, Research Analysis, Scientific Report Writing, Data Presentation; Year 1, Semester 2: Species Conservation, Ecological Field Techniques, Behavioural Ecology, Research Methods and Applied Statistics, Project Cycle Management, Introduction to Protected Areas Management.</i>					
8	No. of weeks spent by FFI staff and other British experts working on the project (include Callum McCulloch, Dr Jenny Daltry, Zoe Dind, Dr Carl Traeholt, Dr Simon Loader, Emily Woodfield, Richard Paley, Mike Appleton, David Emmett).	40	80	80	200	at least 6 UK staff, number of weeks not specified
10	Manuals and guides produced.	0	1 (1,000 copies)	0	1 (1,000 copies)	not specified
11	Scientific papers produced by Darwin Scholars.	0	1 (11B)	3 (11A) 10 (11B)	3 (11A) 11 (11B)	10-15
12A	Library database and reference collection database established at RUPP.	n/a	2	0	2	2
13A	Species reference collections established at RUPP (zoological and botanical)	n/a	1	1	2	1 (zool. only)
14A	Workshops organised on contemporary Cambodian conservation biology, research and collaboration.	0	1	2	3	3-4
14B	Attendance by Darwin Scholars in relevant national workshops	0	2	1	3	3-4
15A	National newspaper articles, including adverts announcing Masters course (adverts posted on three days each).	3	3	2	8	12-16
16A (16B)	Newsletter 'The Missing Link'	0	1 (100)	0	1 (100)	not specified
17A	Steering Committee established to oversee Masters course. International Editorial Board established for the Cambodian Journal of Natural History.	1	0	1	2	not specified
20	Assets include computers, books, field equipment, renovated offices and lecture room, and conversion/ upgrading of laboratories for research.	£6,000	£40,000	£30,000	£76,000	£75,000
21	The Centre for Biodiversity Conservation established at RUPP Faculty of Science.	0	1	0	0	not specified
22	Long term field plots and survey sites set up during the project and maintained by Darwin Scholars.	15 (Phnom Samkos)	0	3 (Veng Sai, Keoseima)	18	10-12
23	Additional funds from Association for Cultural Exchange, USFWS, ADM Capital Foundation and DANIDA, plus support in kind from RUPP, FFI, and others.	£50,000	£200,000	£100,000	£375,000	£268,763

Table 2 Publications

Type	Detail	Publishers	Available from	Cost £
Scientific paper published by Darwin	Lee Grismer, Neang Thy, Chav Thou, <i>et al.</i> (2007) The herpetofauna of the Phnom Aural Wildlife Sanctuary and checklist of the herpetofauna of the Cardamom Mountains, Cambodia.	<i>Hamadryad</i> 31: 216-241 (Centre for Herpetology, India)	PDF copy is available from Project Leader	n/a

Scholars				
Scientific paper published by Darwin Scholars	Lee Grismer, Neang Thy, Chav Thou, <i>et al.</i> (2007) A new species of <i>Chiromantis</i> Peters 1854 (Anura: Rhacophoridae) from Phnom Samkos in the northwestern Cardamom Mountains, Cambodia.	<i>Herpetologica</i> 63: 392-400 (The Herpetologists' League)	As above.	n/a
Scientific paper published by Darwin Scholars	Lee Grismer, Neang Thy, Chav Thou, <i>et al.</i> (2008) Additional amphibians and reptiles from the Phnom Samkos Wildlife Sanctuary in Northern Cardamom Mountains, Cambodia, with comments on their taxonomy and the discovery of three new species.	<i>Raffles Bulletin of Zoology</i> 56: 161-175 (National University of Singapore)	As above.	n/a

3.4 Progress towards the project purpose and outcomes

The main purpose of this Darwin Project is “to build capacity in conservation and applied research at Cambodia’s premier university, chiefly by establishing new teaching modules and MSc in conservation biology, supported with practical field experience.” This is Cambodia’s first MSc in Biodiversity Conservation (and indeed the country’s first Masters degree course in any field of science!). The development of the new Masters curriculum and the associated Bridging Course has entailed the successful development and delivery of 19 original modules, each with supporting teaching materials. Practical field experience has been incorporated into many stages of the course, including field trips to the Kirirom Ecotourism Centre, Phnom Samkos Wildlife Sanctuary, Botum-Sakor National Park, and the Phnom Thmao Wildlife Rescue Centre, and the students’ final-year theses.

Since enrolling on the course, all of the Masters candidates have exhibited striking improvements in their understanding, capacity and enthusiasm for conservation, as demonstrated by the improved quality of their written work, examination grades, and voluntary organisation of additional field trips. More importantly, the students have exhibited independence in their research activities, having gained confidence in their ability to analyse questions and solve problems. During the course of the programme, the students have successfully learned how to critically analyse, challenge dogma, and read around their subjects, which marks a tremendous step forward for the advancement of conservation science in Cambodia (Cambodia’s education system traditionally centres on rote-learning, limited reading or practical exercises, and unquestioning acceptance of facts given by the teachers). It is worth reiterating that around 60% of the Masters candidates already hold posts in environmental fields, either with the government or NGOs in Cambodia, and are therefore well placed to make immediate use of their training to improve the policies and impact of their institutions (see **Annex 3 iii**).

The Royal University of Phnom Penh is dedicated to continuing this Masters programme, and has been very supportive of the initiatives undertaken by the project. This support includes allowing extensive capital works on its infrastructure to house elements of the programme and integrating student administration into the existing student administration systems. The university now has many useful tools in place, including a new conservation library, biological reference collections and field equipment, to enable Cambodian students and visitors to further their knowledge and conduct original research.

The purpose assumptions still hold true, but more Cambodian trainers are needed for the long-term future of the new Masters course. With this need in mind, our project has begun to involve the final year students and Darwin Scholars as assistant teachers in classes for the first year courses. Additionally, there has been increasing involvement with staff from the Environmental Science Department, many of whom have recently returned to RUPP from postgraduate studies abroad.

National capacity has also been improved through networking and enlisting the involvement of more Cambodian and international institutions in the Darwin Project. Many of the students undertaking independent research for their thesis have now begun meeting and working with other people involved in conservation within Cambodia and regionally, and their increased confidence and new contacts should stand them in good stead in their current and future careers.

3.5 Progress towards impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits

The educational nature of this project makes it difficult to point to immediate, direct impacts on biodiversity. The capacity of a significant number of Cambodian men and women from a wide range of institutions has been increased very substantially, however, and they are now beginning to apply their new skills, knowledge and enthusiasm to achieving positive impacts on the ground (see above).

4. Monitoring, evaluation and lessons

Methods of monitoring and evaluation in operation include: monthly FFI meetings (where project progress is discussed and peer-reviewed by other FFI staff in Cambodia), monthly RUPP Steering Committee meetings (involving selected panel of senior university staff and FFI project leaders), quarterly reports to the Ministry of Foreign Affairs, graded student assignments and examinations (all courses), student feedback questionnaires, debriefings by lecturers (on their perception of progress made and lessons learned), and establishment of databases (to record specimens in the new reference collection and book titles in the conservation library). The FFI Project Coordinator, Callum McCulloch, is responsible for overseeing the databases and compiling and analysing statistics on the students and the course. Some of these data are summarized in **Annex 3**, in confidence and as requested by previous reviewers. Measurable indicators of this project include: grades achieved by students in examinations and on assignments (**Annex 3 iv**); number of specimens held in the national reference collection (as recorded on specimen database); number and diversity of research projects conducted by Darwin Scholars and postgraduates, and outputs (theses, papers, reports, etc); and number of collaborative activities with other organisations and projects.

An important lesson from this project has been the need to maintain high academic standards and take a firm stance against nepotism and corruption. Students who enrol on most high school or university courses in Cambodia can commonly expect to pass even if they skip classes or fail their examinations repeatedly (it is very common practice for schoolchildren and students to bribe teachers and examiners). This Masters programme is very different in that the students know that they must work hard to pass every course. It is pleasing that RUPP has accepted the precautionary measures introduced by FFI, despite their obvious reluctance to see any student fail. This strictly merit-based approach has helped to push the students into becoming genuinely capable scholars, who can take pride in the knowledge that their results have been earned. The students are given one chance to re-take examinations or re-submit an assignment. Those students who fail a semester can re-apply next year (we have had four cases of people repeating a semester to date). In most cases, failure to pass has been due to the student not putting enough time into his or her studies.

The fact that course has a reputation for being “difficult”, has given credibility to the new MSc in Biodiversity Conservation qualification, and our programme has already been approached by prospective employers who have been impressed with their contact with the students through their thesis research. Some of the students who have only recently submitted their theses have already gained employment with collaborating agencies. We hope that the graduates can continue to play a

role in the programme and that their rapid employment will serve to re-enforce the university's interest in delivering this and other courses to a respectable standard.

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

Response to reviewer comment number 1: Provide a more easily assimilated presentation of student numbers passing each course.

The numbers of students enrolled and passing each semester of the course can be seen in the table shown in **Annex 3 (ii)**, which follows the format suggested by the reviewer.

Response to reviewer comment number 2: Revise the logical framework.

The revised logical framework can be seen in **Annex 1**. The main changes are: (i) The indicators for the Purpose have been refined to emphasise the important steps taken to provide quality assurance; (ii) Output 1 has been reframed to cover the development of teaching materials with delivery of the bridging course and each year of the MSc as separate activities (indicators are the students successfully meeting defined standards); (iii) The original Outputs 2 and 4 have been combined under one output (Output 2); (iv) All key publications have been assigned to the final output (Output 4); and (v) All key activities have been outline numbered to show which outputs they contribute to.

Response to reviewer comment number 3: Try and persuade some students to look at the botanical side in their theses. (No Response Needed).

We are pleased to report that one final year student has begun conducting a botanical study for their thesis. We hope that the new herbarium, research laboratory and recent arrival of additional botanical expertise will encourage and enable more students to conduct botanical studies as part of their postgraduate research.

6. Other comments on progress not covered elsewhere

None.

7. Sustainability

With the first group of students now completing their year-long research and in contact with a variety of organisations, the course has become widely known among the conservation/ environment community in Cambodia. Students enrolled on the MSc course are finding the work challenging, but feedback on the courses to date indicate a high level of satisfaction with the subjects and standard of teaching. They are especially appreciative of the merit-based systems that are found in this programme, but are lacking in many other Master programmes in Cambodia.

FFI and our project partners intend the Masters course to continue long after the current project has ended (and in fact we have already enrolled students who will not graduate until 2010). The Masters course is currently delivered through the Centre for Biodiversity Conservation, in the Biology Department. The university has introduced student fees of \$200 per student per semester to meet some of the costs of the programme. Though not high enough to sustain foreign teachers, this fee is of the right order of magnitude to cover Cambodian staff. This fee could be increased, because it is lower than most MA programmes in Cambodia.

To further ensure the sustainability of the Masters course, a number of university biology lecturers have been enrolled on the course (or have secured scholarships to pursue graduate studies overseas) and this programme will benefit from their input in the next few years. During Year 3, we engaged several of the second-year students and Darwin Scholars to assist in teaching the first-

year students, and thereby build their experience in delivering this curriculum. By the end of the current Darwin grant period, we anticipate that some of the courses can be delivered by Cambodian trainers using the course materials that have already been developed. A few more years may be needed before more of the international trainers can be withdrawn, however, and we therefore intend to seek additional funding to bridge that gap, potentially including a Darwin Initiative Post Project grant.

Importantly, Cambodia now has a permanent reference library and a herbarium and zoological reference collection, which will be important and lasting assets for university students and other Cambodians interested in biodiversity. With the arrival of the Sud Plantes Expertes project and involvement of a steady flow of researchers visiting that project and other FFI projects, we envisage that these facilities will continue to grow in the future. (The Sud Plantes Expertes initiative will also support the herbarium financially and technically for the foreseeable future).

Ultimately, the real measure of impact is not just in the capacity of the university to teach and support biodiversity research, but in how the graduates and other beneficiaries apply their new skills and enthusiasm to conserving biodiversity. As long as most of the graduates remain in their chosen fields of education, research and environmental management, we can be optimistic that the impacts of this project will continue throughout their working lives, with long term consequences that cannot be predicted at this stage.

8. Dissemination

To date, dissemination has largely been achieved through group meetings and consultations. In addition to monthly meetings with the Steering Committee, the Darwin Project staff have met with many groups and projects, both formally and informally, to promote the Darwin Project and enlist support and collaboration.

This Darwin Project has also established a visiting lecture series. Researchers and project personnel presented these open forum lectures from the field of conservation in Cambodia. They were advertised to the whole university so anyone interested could come along. The presentations at the Centre for Biodiversity Conservation in 2007 were: Dr Ulrike Streicher (Wildlife Alliance) *The Conservation Status of Lorises in Cambodia*; Mr Boyd Simpson (FFI) *Ecology and Conservation of Siamese Crocodile in Cambodia*; Mr Tom Gray (WCS) *People, Grasslands and Conservation: Conserving the Bengal Florican in the Tonle Sap Flood Plain*; Mr Phay Somany (WWF/Fisheries Department) *Irrawaddy Dolphin Conservation in Cambodia*; Mr Eang Hourt (Darwin Scholar/ WWF/ Department of Nature Conservation and Protection) *Rattan Taxonomy in Cambodia*; Mr Julian Colmer (Wildlife Alliance) *The Educational Benefits of the "Kouprey Express" Programme*; Mr Neang Thy (Darwin Scholar/ Department of Nature Conservation and Protection) *The Biodiversity and Importance of the Cardamom Mountains of SW Cambodia* and Dr Fred Bagley (USFWS) *Apes in Indochina and USFWS Grants for Conservation*. Plans are underway to repeat this lecture series for 2008, and individuals from a variety of organisations are being approached to contribute to the success of this series.

These and other approaches have helped to bring Cambodia's conservation community together and has introduced many people to the work of the Darwin Project. Many of our visitors have told us that they have been impressed by the knowledge and interest of the students, especially those in their second year of the programme. The students themselves are also helping to disseminate this project and what they have learned through their existing jobs with various organisations (see **Annex 3 iii**) and through their practical projects.

The main written outputs of the project to date have been reports to our donors, Royal University of Phnom Penh, the Ministry of Foreign Affairs, and Fauna & Flora International (copies of annual project reports to FFI can be obtained on request). A quarterly newsletter, *The Missing Link*, circulates news about the programme, student profiles and upcoming events. The volume of written

outputs has now increased, as the students have begun to submit their research theses and scientific papers. The forthcoming *Cambodian Journal of Natural History* will also feature papers from many contributors, including some of the final-year students. If printing costs cannot be realistically sustained through grants or subscriptions after 2008, future editions of the journal could be exclusively online.

9. Project Expenditure

Table 3: Project expenditure - Defra Financial Year 01 April 2007 to 31 March 2008

Item	Budget	Expenditure	Balance
Rent, rates, heating, overheads etc			
Office costs (e.g. postage, telephone, stationery)			
Travel and subsistence			
Printing			
Conferences, seminars, etc			
Capital items/equipment			
Others:			
Audit			
Accommodation			
Bank transfer			
Salaries (specify)			
<i>Dr Carl Traeholt, Chief Lecturer</i>			
<i>Dr Jennifer Daltry, Team Leader</i>			
<i>Mr Callum McCulloch, FFI Project Coordinator</i>			
<i>Ms Emily Woodfield, lecturer/ supervisor</i>			
<i>Mr David Ford, lecturer/ supervisor</i>			
<i>Mr Saveng, Museum Curator</i>			
<i>Darwin Scholars</i>			
<i>Accountant, secretary, cleaner</i>			
TOTAL			

10. OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes

This Darwin Project has been hugely successful in establishing Cambodia's first Masters of Science in Biodiversity Conservation, and the first students will graduate shortly. No fewer than 108 students have benefited from advanced training to date, more than 60% of whom are 'in service' government and non-government employees who are well placed to apply their new skills and knowledge to national biodiversity management issues. The new Masters programme is intended to continue even after the first Darwin Project ends. Equally significantly, this project has successfully stimulated a diverse array of original, collaborative research projects on issues of biodiversity conservation and sustainable use, partly through supporting promising 'Darwin Scholars' and providing much-needed research facilities (including the first conservation library, national zoological museum, national herbarium and research laboratory). Around 20 applied research studies are currently underway or nearing completion. It has been particularly rewarding to see 'our' students confidently apply their new skills and knowledge to formulate good, original research projects and negotiate with collaborating organisations to make sure their studies meets genuine biodiversity management needs. Another heartening aspect has been the incredible response from the collaborating government and non-governmental partners: not only have they willingly integrated the

students into existing programmes, but they have provided logistical and financial support and mentored the students. The Darwin Project has further encouraged improved communication and collaboration among the various conservation stakeholders in Cambodia, partly through our popular lecture series. We are now gearing up to publish the first *Cambodian Journal of Natural History*, which has already generated considerable interest from prospective authors, reviewers and editors.

Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2007/08

Project summary	Measurable Indicators	Progress and Achievements April 2007 - March 2008	Actions required/ planned for next period
<p>Goal: <i>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve</i></p> <p><i>The conservation of biological diversity,</i></p> <p><i>The sustainable use of its components, and</i></p> <p><i>The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</i></p>		<p><i>Not directly applicable, but Cambodia's capacity to conserve and sustainably use biodiversity has been greatly enhanced from training and new tools provided by the Darwin Project. This will translate into better biodiversity management.</i></p>	
<p>Purpose To build capacity in conservation and applied research at Cambodia's premier university, chiefly by establishing new teaching modules and MSc in conservation biology, supported with practical field experience</p>	<p>Number of active research projects and conservation biology courses at the Royal Universities, number of new students, protocols in place to ensure quality control and merit-based qualifications.</p>	<p>17 courses were delivered during this period. 24 new Cambodian postgraduates undertook the Bridging Course. 12 successfully completed and passed the course and were accepted (with 2 repeating from the previous year) into first semester of the Masters course.</p> <p>19 First Year students (enrolled in 2007) completed their first semester. 12 passed the first semester exams to enter the second semester. 10 passed the second semester exams and have begun the third semester and thesis component of the course. In addition, 12 Second Year students (enrolled in 2006) researched and completed their final-year theses. Nine will graduate in 2008.</p> <p>20 collaborative research projects were carried out during Darwin Project Year 3,</p>	<p>The first issue of <i>Cambodian Journal of Natural History</i> will be published and disseminated.</p> <p>5 more Darwin Scholars will be selected and supported to conduct original research, which will be disseminated in conferences, journals and website.</p> <p>The 2006 students will graduate, and this important milestone should be publicized. The 2007 students will undertake the third and fourth semesters and examinations, and complete their final-year research theses. The newest cohort of students will continue the first and second semesters of the MSc programme, with examinations.</p>

Project summary	Measurable Indicators	Progress and Achievements April 2007 - March 2008	Actions required/ planned for next period
		<p>involving final year Masters students and Darwin Scholars working with a wide range of governmental, academic and non-governmental organisations.</p> <p>The Royal University of Phnom Penh's new regulations on postgraduate degrees incorporate many of the safeguards devised and introduced by the Darwin Project to ensure qualifications are based on merit alone.</p>	
<p>Output 1. 12-week Bridging Course developed and delivered every year. Two-year MSc curriculum developed and delivered to students who pass the Bridging Course. 20 students selected to be junior research officers ('Darwin Scholars').</p>	<p>Courses and exams conducted every semester, the number of students trained and attaining the required standard, number of active junior research officers increased at the Royal University.</p>	<p>17 courses and examinations were conducted for first-year and second-year students. 24 new students enrolled on this programme and were trained on the Bridging Course. They received 20 weeks of training (Bridging Course and the beginning of the first semester of the Masters course). In addition, 16 second-year students received up to 34 weeks of training on the Masters course. This project is thus well on target to train significantly more than 60 students for more than 15 weeks (but note that not all students are expected to complete the entire two-year Masters programme and graduate because some will fail to reach the required standard and drop out).</p> <p>14 young conservationists have been selected as Darwin Scholars and have assisted with teaching. A further five are to be designated during the remainder of this project, to bring the total to 19.</p>	
<p>Activity 1.1 Develop Bridging Course and MSc level module curriculum and exams, and conduct lectures in applied research, conservation biology and natural research management</p>		<p>The Bridging Course and Masters of Science programme in Biodiversity Conservation has not only been developed at the Royal University of Phnom Penh, but entered its third year of delivery in Year 3.</p> <p>In this year, the Bridging Course comprised the four courses of <i>English for Academic Purposes</i>, <i>Ecology and Evolution</i>, <i>Biology and Genetics</i>, and <i>Statistics for Biologists</i>. The Masters course comprised 13 modules: (first semester) <i>Integrated Natural Resource Management</i>, <i>Environmental Impact Assessments</i>, <i>Environmental Law</i>, <i>GIS</i>, <i>Research Analysis</i>, <i>Scientific Report Writing</i>, <i>Data Presentation</i>, (second semester) <i>Species Conservation</i>, <i>Ecological Field Techniques</i>, <i>Behavioural Ecology</i>, <i>Research Methods &</i></p>	

Project summary	Measurable Indicators	Progress and Achievements April 2007 - March 2008	Actions required/ planned for next period
		<p><i>Applied Statistics, Project Cycle Management and Introduction to Protected Areas Management.</i> These modules cover a wide range of contemporary biodiversity management issues, skills and approaches that are relevant to Cambodia.</p> <p>The courses are now running in their third year, which has allowed for the materials to be further refined, based on experience and feedback from the first two years of this Darwin Project.</p>	
<p>Output 2. The Royal University obtains essential field equipment, research facilities and hardware to conduct conservation research projects. Cambodia's first zoological and botanical reference collections and basic library facilities initiated, with databases and trained curators.</p>	<p>Conservation research projects at the Royal University have adequate equipment and other resources; active reference collections and library set up, specimens remain in Cambodia for general use.</p>	<p>The national zoological reference collection is fully operational at the Royal University of Phnom Penh, with a trained curator and effective procedures in place to process incoming specimens.</p> <p>The herbarium room and quarantine facility, constructed in Year 2, now houses a botanical expert to continue its development and supervise students. An increasing number of foreign scientists are choosing to deposit specimens at these national collections instead of taking them overseas.</p> <p>The conservation library at the Royal University has grown to more than 230 titles and is heavily used by the university students.</p> <p>The stock of field and laboratory research equipment procured by the project team continued to grow, and this equipment has been frequently utilized by the students, Darwin Scholars and other members of the university staff.</p>	
<p>Activity 2.1. Prepare reference collection facilities, including designing and initiating a database system, procure necessary storage and preservation equipment and materials, train curators and collect and identify specimens collected during fieldwork by the students and Darwin Scholars.</p>		<p>The Herbarium, Animal Specimen and Quarantine rooms that were constructed in Year 2 at the Royal University of Phnom Penh have been fitted with additional shelving, jars, and other hardware during the course of Year 3. This has been aided by the arrival of botanist Loic Cecelio, who has become a permanent member of the Centre for Biodiversity Conservation team.</p> <p>Darwin Scholar and Head Curator Ith Saveng has further established clear protocols for quarantining, cataloguing and storing incoming specimens. Many specimens have been deposited in the museum as the students conducted their thesis research. Mr Saveng also attended a bat workshop at Prince of Songkhla University to learn preservation and mounting techniques for bats.</p>	

Project summary	Measurable Indicators	Progress and Achievements April 2007 - March 2008	Actions required/ planned for next period
		The collections currently hold over 200 animal specimens and several hundred plant specimens. The number of specimens is expected to rise steadily as more research is conducted in Cambodia.	
Activity 2.2. Initiate a small library of books, papers and reports relevant to the study and conservation of Cambodian biodiversity (linked to the database system).		A Biodiversity Conservation Reference Library has been established and fully operational at the Royal University of Phnom Penh. It comprises books and journals on the themes of biodiversity conservation, biological research and sustainable development. More than 200 titles were purchased during Year 2, and a library database established and populated. In Year 3, 30 more titles were added and negotiations began for integrating this collection into the Department of Environmental Science's library to make it more widely available. There has been an increase in the availability of Internet and computer facilities for the students to access journal databases. This expansion has been driven by the increasing number of students enrolled in the programme.	
Output 3. The development of new inter-institutional partnerships to implement conservation-oriented research and education projects in Cambodia.	University staff and students work alongside staff from local NGOs and government agencies in at least 20 conservation-oriented research and education projects, including 3-5 joint workshops.	New collaborations have been created and existing collaborations strengthened, as more than 30 organisations have become involved in the development of the Masters course and the reference collection facilities (see section 2 for names). In addition, students from the programme attended an international conferences and additional training workshops which exposed them to the wider regional community of scientists and practitioners. In Year 3, the class of 2006 completed 12 collaborative research projects as part of their final year theses which are currently being submitted. The class of 2007 is now beginning 10 collaborative research projects (see Annex 3 v for details).	
Activity 3.1. Develop applied research projects that are integrated with existing FFI and government conservation projects, other international NGOs, and international development projects (thereby sharing costs and expertise).		12 Masters students conducted research projects for their thesis, all of which focus on contemporary conservation issues and are hosted by a number of national and international organisations and projects (section 3). In addition, the 14 designated Darwin Scholars are also undertaking various projects on environmental topics. The results of these studies will be disseminated in Year 4 in student theses, conferences, and in the forthcoming <i>Journal of Cambodian Natural History</i> (Activity 4.2). By raising and maintaining high standards, the Masters course has gained genuine credibility, and many organisations have offered placements to the students.	

Project summary	Measurable Indicators	Progress and Achievements April 2007 - March 2008	Actions required/ planned for next period
		These collaborations will continue and expand for the next batch of students and Darwin Scholars, facilitated by the growing alumni.	
Activity 3.2. Promote Cambodia and the Royal Universities for national researchers and students, and encourage other British institutions to develop student exchange programmes.		<p>In addition to advertising the Masters programme, the Darwin Project has organised many meetings to elicit involvement of other national, regional and international organisations. This programme is now widely known in Cambodia, and more than 30 organisations were involved in Year 3, including the UK's Harrison Institute, Cambridge University, Frontier, and Natural History Museum. The Harrison Institute, for example, supervised three of the Masters students in a student exchange and training programme affiliated to Darwin Project No. 14-011.</p> <p>In the final phase of the Darwin Project (Year 4), faculty staff from St Peters College at Oxford will visit on a planned exchange programme with the Royal University of Phnom Penh (this exchange was initiated in Year 3, and will include Oxford faculty staff visiting RUPP annually for capacity development).</p>	
Output 4. Publication of newsletter and field guides to disseminate original research and lessons learned. The first issue of the <i>Cambodian Journal of Natural History</i> launched, published and distributed (final year of project).	Editors and review panel established, journal available to NGO, GO and academic institutions, field guides published in Khmer language.	<p>The Darwin Project has established a project newsletter, which will shortly be succeeded by the <i>Cambodian Journal of Natural History</i>. The Editorial Team and International Editorial Board were formally established in Year 3, and the first manuscripts went sent out for peer-review by international experts.</p> <p>The project has also been active in developing books and in supporting students and Darwin Scholars to publish peer-reviewed papers. In Year 3, 3 scientific papers were published by Darwin Scholars, and a further 11 manuscripts have been prepared which will be published in Year 4.</p>	
Activity 4.1. Produce and publish project newsletter and peer-reviewed field guides to Cambodian wildlife and contemporary biodiversity management issues.		<p>Copies of the manual '<i>Green Development: Guidelines for Sustainable Development in Protected Areas</i>' (published by FFI and Ministry of Environment in Year 2) continued to be disseminated nationwide, and credited Darwin Initiative support.</p> <p>Darwin Scholar Neang Thy prepared the first guide to amphibians in Cambodia, which will be published in 2008. He also contributed to three scientific papers on Cambodian amphibians and reptiles, which were published in Year 3. These publications include the description of four species new to science, discovered by Neang Thy and co-workers</p>	

Project summary	Measurable Indicators	Progress and Achievements April 2007 - March 2008	Actions required/ planned for next period
		during Years 2 and 3.	
Activity 4.2. Found the <i>Cambodian Journal of Natural History</i> including creating an editorial committee, design lay-out and volume format, set up reviewer network and publish first round of papers.		Significant progress was made during the course of Year 3 of this project, with the establishment of the Editorial Team (Dr Jennifer Daltry, Dr Carl Traeholt, Callum McCulloch), and a very well qualified International Editorial Board (Dr Stephen J. Browne, UK; Dr Martin Fisher, UK; Dr L. Lee Grismer, USA; Dr Knud E. Heller, Denmark; Dr Sovanmoly Hul, France; Dr Andy L. Maxwell, Cambodia; Dr Jörg Menzel, Germany; Dr Bradley Pettitt, Australia; and Dr Campbell O. Webb, USA). The Editorial Team developed and disseminated instructions to contributors for the journal as well as instructions for peer-reviewers. Several manuscripts were received in Year 3 and are undergoing rigorous peer-review. Additional manuscripts are being prepared by our Darwin Scholars and students who have completed their thesis.	

Annex 2 Project's full current logframe

The project logical framework has undergone some alterations in line with requests from our previous reviewer (see section 5).

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 benefits arising out of the utilisation of genetic resources 			
<p>Purposes</p> <p>To build capacity in conservation and applied research at Cambodia's premier university, chiefly by establishing new teaching modules and MSc in conservation biology, supported with practical field experience.</p>	<p>Number of active research projects and conservation biology courses at the Royal Universities, number of new students, protocols in place to ensure quality control and merit-based qualifications.</p>	<p>Research publications, course modules, Masters in Biodiversity Conservation qualification, written project and university rules on grading and passing students.</p>	<p>Facilities, trainers and students available</p>
<p>Outputs</p> <p>1) 12-week Bridging Course developed and delivered every year. Two-year MSc curriculum developed and delivered to students who pass the Bridging Course. 20 students selected to be junior research officers ('Darwin Scholars').</p>	<p>Courses and exams conducted every semester, the number of students trained and attaining the required standard, number of active junior research officers increased at the Royal University.</p>	<p>Course modules available, Darwin Scholars in place and active, researchers working on conservation projects.</p>	<p>Trainers available, sufficient number of students qualifying to become Darwin Scholars</p>

<p>2) The Royal University obtains essential field equipment, research facilities and hardware to conduct conservation research projects. Cambodia's first zoological and botanical reference collections and basic library facilities initiated, with databases and trained curators.</p> <p>3) The development of new inter-institutional partnerships to implement conservation-oriented research and education projects in Cambodia.</p> <p>4) Publication of newsletter and field guides to disseminate original research and lessons learned. The first issue of the Cambodian Journal of Natural History launched, published and distributed (final year of project).</p>	<p>Conservation research projects at the Royal University have adequate equipment and other resources; active reference collections and library set up, specimens remain in Cambodia for general use.</p> <p>University staff and students work alongside staff from local NGOs and government agencies in at least 20 conservation-oriented research and education projects, including 3-5 joint workshops.</p> <p>Editors and review panel established, journal available to NGO, GO and academic institutions, field guides published in Khmer language.</p>	<p>Equipment purchased and in use, facilities available, reference collections and library set up and used by students and researchers, specimens are identified in-country not sent overseas</p> <p>FFI staff as supervisors, research officers attached to MAFF/ MoE/ NGO research and conservation projects, abstracts, proceedings and reports printed</p> <p>Printed copies of Cambodian Journal of Natural History, newsletter and field guides.</p>	<p>Sufficient funding. Staff for training and appropriate facilities available.</p> <p>Cooperation from NGOs and ministries</p> <p>Sufficient contribution of papers, review panel members active</p>
<p>Activities</p> <p>1.1 Develop Bridging Course and MSc level module curriculum and exams, and conduct lectures in applied research, conservation biology and natural research management</p> <p>2.1 Prepare reference collection facilities, including designing and initiating a database system, procure necessary storage and preservation equipment and materials, train curators and collect and identify specimens collected during fieldwork by the students and Darwin Scholars.</p>		<p>Activity Milestones</p> <p><u>Year 1</u></p> <p>Q1&2: Develop teaching modules; Conduct lectures (largely led by British trainers); Initiate specimen collection and library facilities; Train curators and librarians.</p> <p>Q3&4: Exams and identification of junior research officers ('Darwin Scholars'); Develop research programme with GO and Intl. NGOs; Begin research projects and specimen collection.</p>	

2.2 Initiate a small library of books, papers and reports relevant to the study and conservation of Cambodian biodiversity (linked to the database system).

3.1 Develop applied research projects that are integrated with existing FFI and government conservation projects, other international NGOs, and international development projects (thereby sharing costs and expertise).

3.2 Promote Cambodia and the Royal Universities for national researchers and students, and encourage other British institutions to develop student exchange programme.

4.1. Produce and publish project newsletter and peer-reviewed field guides to Cambodian wildlife and contemporary biodiversity management issues.

4.2 Found the Cambodian Journal of Natural History including creating an editorial committee, design lay-out and volume format, set up reviewer network and publish first round of papers.

Year 2

Q1&2: Conduct 2nd round of lectures (input from Darwin Scholars); Continue research projects and supervision of research officers.

Q3&4: Exams; Continue research projects; Facilitate international university collaboration; Initiate Cambodian Journal of Natural History (CJNH).

Year 3

Q1&2: Conduct 3rd round of lectures (chiefly by Darwin Scholars); Continue research projects; Promote student exchange programmes.

Q3&4: Exams; Continue research activities. Publish 1st issue of CJNH.

Annex 3 supplementary material

i) Summary of project training activities, 2007-2008

April 2007:

- Dr Brad Pettit delivered the major first year course on 'Integrated Natural Resource Management', including a day trip to the community-managed Kirirom Ecotourism Centre.
- The Deputy Director of the EIA Department, Ministry of Environment, provided a short course on 'Environmental Impact Assessments' to second year students.
- Five students undertook additional field training with Frontier in Botum-Sakor National Park. This training focused on the trapping and processing of bat specimens.
- The second year students designed their research theses with assistance from the project staff and collaborating scientists. Several students began to conduct their fieldwork.

May 2007:

- The second cohort of students completed a course on 'Environmental Impact Assessment', delivered by lecturers from the Department of Environmental Science at The Royal University of Phnom Penh.

June 2007:

- Final examinations were held for the main courses of the first semester: 'Research Analysis' and 'Integrated Natural Resource Management'.
- Dr Lee Grismer, La Sierra University, conducted herpetological surveys in Phnom Samkos Wildlife Sanctuary with two project Darwin Scholars.

July 2007:

- The Bridging Course was reviewed by the FFI-RUPP Project Steering Committee and modified to reflect the new eligibility requirements for the Masters course. The new criteria require the candidates to hold any Science degree, not only in natural sciences, so the revised Bridging Course will include a new courses on 'Ecology and Evolution' and 'Biology and Genetics'.
- Supplementary exams were held for second cohort students who failed the key examinations in June.

August 2007:

- Summer break for the Masters students.
- The Masters course was advertised in all the leading national newspapers and sent to all environmental NGOs and government agencies in Cambodia. 25 candidates applied from a wide range of backgrounds, e.g., protected area managers, GIS analysts and private sector managers.

September 2007:

- The second semester of the Masters course began, with 12 students from the second intake who successfully passed their exams, together with two students who are repeating the semester from the year before.

October 2007:

- Courses in 'Behavioural Ecology' and 'Research Methods and Applied Statistics' were conducted for the students studying second semester.

November 2007:

- One student went to the University of Copenhagen to learn the skills of sound analysis to further her thesis research into gibbon vocalisations in Cambodia.
- Richard Paley (Cambridge University doctoral student) conducted the courses 'Protected Area Management' and 'Project Cycle Management' for students in the second semester.

December 2007:

- Dr Lee Grismer returned to Cambodia to deliver the course 'Ecological Survey Techniques'. All 14 students travelled to Phnom Samkos Wildlife Sanctuary for a four-day skills training exercise. Two Darwin Scholars/ Ministry of Environment staff (Neang Thy and Chav Thou) were assistant teachers.

January 2008:

- For the second cohort students, final examinations were conducted for one major course undertaken in the second semester. 'Behavioural Ecology'. (The second major course, 'Species Conservation', was postponed to May 2008 due to lecturer availability).
- Formal classes began for the third intake of students on 'Research Analysis: A Process of Inquiry', led by Dr Carl Traeholt (FFI).

February 2008:

- Supplementary exams were held for students who had failed their examinations in January.
- Dr Carl Traeholt conducted the first semester subject, 'Scientific Report Writing and Data Presentation' for the third batch of MSc students.

March 2008:

- Dr Jorg Menzel coordinated and instructed the first year course on 'Environmental Law'.

ii) Number of students participating in the training programme since start of project**2005/2006 Academic Year**Bridging Course

70+ applications received	26+ rejected	44 eligible for course
44 started	26 eligible to proceed to MSc	18 left the programme

MSc – 1st Year – Coursework

26 eligible for Semester 1	4 withdrew	22 examined at end Sem. 1
22 completed Semester 1	6 failed	16 to Semester 2
16 eligible for Semester 2	2 withdrew	14 examined at end of Sem. 2
16 completed Semester 2	2 failed	12 proceed to Year 2 (thesis)

2006/2007 Academic Year

Bridging Course

42 applications received	2 rejected	40 eligible for course
40 started	19 eligible to proceed to MSc	21 left the programme

MSc – 1st Year – Coursework

19 eligible for Semester 1	3 withdrew	16 examined at end of Sem. 1
16 completed Semester 1	4 failed	12 to Semester 2
12(+2*) eligible for Semester 2	4 failed	10 proceed to Year 2 (thesis)

MSc – 2nd Year – Thesis

12 commenced thesis	3 withdrew	9 to complete thesis
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Note: * designates students who repeated the semester.

2007/2008 Academic Year

Bridging Course

26 applications received	2 rejected	24 eligible for course
24 started	12 eligible to proceed to MSc	12 left the programme

MSc – 1st Year – Coursework

12(+2*) eligible	3 withdrew	11 currently in the programme
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MSc – 2nd Year – Thesis

10 commenced thesis research	0 withdrew	10 conducting research
9 completed thesis	0 withdrew	9 will graduate in 2008

Note: * designates students who repeated the semester.

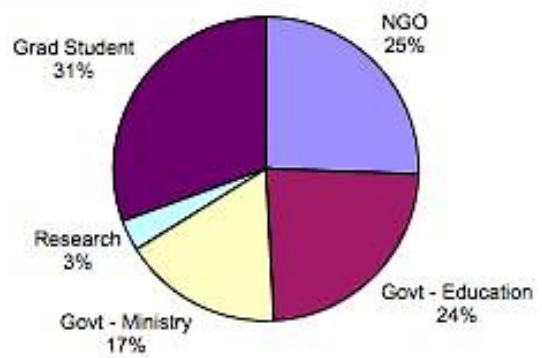
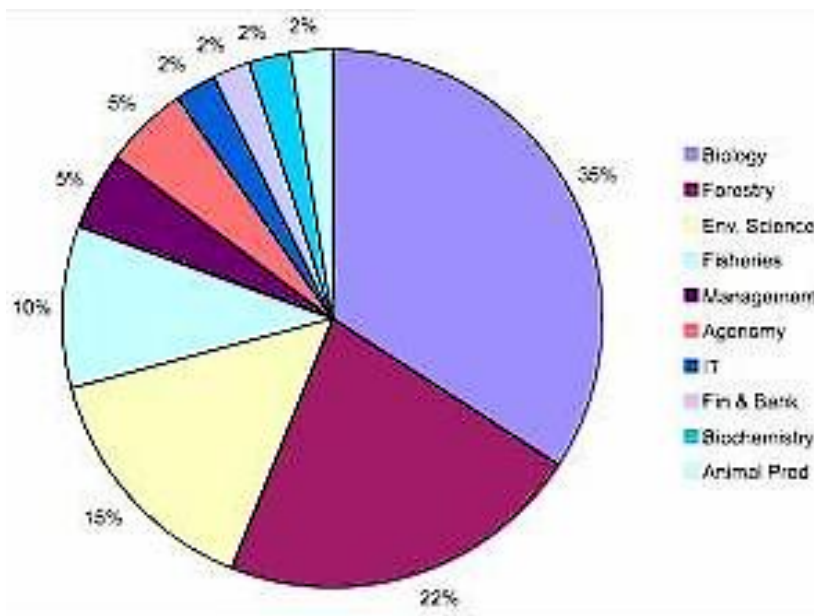
iii) Names and origins of students participating in training since start of project (CONFIDENTIAL)

Tables show Masters level students only. Pie charts summarise the origin and first degrees of all students who enrolled on the Bridging Course during that year.

Class of 2006 – Masters candidates

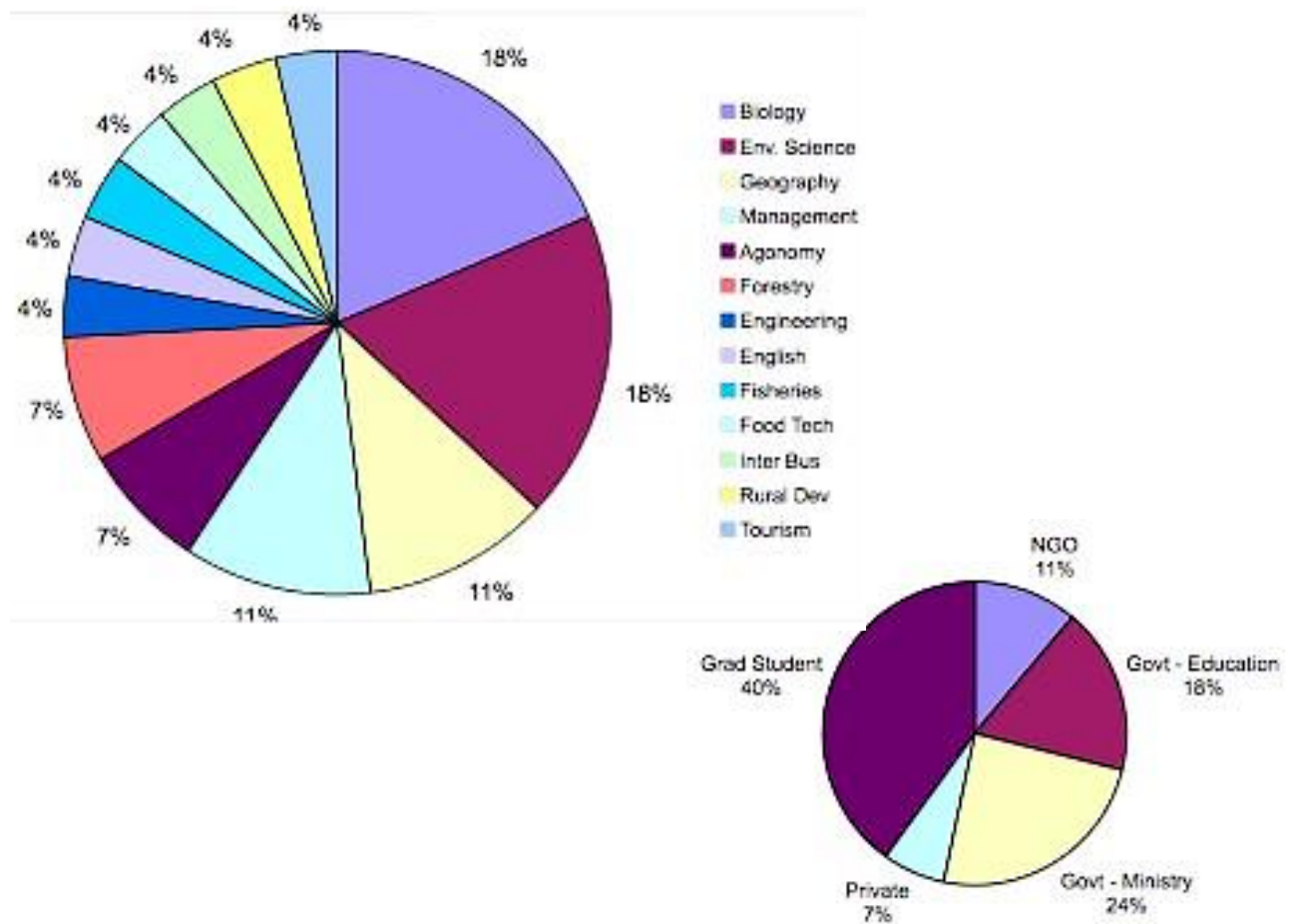
Surname	First Name	Age	Sex	Occupation	Employer	Category
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Surname	First Name	Age	Sex	Occupation	Employer	Category
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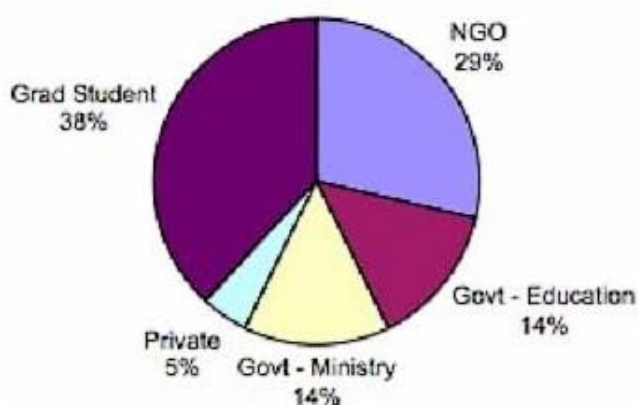
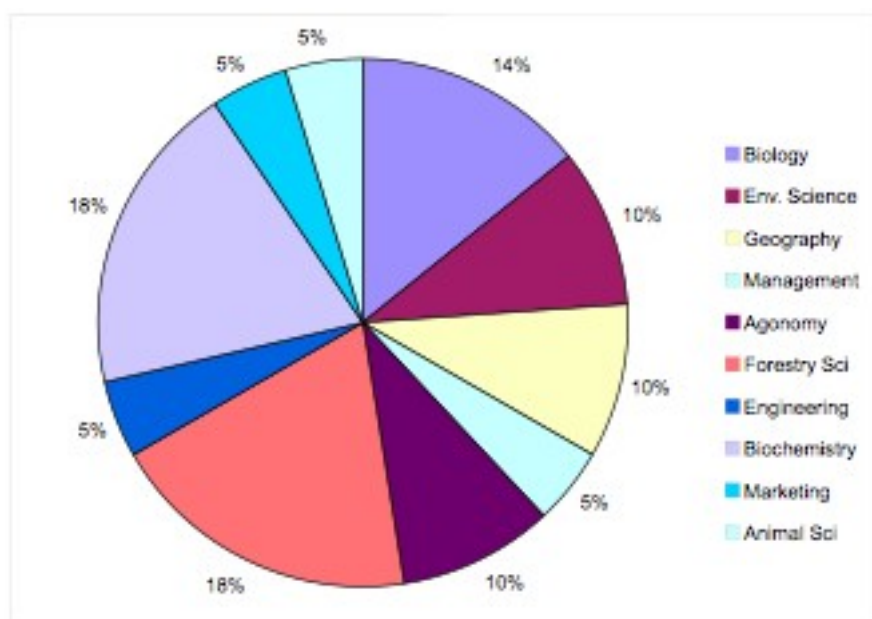
Class of 2007 – Masters candidates

Surname	First Name	Age	Sex	Occupation	Employer	Category
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Class of 2008 – Masters candidates

Surname	First Name	Age	Sex	Occupation	Employer	Category
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iv) Recent grades for Masters in Biodiversity Conservation coursework (CONFIDENTIAL)

Class of 2006

Class of 2007

v) Student research theses (CONFIDENTIAL)

The following tables highlight the variety of collaborations undertaken by students while conducting research for their final year theses.

Class of 2006

Students and their topics that will be submitted in April 2008

Student	Collaborating Organisation	Topic
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Class of 2007

The following students are commencing their theses topics for the 2008-2009 academic year.

Student	Collaborating Organisation	Topic
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vi) Recent images from the project



Final year students undertaking examinations in 2007. This project has introduced a number of safeguards to ensure qualifications are earned through merit only.



Sign on the Centre for Biodiversity Conservation office at the Royal University of Phnom Penh's Department of Biology, Faculty of Science



Darwin Scholar Chav Thou learning how to set up camera traps for large mammals (tutor Jeremy Holden, FFI).



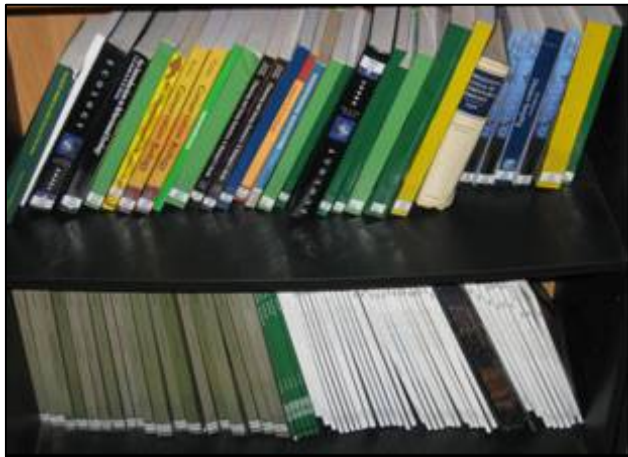
Print of a large leopard or young tiger found during field training.



Curator Saveng studying mammal specimens in the zoological reference museum



A new Cambodian frog, *Chiromantis samkosensis*, described by two Darwin Scholars in 2007.



Some of the 230+ titles in the Conservation Library



Student class using plant specimens in the herbarium.



Herbarium boxes in the new herbarium.



Student using microscope in the new research laboratory.



Botanist Dr Sovanmoly Hul has joined the Editorial Board of the *Cambodian Journal of Natural History*