Darwin Initiative Annual Report

Important note:

To be completed with reference to the Reporting Guidance Notes for Project Leaders – it is expected that this report will be about 10 pages in length, excluding annexes

Submission deadline 30 April 2009

Darwin Project Information

Project Ref Number	16-011
Project Title	Biodiversity and ecosystem functioning: Building research capacity in SE Asia
Country(ies)	Sabah, Malaysia and other SE Asian nations
UK Contract Holder Institution	University of Swansea
Host country Partner Institution(s)	Universiti Malaysia Sabah, Malaysia Yayasan Sabah, Malaysia ASEAN Centre for Biodiversity, Philippines Sabah Forestry Department, Malaysia WWF Malaysia University of Beijing, China
Other Partner Institution(s)	Centre for Population Biology, Imperial College, UK Institute for Environmental Sciences, University of Zurich, Switzerland
Darwin Grant Value	£199,605.00
Start/End dates of Project	Start date: July 2007; End date: July 2010
Reporting period (1 Apr 200x to 31 Mar 200y) and annual report number (1,2,3..)	1st April 2008 to 31st March 2009 Annual report number 2
Project Leader Name	Dr Glen Reynolds
Project website	n/a
Author(s) and main contributors, date	Dr Glen Reynolds (author) Dr Henry Bernard (contributor) Prof. Andy Hector (contributor) Mr. Christopher Philipson (contributor) Dr Jake Snaddon (contributor) Mr. Philippe Saner (contributor) Report completed: 11th May 2009 Revised: 18th June 2009

1. Project Background

The forests of SE Asia support much of the region's biodiversity, play a crucial role in the provision of key ecosystem services (watershed protection, soil stabilisation, carbon storage etc) and are an important source of income at both national and local levels. Forest conversion, degradation through unsustainable logging practices and slash-and-burn cultivation are simultaneously having a serious impact on both biodiversity and ecosystem functioning, and as a result the livelihoods of the many SE Asian people who depend upon the forests for income, shelter, water and food are being compromised.

In order to understand the possible impacts of biodiversity loss in tropical ecosystems, the importance of conservation and sustainable management of the SE Asian forests, and the mitigation and reversal of biodiversity losses through habitat restoration, it is of critical importance that long-term biodiversity/ecosystem function monitoring and experimental programmes are established by locally-based research institutes and conservation organisations.

Research on the relationship between biodiversity and ecosystem functioning is only a decade old and to date has been mainly restricted to Western Europe and North America, often taking grassland habitats as model systems. These experiments have demonstrated that biodiversity has a strong influence on ecosystem functioning, particularly productivity; there is an urgent need to investigate whether similar effects occur in tropical forest systems. However, only very few long-term experiments of this type have been established in the tropics, especially SE Asia.

Our host country and SE Asian partners have acknowledged that this is in large part due to an acute lack of experience and expertise in the design of long-term, large-scale ecological experiments and monitoring programmes. There are no commonly accepted standards in place in SE Asia for establishing databases of biodiversity and ecosystem function measurements. Furthermore, there is a serious lack of capacity within many SE Asian research institutes in the analysis of complex ecological datasets using classical and modern statistical techniques.

This project aims to address these issues through a multi-level training programme involving key research and conservation institutions in SE Asia (plus China) and through collaboration with regional coordinating organisations.

The research (and field training) component of the project will focus on the **Sabah Biodiversity Experiment**, which is based close to one of SE Asia's leading research stations, the **Danum Valley Field Centre** (and also the base for the Royal Society SEARRP). This is a unique long-term, large-scale forest biodiversity experiment which aims to test questions relating to the effects of diversity loss on rainforest ecosystems and has been established by the Royal Society SEARRP, NERC Centre for Population Biology, the University of Zurich, Yayasan Sabah, Universiti Malaysia Sabah and the ASEAN Regional Centre for Biodiversity Conservation (now renamed the ASEAN Centre for Biodiversity).

2. Project Partnerships

The Royal Society SEARRP has strong and long standing (20+ year) links with a number of our partners on the Project – particularly Universiti Malaysia Sabah, Yayasan Sabah and the Sabah Forestry Department. The Project continues to make a real and tangible contribution, particularly to Universiti Malaysia Sabah, who again hosted this year's training course, and who are now incorporating teaching materials developed and delivered during the Project into their own courses. SEARRP continues to provide supplementary support and training to key staff from Universiti Malaysia Sabah. Participation in the training programme from our other Malaysia-based partners has been excellent – and the University of Beijing and allied research institutions again sent a number of senior staff to participate in this year's course.

Due to financial constraints as a result of the dramatic fall in the value of the GB Pound vis-à-vis the Malaysian Ringgit (close to 30% reduction in value during the reporting period) we did not invite participation on this year's course from the wider SE Asian region. However, teaching

materials will be made available to participating institutions via our partners at the ASEAN Centre for Biodiversity.

In terms of external partnerships, we continue to collaborate with and support the Association for Tropical Biology and Conservation (ATBC) Asia Chapter and will be providing them with the materials developed during the reporting period. ATBC are also running a series of statistics training courses for the SE Asian region – which are complementary to the courses run as part of this Project.

Since the last report, we have entered into a partnership with a new biodiversity conservation/forest restoration project centred in the same location as the Sabah Biodiversity Experiment – the Malua BioBank (www.maluabank.com). This project aims to restore a functioning ecosystem and improve biodiversity levels in a 34,000 hectare area of severely degraded forest just to the north of Danum Valley – and is funded by the sale of 'biodiversity certificates'. The association with the Malua BioBank provides an excellent opportunity for the implementation of research findings from the Sabah Biodiversity Experiment. Dr Glen Reynolds has been appointed to the Advisory Board of the Malua BioBank and both Dr Reynolds and Professor Andy Hector are involved in ongoing discussions about future collaboration including data sharing and staff training.

The Sabah Biodiversity Experiment will also be the main site for a new research and training project funded by the Earthwatch Institute (see the Latest News section of the SEARRP website: www.searrp.org), which is due to launch in August 2009. The Project is very much underpinned by the core support provided by the Darwin Initiative, especially the provision in the Project for the employment and training of field staff and baseline data collection.

3. Project progress

Training:

The training component of the project had two main activities during 2008 1) the second of a series of three advanced courses in statistical analysis, and 2) the first of a series of three courses on data collection and basic data management, aimed at field staff/research RAs.

The advanced course was attended by 30 participants from partner institutions including the Institute of Tropical Biology and Conservation, Universiti Malaysia Sabah (UMS), the School of Science and Technology, UMS, the School of Tropical Forestry, UMS, the Centre for Academic Achievement, UMS, Yayasan Sabah, the Sabah Forestry Department, Institute of Botany (University of Beijing), China and associated from the Institute of Soil Science, CAS Nanjing, China, the Sunbear Conservation Centre, Sepilok, Sabah and senior Malaysian staff from the Royal Society SEARRP. Participants included 5 previous or current Darwin Scholars. We also co-funded participation by a post-doctoral research fellow from the University of Allahabad, India and a research student from Shahjalal University of Science and Technology, Bangladesh. Unfortunately no representative from WWF Malaysia attended; invitations were extended but declined in view of the advanced nature of the course.

Teaching materials used during the course are attached – these have been made available to all participants (including materials used on the first course held in 2007/2008) via the University of Zurich website http://www.uzh.ch/uwinst/publications/Presentations/AHector/

In addition to his participation on the course, Dr Henry Bernard, who is responsible for statistics teaching at the Institute of Tropical Biology and Conservation, UMS was funded by the Royal Society SEARRP and the University of Zurich to attend intensive training courses in Zurich during 2008. Dr Bernard has adapted the teaching materials developed for the Project and is using these in the courses he runs for undergraduate and postgraduate students at UMS. SEARRP and the University of Zurich will continue to provide additional support for Dr Bernard's training.

The more basic training course, aimed at field and research staff, was delivered and facilitated by UK staff from the University of Zurich (Christopher Philipson and Dr Jake Snaddon), the Project Leader (Dr Glen Reynolds), and senior Royal Society SEARRP staff trained during previous Darwin Initiative funded projects at Danum Valley (Bernados Bala Ola, Alex Karolus, Johnny Larenus, Adrian Karolus). Due to an effective reduction in the Project budget (as a result of the depreciation in the value of the Pound) training was limited to ±25 field staff based at Danum Valley and the Sabah Biodiversity Experiment.

Overall, we are extremely pleased with attendance on the courses – and in particular the incorporation of the materials developed as part of the Project to Universiti Malaysia Sabah's undergraduate and postgraduate teaching programmes.

Research:

The research component of the Project involves ongoing data collection and fieldwork as part of the Sabah Biodiversity Experiment. Since the Project started in July 2007, this has included:

- Collection and sowing of 80,000+ dipterocarp seeds to supply planting and experimental material
- Replanting c.12,000 seedlings in 15 plots (replanting will continue during the current year)
- Ongoing survival and growth measurements for all planted seedlings (Figure 1). Mortality has been higher than anticipated – which we attribute mainly to a drought immediately after the initial round of planting. Figure 1 shows survival data – growth data for the main experimental plots will be presented in the final report.

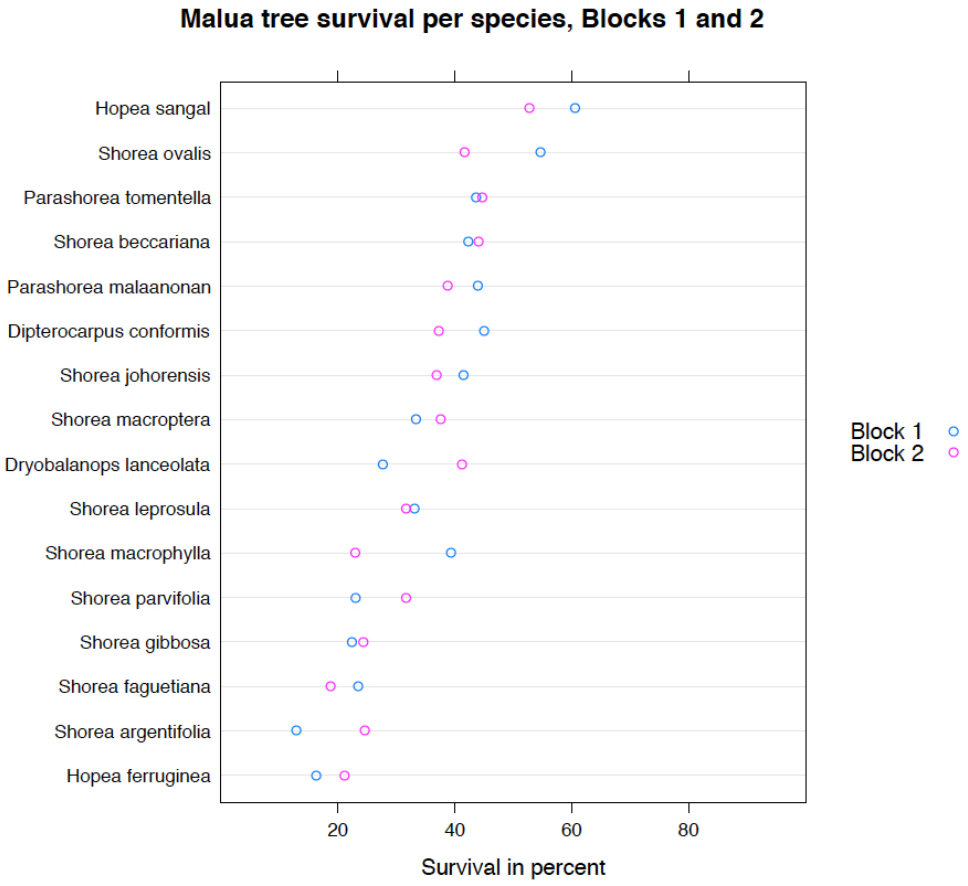

Figure 1: Survival of planted seedlings to end of December 2008 (seedlings originally planted in 2002/2003).

- More detailed/frequent measurements taken from c. 5,000 seedlings in 7 of the all-species plots of the Sabah Biodiversity Experiment and in primary forest plots at Danum Valley, including the collection of habitat data (plant diversity, canopy openness, vegetations structure, litter-fall etc). These data will form part of a comprehensive analysis of growth, survival and a range of other parameters which will be presented in the final report. In the meantime, data are presented from initial analyses on carbon stocks and soil respiration rates – see Figures 2 and 3.

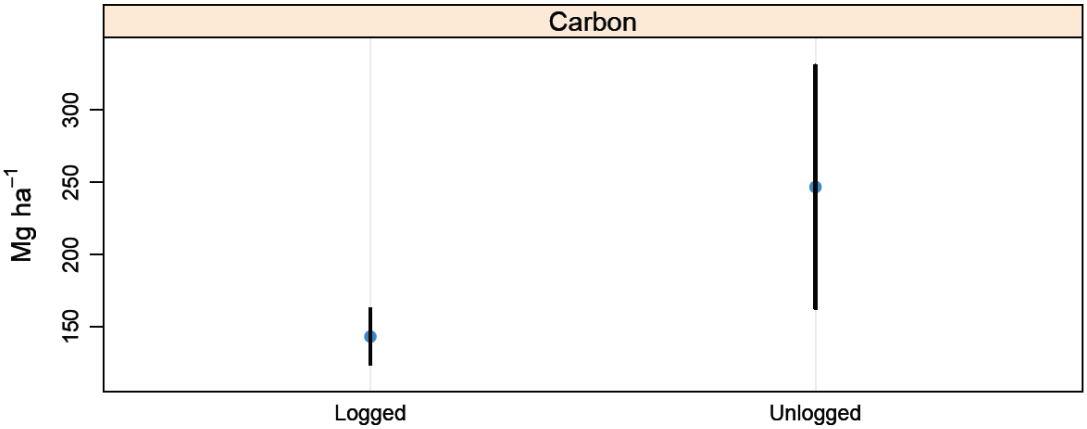

Figure 2: Carbon levels of the logged forests of the Sabah Biodiversity Experiment compared to primary forest at Danum Valley (Mean ± 95% Confidence Intervals).

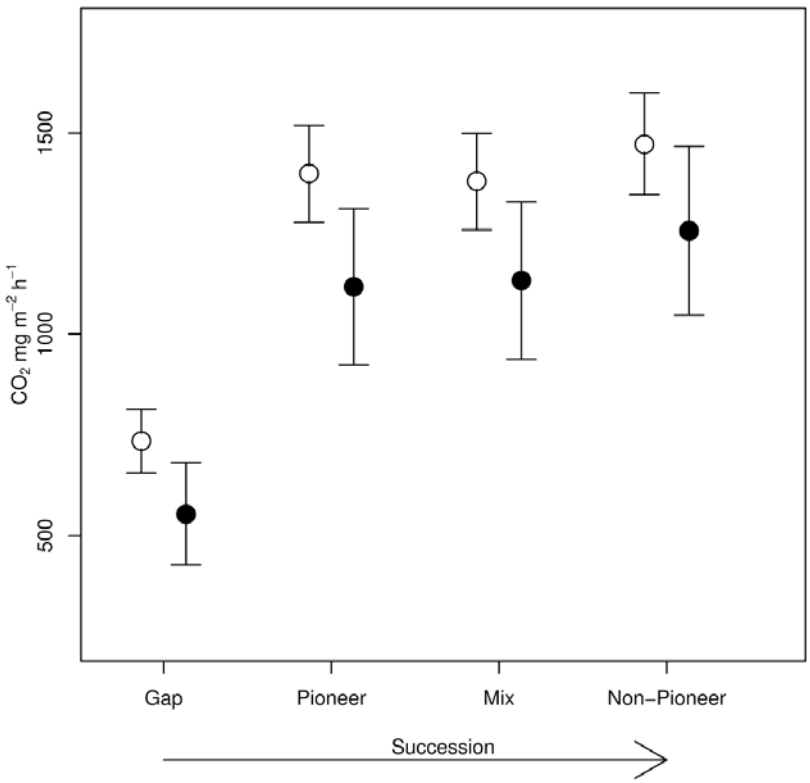

Figure 3: Soil respiration rates (CO_2 [mg m^{-2} h^{-1}] (Mean ± SEM)) along the successional gradient within the logged forest of the Sabah Biodiversity Experiment, ranging from gap sites to pioneer, mixed pioneer/canopy species and closed canopy non-pioneer sites. Open circles indicate day soil respiration rates, solid circles indicate night soil respiration rates. Soil respiration rates in gaps are significantly lower than in forested sites.

- Establishment of associated shade-house experiments to assess the morphological plasticity of selected dipterocarp seedlings, influence of fertilizer applications and mycorrhizal inoculation (example given in Figure 4 of the highly shade tolerant dipterocarp *Vatica albiramis*). Again, a more comprehensive analysis across a range of species (including all those planted as part of the larger experiment) will be presented as part of the final report.

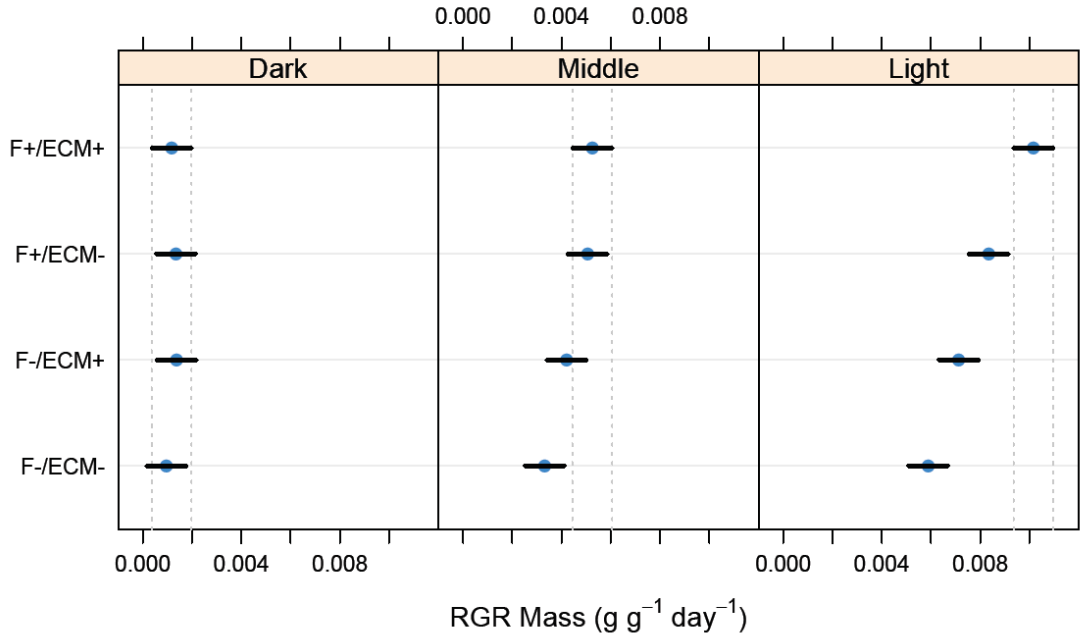

Figure 4: Relative growth rate (Mean ± SED (Standard Error of the Difference)) of *Vatica albiramis* seedlings in an artificial shadehouse experiment. Light levels: Dark (3% full sunlight), Middle (11% full sunlight), Light (33% full sunlight). Inoculation: Control (ECM-), with ectomycorrhiza (ECM+). Fertilization: Control (F-), with NPK fertilizer (F+). Initial inoculation with ectomycorrhiza significantly accelerated seedling mass growth under fertilzed conditions for over one year.

A key objective in establishing the Sabah Biodiversity Experiment was for it to act as a platform for scientists from a range of disciplines. We have been particularly keen to encourage local students to work at the project site – and have provided additional funds to support their work. In the current reporting period, two students from Universiti Malaysia Sabah (Robin Lim Ah Hee and Lon Yen Yee) have continued their work on the project to collect supplementary data for the PhD studies of Christopher Philipson and Philippe Saner. Both Robin Lim and Yen Yee are interested in undertaking Masters degrees as part of the project and we are actively seeking funds to support their further studies. Although not directly funded by the Darwin Initiative, these students benefit through the support provided by the team of Research Assistants funded by the project – and have also been involved in the statistics training courses.

During the current reporting period, two students from the University of Zurich (Christopher Philipson and Philippe Saner) have completed their PhD fieldwork. Christopher Philipson has submitted his thesis and Philippe Saner is now writing up. Again, these students have not been funded by the Darwin Initiative, but both have benefited directly through the field staff employed and trained by the project. Both students have also played an important supporting role in the statistics training courses.

2009/2010 will see a considerable increase in research activity as part of the Sabah Biodiversity Experiment through the new Earthwatch funded project. This includes scholarships for three Malaysian PhD students; two registered at Universiti Malaysia Sabah, one registered at the University of Zurich under the supervision of Prof. Andy Hector.

With the completion of the various undergraduate and postgraduate studies (particularly Prof. Hector's two PhD students), we will be in a position to provide details of early research findings during the next reporting period.

3.1 Progress in carrying out project activities

Project outputs	Activities in Year 2	Progress
1. Develop standard research methodologies and protocols for long term research on biodiversity and ecosystem functioning	**1.1** Collect sample datasets for use in analyses and training courses	• Survival recorded in all plots (c. 70,000 planting points) • More detailed/frequent measurements taken in 7 plots (c. 5,000 seedlings)
2. Identify skills gaps amongst post-doc and postgraduate researchers/research managers and conduct linked training courses and field training events to remedy gaps identified	**2.1** Conduct skills gap analysis and gauge requirements of local partner institutions **2.2** Deliver training course on 'Analysis of biodiversity data using Linear Models in R'	Completed Completed
3. Identify skills gaps amongst researcher assistants/field staff and conduct linked training courses and field training events to remedy gaps identified	**3.1** Develop and deliver a classroom and field based course for research assistants and field staff on 'Data collection, management and archiving'	Completed
4. Disseminate results of new analyses, training course curricula and teaching material, and prepare policy level and public awareness material	**4.1** Develop course materials for incorporation into teaching programmes of partner universities **4.2** Papers etc published on research component	Ongoing (course notes already available for courses held in years 1 and 2) Ongoing

3.2 Progress towards Project Outputs

We continue to make good progress towards both the Project's training and research components and are confident that these will be fully met by the end of the Project.

Progress on the research component of the project has been encouraging, and with new supplementary funding from the University of Zurich and the Earthwatch Institute, we anticipate that the current year, 2009/2010, will be particularly productive.

Assumptions made at the time of the application remain valid and we do not anticipate the need to revise these during the coming year. The Project budget is, however, under some pressure, for the reasons outlined above, but we hope to make-up at least most of the shortfall through additional funds from the core SEARRP budget, Imperial College and University of Zurich.

3.3 Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Year 1	Year 2	Year 3	Year 4	Total to date	Number planned for this reporting period	Total planned from application
8	UK staff time (5 staff)	±30 weeks	±40 weeks	-	-	±70 weeks	±40 weeks	±120 weeks
14A 14B	Project workshop	1	-	-	-	1	0	2
5	Data collection in Sabah BioD Experiment	±9 mnths	12 mnths	-	-	±21 mnths	12 mnths	±36 mnths
4C 4D	Training courses	1	2	-	-	3	2	6
11A 11B	Publications etc resulting from research component	3	-	-	-	3	No firm plan for publications in individual years	6
16A 16B 16C	Project newsletter	0	0	-	-	0	1	3
A1	PhD theses	-	2				2	0
A2	MSc theses	1					1	0
A3	BSc theses	1	1				2	0

Table 2 Publications

Type (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £
Manuals (delivered during training courses)	Andy Hector 2009	n/a	University of Zurich http://www.uzh.ch/uwinst/publications/Presentations/AHector/	None

3.4 Progress towards the project purpose and outcomes

The overall purpose of the Project is: To increase and sustain the capacity of SE Asian research institutes and conservation organisations to conduct effective research on the linkage between biodiversity and ecosystem functioning.

The project is making significant progress towards achieving this outcome and the objectives that contribute to it. The teaching materials developed through the project are now being taken-up by University Malaysia Sabah on their own courses. We have also secured significant funding to support the involvement of a number of young Malaysian students to work on the Sabah Biodiversity Experiment, including three PhD scholarships, which we hope will further imbed Project outcomes with our partner institutions.

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

We will be better able to assess these impacts in the final stages of the project.

4. Monitoring, evaluation and lessons

Output measures are listed in the above table. We have met or exceeded most output measures set as outlined in our original application.

Actions taken in response to previous reviews (if applicable)

List of attendees of training course attached

5. Other comments on progress not covered elsewhere

None.

6. Sustainability

As described above, the materials developed as part of the Project are now being used by our main partner organisation, Universiti Malaysia Sabah. A key member of staff from the university, Dr Henry Bernard, continues to receive supplementary training and scholarships (externally funded) have been offered to a number of students to register for higher degrees at UMS to conduct associated research.

In terms of the wider application of Project outputs, the new partnership with the Malua BioBank will ensure that these can be directly applied with a real-life rainforest restoration/biodiversity conservation project.

7. Dissemination

Launch of the Project website, as part of the main SEARRP site, has been delayed as the whole site remains under construction - but we will be launching this within the next 3 months.

Teaching materials developed for the Project training courses have been posted on the University of Zurich website.

8. Project Expenditure

Table 3 Project expenditure during the reporting period (Defra Financial Year 1 April 2008 to 31 March 2009)

Item	**Budget** (please indicate which document you refer to if other than your project application or annual grant offer letter)	Expenditure	Variance
Rent, rates, heating, overheads etc			
Office costs (eg postage, telephone, stationery)			
Travel and subsistence			
Printing			
Conferences, seminars, etc			
Capital items/equipment (specify)			
Others (specify)			
Salaries (specify by individual) – c. 75% contribution to salaries of 12-person research assistant team employed on the Sabah Biodiversity Experiment			
TOTAL			

Note: This project is supported by significant co-funding (in all categories) from the Royal Society SEARRP, University of Zurich and the NERC Centre for Population Biology, Imperial College – hence the expenditure of Darwin Initiative funds is exactly as budgeted. Co-funding from these sources has been considerably increased during 2008/09 due to the c. 30% fall in the value of the Pound during this period.

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

I agree for LTS and the Darwin Secretariat to publish the content of this section

None during the current reporting period.

Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2008/09

Project summary	Measurable Indicators	Progress and Achievements April 2008 - March 2009	Actions required/planned for next period
Goal: 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 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			(do not fill not applicable)
Purpose To increase and sustain the capacity of SE Asian research institutes and conservation organisations to conduct effective research on the linkage between biodiversity and ecosystem functioning.	Postgraduate and post-doctoral researchers and research managers aware of latest research and pursuing revised and relevant programme in SE Asia Revised research protocols and procedures being used effectively by researchers and field staff Policy makers and wider public made aware of value of research on biodiversity and ecosystem functioning	Training delivered – and incorporated into university courses Training delivered Workshops delivered	
Output 1 Raise awareness amongst scientists, conservationists and forest managers in SE Asia of the latest findings and methods for research on biodiversity and ecosystem functioning and their relevance to SE Asia	Workshop includes all key players and reaches consensus	Completed in year 1 of project 2007/2008	
Activity 1.1 Conduct detailed review of latest international practices and results		Completed in year 1 of project 2007/2008	
Activity 1.2 Introductory workshop for policy makers, university department heads, senior conservationists and forest managers to introduce the importance of research linking biodiversity with ecosystem function and the application of the latest		Completed in year 1 of project 2007/2008	

experimental design and analytical techniques		
Output 2 Develop standard research methodologies and protocols for long term research on biodiversity and ecosystem functioning	Wide representation in development of new protocols Approved and validated protocols for field design, data collection and archiving, analysis and interpretation New datasets included in course materials	Continued development and incorporation into teaching materials As above Ongoing – and as described above
Activity 2.1 Conduct detailed review of current practices and standards and prepare analytical report		Completed in first year of project
Activity 2.2 Develop and validate revised research protocols including experimental design, layout, data collection and analysis systems		Ongoing
Activity 2.3 Collect sample datasets for analysis and use in training courses using revised protocols		Ongoing – and as described above
Output 3 Identify skills gaps amongst post-doc and postgraduate researchers/research managers and conduct linked training courses and field training events to remedy gaps identified	Training course material developed to remedy skills gaps identified Trainees' level of understanding and competence measurably increased	Gap analysis completed – training courses ongoing To be assessed on completion of Project
Activity 3.1 Conduct detailed skills gap analysis for postgraduate and post-doctoral researchers and research managers		Completed in first year of Project
Activity 3.2 Develop and deliver a course on 'Experimental design and analysis for biodiversity and ecosystem functioning'		Completed in first year of Project
Activity 3.3 Develop and deliver a course on 'Analysis of biodiversity data using Linear Models in R'		Completed during this reporting period (2008/2009)

Activity 3.4 Develop and deliver a course on 'Analysis of biodiversity data using Generalised Linear Models'		To be delivered in reporting period 2009/2010
Output 4 Identify skills gaps amongst researcher assistants/field staff and conduct linked training courses and field training events to remedy gaps identified	Training course material developed to remedy skills gaps identified Trainees' level of understanding and field competence measurably increased	Completed To be assessed on completion of Project
Activity 4.1 Detailed skills gap analysis for research assistants and field staff		Completed
Activity 4.2 Develop and deliver a classroom and field based course for research assistants and field staff on 'Data collection, management and archiving'		Completed during this reporting period (2008/2009)
Activity 4.3 Develop and deliver a classroom and field based course for research assistants and field staff on 'Field survey, sampling and monitoring techniques'		To be delivered in reporting period 2009/2010
Activity 4.4 Develop and deliver a classroom and field based course for research assistants and field staff on 'Additional biodiversity monitoring techniques and introductory data analysis'		To be delivered in reporting period 2010/2011
Output 5 Disseminate results of new analyses, training course curricula and teaching material, and prepare policy level and public awareness material	Refereed papers accepted for publication by end of project Web material available and being accessed Policy level and publicity material available and accessible Wrap-up workshop held and final report prepared	Ongoing Material available and posted on an ongoing basis To be posted towards completion of Project To be held/prepared during final reporting period (2010/2011)
Activity 5.1 Refereed papers on research component and associated studies		Ongoing
Activity 5.2 Project newsletter		Not yet prepared – to be posted during 1st quarter of reporting period 2009/2010

Activity 5.3 Posters and simple publications for public consumption through participating institutions, regional media and environmental awareness programmes	Ongoing
Activity 5.4 Development (and translation if necessary) of teaching material for incorporation into teaching programmes of partner universities	Material from first two advanced courses available, and from first course held for field staff/research assistants (all course material attached to this report)

Annex 2 Project's full current logframe

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Goal: To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve 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			
Purpose To increase and sustain the capacity of SE Asian research institutes and conservation organisations to conduct effective research on the linkage between biodiversity and ecosystem functioning.	• Postgraduate and post-doctoral researchers and research managers aware of latest research and pursuing revised and relevant programme in SE Asia • Revised research protocols and procedures being used effectively by researchers and field staff • Policy makers and wider public made aware of value of research on biodiversity and ecosystem functioning	• Review of relevant current research activities being undertaken in SE Asia and extent to which this has responded to new ideas • Validation of protocols, etc.; improved data handling and archiving; field and research skills levels • Policies reflect some measure of incorporation of research findings	• Current interest levels are maintained • Staff remain in post to take sequential courses • Policy makers will to incorporate project outputs into decision making processes
	•	•	•
Outputs 1. Raise awareness amongst scientists, conservationists and forest managers in SE Asia of the latest findings and methods for research on biodiversity and ecosystem functioning and their relevance to SE Asia	• Workshop includes all key players and reaches consensus	• List of attendees and outputs from workshop	• Key players all willing and available to attend workshop
2. Develop standard research methodologies and protocols for long term research on biodiversity and ecosystem functioning	• Wide representation in development of new protocols • Approved and validated protocols for field design, data collection and archiving, analysis and interpretation • New datasets included in course materials	• Protocols agreed by user groups and being used in practice • Review of training course material	• Researchers accept and use revised protocols, analytical methods *etc.* •
3. Identify skills gaps amongst post-doc and	• Training course material developed to remedy skills	• Skills gaps identified are addressed in training	

postgraduate researchers/research managers and conduct linked training courses and field training events to remedy gaps identified	gaps identified • Trainees' level of understanding and competence measurably increased	material developed • Ability to design and conduct research activities using new techniques	• Trainees remain in permanent/long-term employment and attend all 3 courses
4. Identify skills gaps amongst researcher assistants/field staff and conduct linked training courses and field training events to remedy gaps identified	• Training course material developed to remedy skills gaps identified • Trainees' level of understanding and field competence measurably increased	• Skills gaps identified are addressed in training material developed • Ability to conduct and record field research activities using new techniques	• Trainees remain in permanent/long-term employment and attend all 3 courses
5. Disseminate results of new analyses, training course curricula and teaching material, and prepare policy level and public awareness material	• Refereed papers accepted for publication by end of project • Web material available and being accessed • Policy level and publicity material available and accessible • Wrap-up workshop held and final report prepared	• Acceptance letters from journals • Material posted on partner organisation websites • Use made of material • List of attendees and outputs from workshop	• Research of publishable quality • Key players all willing and available to join workshop

Annex 3 Onwards – supplementary material (optional but encouraged as evidence of project achievement)

This may include outputs of the project, but need not necessarily include all project documentation. For example, the abstract of a conference would be adequate, as would be a summary of a thesis rather than the full document. If we feel that reviewing the full document would be useful, we will contact you again to ask for it to be submitted.

Checklist for submission

	Check
Is the report less than 5MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	
Is your report more than 5MB? If so, please advise Darwin-Projects@ltsi.co.uk that the report will be send by post on CD, putting the project number in the Subject line.	
Have you included means of verification? You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	
Do you have hard copies of material you want to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number.	
Have you involved your partners in preparation of the report and named the main contributors	
Have you completed the Project Expenditure table fully?	
Do not include claim forms or other communications with this report.	