



Darwin Initiative Annual Report



Darwin Project Information

Project Ref Number	17-003
Project Title	Developing tools for reducing biodiversity losses in tropical agricultural landscapes
Country(ies)	Malaysia
UK Contract Holder Institution	University of York
Host country Partner Institution(s)	Universiti Malaysia Sabah, Malaysian Palm Oil Board, Forest Research Centre, Wilmar (PPB Oil Palm Bhd), Royal Society SE Asian Rainforest Research Programme, Dato' Henry S. Barlow
Other Partner Institution(s)	University of Leeds
Darwin Grant Value	£218,438
Start/End dates of Project	1 June 2009 – 21 May 2010
Reporting period (1 Apr 200x to 31 Mar 200y) and annual report number (1,2,3..)	1 April 2009-31 March 2010 Annual Report number 1
Project Leader Name	Dr Jane K Hill
Project website	http://bioltfws1.york.ac.uk/biostaff/staffdetail.php?id=jkh
Author(s) and main contributors, date	Jane Hill, Keith Hamer June 2010

1. Project Background

The main aims of the project are capacity building, training and research to enable conservationists, land managers, and policy makers to assess the ecological benefits of promoting biodiversity within agricultural landscapes. Findings from the project will enable us to provide clear practical advice on the consequences for biodiversity and ecosystem function of incorporating natural forest remnants within oil palm plantations. In this way, to enable stakeholders in Sabah to promote responsible economic growth whilst maximising the conservation of biodiversity.

We shall achieve these objectives by: (1) collecting new field data on species richness of key target taxa and ecosystem functioning in natural rainforest remnants and adjacent areas of oil palm, (2) quantifying forest 'spill-over' effects and the contribution of forest remnants to biodiversity and ecosystem functioning of surrounding agricultural areas in relation to remnant size and location, and (3) using computer models to integrate these data and determine the effectiveness of natural forest remnants for promoting landscape connectivity and thus conservation of biodiversity and ecosystem function.

We will focus on ants and butterflies, which are highly diverse with many endemic species on Borneo, are high-profile sensitive indicators of environmental changes, and comprise species with different ecological functions (herbivores, detritivores, predators etc) thus making it possible to examine changes in ecosystem functioning as well as diversity *per se*. The methods developed by the project will also be applicable to other taxa and we shall leave a lasting legacy of personnel trained in their application.

2. Project Partnerships

Project partnerships:

The project partners at the University of York and Universiti Malaysia Sabah (UMS) have continued to work successfully together since the current project began in June 2009. The success of the collaboration is greatly helped by the fact that Dr Suzan Benedick was involved in three previous Darwin projects with the University of York. The management roles of the UK and host partners have not changed and remain as described in the original project application.

Jane Hill (York) is overseeing the project and training the two DRFs in quantitative invertebrate census methods, identification, and taxonomy. Keith Hamer (Leeds) is providing training in experimental design, assessment of ecosystem function and analytical methods. Colin McClean (York) will provide training in spatial modelling techniques and GIS when the DRFs are based in York from October 2010. Suzan Benedick (School of Sustainable Agriculture, UMS) is co-ordinating the project locally and providing day-to-day advice and support to the DRFs during their current fieldwork campaign. Chey Vun Khen (Chief Entomologist, FRC) has provided permits to sample in forest remnants, helped with invertebrate identification, and in due course will provide permission to export invertebrate material to the UK for identification. Calley Beamish (Biodiversity & Conservation Manager, Wilmar International) has facilitated access to field sites in oil palm, and provided support in-kind in terms of accommodation, subsistence and field support for DRFs during their current field work campaign. Glen Reynolds (RS SEARRP) is providing practical support locally for field work through provision of trained field assistants, and by providing access to all research facilities at Danum Valley Field Centre, Sabah. The lead DRF, Noel Tawatao, has been funded by the Darwin Initiative through a Darwin Fellowship (EIDPS012) and thus is ideally placed to train the other DRF (e.g. in ant ID and taxonomy, experimental design, statistical analysis).

In future, Henry Barlow (RSPO) and Dr Siti Ramlah (Head of Entomology, MPOB) will comment on project results and policy recommendations and provide direct links to RSPO as well as to one of the largest oil palm producing companies in SE Asia (Sime Darby Bhd.) and to current Malaysian Government policy in respect to palm oil production and sustainability.

Most of the management of the project has been via email, supplemented with phone conversations. Two UK partners (Hill, Hamer) visited Borneo in August 2009 to help set up fieldwork, and to liaise with host partners.

In previous Darwin funded projects the Universities of York and Leeds collaborated very successfully with Prof Datim Maryati Mohamed who was Head of the Institute of Tropical Biology & Conservation at UMS. Prof Marayati retired in 2009 and Dr Hamid Ahmad is now Head of ITBC. Unfortunately this new collaboration has not yet proved very successful, probably because Dr Hamid was not involved in the initial set-up of the project. However, the strong support from Dr Benedick at UMS and our other project partners means that this has not proved a problem for the running of the current project

and we have been developing links with other members of ITBC staff to ensure that future project findings are disseminated within ITBC in due course.

Other Collaboration:

The DRFs have attended training and statistical courses run by Darwin Initiative project 16011 at UMS.

As yet, no link has been made with the CBD focal point for Malaysia (Ministry of Natural Resources and the Environment) but representatives will be invited to the end-of-project workshop and circulated into policy-related material arising from the project's findings.

The project will help support host country institutions in building their capacity to meet CBD commitments, and the project relates specifically to the following CBD articles:

7. Identification and Monitoring. New field data for butterflies and ants are being collected from a range of forest remnants within oil palm plantations in order to quantify alpha and beta diversity and 'spill-over' effects of species into surrounding oil palm areas.

10. Sustainable use of components of Biological Diversity. New field data will be collected for ants to determine the degree to which remnants retain ecosystem functioning of continuous forest areas, and contribute to the functioning and productivity of agricultural ecosystems.

12. Research and Training. Two DRFS are being trained in experimental design, field techniques and computer modelling for assessing landscape connectivity.

The project also directly addresses the CBD cross-cutting themes of 'Ecosystems approach', and 'Sustainable Use and Biodiversity'.

3. Project progress

3.1 Progress in carrying out project activities

Output 1. *Improved capacity for capturing, analysis and computer modelling of ecological data.*

Indicators: *Two DRFs successfully trained in ant and butterfly sampling and identification techniques, in quantifying ecosystem functioning, and in spatial modelling of ecological data.*

Verification: *DRFs demonstrate competence in field sampling and data capture techniques.*

Two DRFs were appointed in June 2009 (Noel Tawatao (DRF1), Mazidi Abd. Ghani (DRF2)), and Loh Yen Yee was appointed in January 2010 (replacement DRF2). Since the project started, one of the original DRFs, Mazidi Abd, Ghani, has obtained employment with WWF-Malaysia. Mazidi had been employed on a previous Darwin Initiative funded project (14022) and this new employment will be an excellent opportunity for him to make use of the GIS and modelling skills and training he has received through this earlier project. Also the new link with WWF will be an excellent opportunity to disseminate findings from the current project more widely. Host partner Suzan Benedick (UMS) has helped recruit a new DRF (Loh Yen Yee) from UMS who is now in-post, has registered for her MSc at UMS, and is currently carrying out fieldwork.

The transition from Mazidi to Yen has been very straightforward and there has been very little slippage in the project timetable.

Drs Jane Hill (York) and Keith Hamer (Leeds) visited Sabah in July/August 2009 to discuss research protocols with DRFs, to select field sites, and to develop the experimental design for sampling ants and butterflies in forest fragments and oil palm plantations. Project objectives and progress was discussed with all host partners.

To confirm the identification of ant material, and to standardize the classification of morpho-species of ants, Noel Tawatao (DRF1) took ant specimens to the California Academy of Sciences, USA. Between January - April 2010, Noel identified Borneo ant material to morpho-species, took images of adults and uploaded them onto 'Antweb' (www.antweb.org). As a result of the visit by Noel Tawatao, there are now webpages devoted to 'Ants of Borneo' (<http://www.antweb.org/borneo.jsp>) which feature specimens collected from the current project and from Noel's previous Darwin Fellowship (EIDPS012). About 56% of Borneo ant species included in Antweb have been collected from these Darwin Projects and more species will be added upon the completion of the current project. The webpage will serve as an interactive guide for identifying ants of Borneo. This work is in collaboration with Brian Fisher, curator of ants in the California Academy of Sciences.

Output 2. Clear advice provided to managers and policy makers at national and regional levels and through RSPO group and ASEAN biodiversity network.

Not expected until year 2 of the project.

Output 3. Research data provided on how biodiversity and ecosystem function in oil palm areas relate to size and proximity of forest remnants.

Indicators: Databases constructed and used to produce species richness estimates for key taxa in forest remnants and surrounding agricultural areas, plus ecosystem function estimates.

Verification: Academic papers published in peer-reviewed international research journals, public media articles and presentations at seminars and conferences in Sabah and internationally.

In August 2009, Noel Tawatao (DRF1), and Jane Hill met up with Calley Beamish (Biodiversity and Conservation Manager, Wilmar International) to discuss field work sites and securing research permits. To date, we have identified two main field sites which are two separate oil palm plantation estates which contain small forest patches in which ants and butterflies will be sampled. These plantations are managed by Wilmar under RSPO guidelines and are in eastern Sabah (Sapi Estate and Sabahmas plantations). Field sites were surveyed in September 2009, and 20 potential sampling sites were identified. In October 2009, transects were established in all study sites and sampling of ant specimens was completed in two small forest fragments and two oil palm plantations using Winkler extraction techniques and pitfall traps. The field sampling for ants re-commenced in May 2010 and 10 fragments have now been sampled. Sampling of butterflies is currently also under-way in these forest remnants. Identification and sorting of ant material is on-going. Fieldwork will continue in year 2, followed by identification of material, statistical analysis and publication of findings.

Keith Hamer (Leeds) attended the International Congress for Conservation Biology (invited speaker; Beijing, July 2009) to present aims and objectives of project, and to present other research from Borneo field sites. Keith Hamer (Leeds) was also invited to a workshop in Kuala Lumpur hosted by the British High Commission and SEA-EU-Net (EU FP7 funding) to discuss ecosystem functioning in tropical forest.

Three papers have been published in peer-reviewed literature which include findings from the current project and/or extend collaborations with host partners (details below).

Output 4. *Raising of awareness of project findings and latest research methods, and dissemination of information.*

Indicators: *Workshop held at end of project.*

Not expected until year 3 of the project. However, the project has been 'Featured Research' on the front page of the University of York web site (Jan-Feb 2010).

<http://www.york.ac.uk/news-and-events/research/palm-oil-production/>

3.2 Progress towards Project Outputs

Progress has been excellent to date. Field work is on-going and new data on ant and butterfly diversity are being collected as planned. Important progress has been made in identification and taxonomy of Bornean ants through the new link with 'Antweb' and the California Academy of Sciences. Based on this year's overall progress, the project is likely to achieve its outputs by its close. Output indicators are being measured by regular contact and supervision of DRFs, and by the successful collection of new data. The output level assumptions still hold true.

3.3 Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for this reporting period	Total planned from application
2	Number of people to attain Masters qualification	0	0	1	0	0	0	1
4B	Number of training weeks to be provided	24	24	24	0	24	24	72
4C	Number of postgraduate students to receive training	1	1	1	0	1	1	1
5	Number of people to receive at least one year of training	0	0	1	0	0	0	1
6B	Number of training weeks to be provided	24	24	24	0	24	24	72
8	Number of weeks to be spent by UK project staff on project work in the host country	8	8	8	0	8	8	24

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for this reporting period	Total planned from application
9	Number of species/habitat management plans	0	0	1	0	0	0	1
10	Number of individual field guides/manuals to be produced to assist species identification.	1	1	1	0	1	1	3
11A	Number of papers to be published in peer reviewed journals	3	2	2	0	3	3	3
11B	Number of papers to be submitted to peer reviewed journals	3	2	2	0	3	3	3
12A	Number of computer based databases to be established and handed over to host country	0	0	2	0	0	0	2
12B	Number of computer based databases to be enhanced and handed over to host country	0	0	1	0	0	0	1
13B	Number of species reference collections to be enhanced and handed over to host country(ies)	1	0	1	0	1	1	2
14A	Number of conferences/seminars/workshops to be organised to present/disseminate findings	0	0	1	0	0	0	1
14B	Number of conferences/seminars/workshops attended at which findings from Darwin project work will be presented/disseminated.	2	2	2	0	2	2	6
15A	Number of national press releases in host country(ies)	0	1	1	0	0	0	2
15B	Number of local press releases in host country(ies)	0	1	1	0	0	0	2
15C	Number of national press releases in UK	0	0	1	0	0	0	1
15D	Number of local press releases in UK	0	0	1	0	0	0	1
16A	Number of newsletters to be produced	1	1	1	0	1	1	3

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for this reporting period	Total planned from application
19A	Number of national radio interviews/features in host county(ies)	0	0	1	0	0	0	1
19B	Number of national radio interviews/features in UK	0	0	1	0	0	0	1
22	Number of permanent field plots to be established during the project and continued after Darwin funding has ceased	10	0	0	0	10	10	10

Table 2 Publications

Type (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £
Journal	Berry, N.J., Phillips, O.L., Lewis, S.L., Hill, J.K. , Edwards, D.P., Tawatao, N.B. , Ahmed, N. , Magintan, D., Chey V.K. , Maryati, M. , Ong, R.C. & Hamer, K.C. (2010) The value of logged tropical forests: lessons from northern Borneo.	<i>Biodiversity and Conservation</i> , 19. 985-997	Jane Hill	0
Journal	Sodhi, N. S., Koh, L. P., Clements, R., Wangerd, T.C., Hill, J.K. , Hamer, K.C. , Clough, Y., Tschardtke, T., Rose, M., Posa, C., Lee, T.M. (<i>in press</i>) Conserving Southeast Asian forest biodiversity in human-modified landscapes.	<i>Biological Conservation</i>	Jane Hill	0

Journal	Chen, I-C., Hill, J.K. , Shiu, H-J., Holloway, J.D., Benedick, S., Chey, V.K., Barlow, H.S. & Thomas, C.D. (<i>in press</i>) Asymmetric upper and lower boundary shifts of tropical moths over four decades of climate warming.	<i>Global Ecology and Biogeography</i>	Jane Hill	0
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3.4 Progress towards the project purpose and outcomes

The project purpose is to increased capability at local and national levels to determine ecological benefits of natural rainforest remnants for reducing biodiversity losses in oil palm plantations. We have made excellent progress identifying field sites, developing sampling protocols and initiating data collection and surveys. The purpose level assumptions still hold true, and the indicators are adequate for measuring outcomes.

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

The findings from the project will feedback to stakeholders and project partners, and also to RSPO guidelines. Thus the project will have an impact on the potential to provide evidence for the development of more sustainable methods of oil palm production that reduce biodiversity losses in these landscapes.

4. Monitoring, evaluation and lessons

The progress is being monitored and evaluated by regular weekly email contact with DRFs, yearly visits by UK partners to field sites, and by the successful collection of field data. These data will be analysed to produce outputs and outcomes of the project that will directly contribute to the project. The indicators of achievements will be the training of DRFs and the successful completion of an MSc degree (DRF2), and the publication of findings in peer-reviewed Journals and in project reports to stakeholders. There have not been any changes made to the M&E plan this year.

Maintaining regular weekly contact with DRFs has been crucial to project success and we will continue to do this in future while DRFs remain carrying out field work.

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

n/a

6. Other comments on progress not covered elsewhere

The project does not face any particular risks.

7. Sustainability

The objectives of the project have been presented at International conferences in the host country. The RSPO has increasing interest for developing more sustainable methods of production that reduce biodiversity losses, and thus attempt to redress negative publicity about the crop in Europe.

This is a discrete project that will reach a stable and sustainable end point and has a clear exit strategy. Databases and fully catalogued insect collections will be housed with project partners (FRC, ITBC) and will continue to be updated for long-term monitoring of biodiversity in agricultural areas well beyond the end of the grant period. Policy documents written in the final year of the project will include recommendations for future monitoring and research. These will be written in consultation with Conservation Officers, Regional Forestry Managers, and Palm Oil managers to ensure that recommendations are implemented. Facilities for housing permanent faunal collections are already in place within partner organisations (FRC and ITBC) so that the availability of fully trained staff resulting from this project will ensure that research on biodiversity changes in agricultural areas on Borneo continues beyond the lifetime of the project.

8. Dissemination

Information about the project has been disseminated among project partners by an annual newsletter. Other dissemination to the local research community has been via published papers.

9. Project Expenditure

Table 3 Project expenditure during the reporting period (Defra Financial Year 1 April 2009 to 31 March 2010)

Item	Budget (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 (laptop, DRF UK subsistence, RS project co-ordination)			
Salaries Noel Tawatao, Loh Yen Yee			
TOTAL			

We were not allowed to carry-over any under-spend to next year (under-spend was primarily in 'Others' item and was due to DRFs not visiting the UK in year 1 and so not claiming UK subsistence allowance. Virements were agreed with LTS.

10. **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](#)

We have contributed to the Darwin newsletter this year.

Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2009/10

Project summary	Measurable Indicators	Progress and Achievements June 2009 - March 2010	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>Steps taken towards collecting data and carrying out analyses to inform on sustainable production of palm oil and reduction of biodiversity losses in agricultural landscapes.</i></p>	<p><i>(do not fill not applicable)</i></p>
<p>Purpose Increased capability at local and national levels used to determine ecological benefits of natural rainforest remnants for reducing biodiversity losses in oil palm plantations.</p>	<p>Dialogue with stakeholders indicates that project outputs have contributed to application of management policy for promoting agricultural biodiversity in Sabah within 3 years of end of project.</p>	<p>Appointment of 2 DRFs. Collection of new field data on ants and butterflies in forest remnants.</p>	<p>Continue collecting field work and sample all field sites for ant diversity.</p>

<p>Output 1.</p> <p>1. Improved capacity for capturing, analysis and computer modelling of ecological data. Development of standardized protocols for research.</p>	<p>Two DRFs successfully trained in ant and butterfly sampling and identification techniques, in quantifying ecosystem functioning, and in spatial modelling of ecological data.</p>	<p>Indicator is appropriate.</p> <p>DRFs appointed and trained in field sampling techniques. DRF2 registered for MSc degree.</p>
<p>Activity 1.1 Training of 2 DRFs</p>		<p>DRFs successfully collecting data. DRF1 successfully trained in taxonomy and morpho-species identification on ants. Images and taxonomic key uploaded on to 'Antweb'. DRFs visit York for further training in year 2. DRFs continue to collect new field data.</p>
<p>Activity 1.2 Sabah collaborators visit UK</p>		<p>Planned for Year 2</p>
<p>Activity 1.3 Production of 3 educational packages</p>		<p>Year 3</p>
<p>Output 2.</p> <p>2. Clear advice provided to managers and policy makers at national and regional levels and through RSPO group and ASEAN biodiversity network.</p>	<p>Draft recommendations for management of forest remnants and agricultural areas in Sabah by year 2, revised year 3.</p>	<p>Indicator is appropriate.</p>
<p>Activity 2.1 UK staff supervise fieldwork</p>		<p>UK partners spend 8 person weeks on the field supervising and training DRFs, and liaising with Malaysian partners.</p>
<p>Activity 2.2 Production of management plan</p>		<p>Year 3</p>
<p>Activity 2.3 Production of species data bases & reference collection</p>		<p>Ant images uploaded on to 'Antweb' to aid taxonomy and identification</p>

<p>Output 3. Research data provided on how biodiversity and ecosystem function in oil palm areas relate to size and proximity of forest remnants.</p>	<p>Databases constructed and used to produce species richness estimates for key taxa in forest remnants and surrounding agricultural areas, plus ecosystem function estimates. Data incorporated into spatially explicit computer models to quantify landscape permeability and to identify best areas for forest protection and reforestation.</p>	<p>Indicator is appropriate.</p>
<p>3.1 Submit papers for publication</p>		<p>3 papers submitted from on-going work with project partners</p>
<p>3.2 Presentation of results at conferences</p>		<p>2 international conferences attended and papers presented (invited speakers). At least 2 more international conferences to be attended in year 2.</p>
<p>3.3 Dissemination of results in media</p>		<p>Year 3</p>
<p>3.4 Production of annual newsletters</p>		<p>Regular newsletters produced and distributed by DRFs to keep all project partners updated on progress.</p>
<p>Output 4. Raising of awareness of project findings and latest research methods, and dissemination of information.</p>	<p>Workshop held at end of project. Findings made available via the web.</p>	<p>Year 3</p>

Annex 2 Project's full current logframe

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Goal: Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources.</p>			
<p>Sub-Goal: Reducing losses of biodiversity and ecosystem functioning in tropical mosaic agricultural landscapes of Sabah (Malaysian Borneo).</p>	<p>Conservation of rainforest remnants reduces biodiversity losses and supports ecosystem functioning in adjacent agricultural areas.</p>	<p>Field data quantifying biodiversity and ecosystem functioning in forest remnants and surrounding landscapes.</p>	
<p>Purpose Increased capability at local and national levels used to determine ecological benefits of natural rainforest remnants for reducing biodiversity losses in oil palm plantations.</p>	<p>Dialogue with stakeholders indicates that project outputs have contributed to application of management policy for promoting agricultural biodiversity in Sabah within 3 years of end of project.</p>	<p>Public dissemination of policy for reducing biodiversity loss in agricultural areas. Surveys of local agencies confirm implementation of policy.</p>	<p>Local agencies are capable of implementing management methods that promote biodiversity. A mechanism to promote this capability is provided through the RSPO.</p>

<p>Outputs (add or delete rows as necessary)</p> <p>1. Improved capacity for capturing, analysis and computer modelling of ecological data. Development of standardized protocols for research.</p>	<p>Two DRFs successfully trained in ant and butterfly sampling and identification techniques, in quantifying ecosystem functioning, and in spatial modelling of ecological data.</p>	<p>Training workshop reports evaluated by Project Leader. DRFs demonstrate competence in field sampling and data capture techniques and apply them successfully in Sabah.</p>	<p>Darwin Fellows remain active and fully committed to project. This will be greatly enhanced by our strong links with local agencies and project partners, two of whom were Darwin Fellows on previous projects.</p>
<p>2. Clear advice provided to managers and policy makers at national and regional levels and through RSPO group and ASEAN biodiversity network.</p>	<p>Draft recommendations for management of forest remnants and agricultural areas in Sabah by year 2, revised year 3.</p>	<p>Management recommendations checked and discussed with forest and plantation managers in Sabah.</p>	<p>Managers capable of implementing policies. Biodiversity recommendations supported by RSPO This will be greatly enhanced by our collaborators' involvement in the project from the outset.</p>
<p>3. Research data provided on how biodiversity and ecosystem function in oil palm areas relate to size and proximity of forest remnants.</p>	<p>Databases constructed and used to produce species richness estimates for key taxa in forest remnants and surrounding agricultural areas, plus ecosystem function estimates. Data incorporated into spatially explicit computer models to quantify landscape permeability and to identify best areas for forest protection and reforestation.</p>	<p>Annual research reports, academic papers published in peer-reviewed international research journals, public media articles and presentations at seminars and conferences in Sabah and internationally.</p>	<p>Analysis of new field data provides clear interpretable findings that can be translated into management recommendations and policy.</p>

<p>4. Raising of awareness of project findings and latest research methods, and dissemination of information.</p>	<p>Workshop held at end of project. Findings made available via the web.</p>	<p>List of participants and workshop outputs.</p>	<p>Invited key participants available and willing to attend workshop. Experience from previous projects indicates this will not be a problem.</p>
<p>Activities (details in workplan)</p> <ul style="list-style-type: none"> 1.1 Training of 2 DRFs 1.2 Sabah collaborators visit UK 1.3 Production of 3 educational packages 2.1 UK staff supervise fieldwork 2.2 Production of management plan 2.3 Production of species data bases & reference collection 3.1 Submit papers for publication 3.2 Presentation of results at conferences 3.3 Dissemination of results in media 3.4 Production of annual newsletters 			
<p>Monitoring activities:</p> <ul style="list-style-type: none"> Indicator 1 Continual assessment of data collection during field work Indicator 2 Successful completion of MSc degree Indicator 3 Successful publication of findings in peer-reviewed journals 			

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

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.	x
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.	x
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.	