Darwin Initiative Annual Report

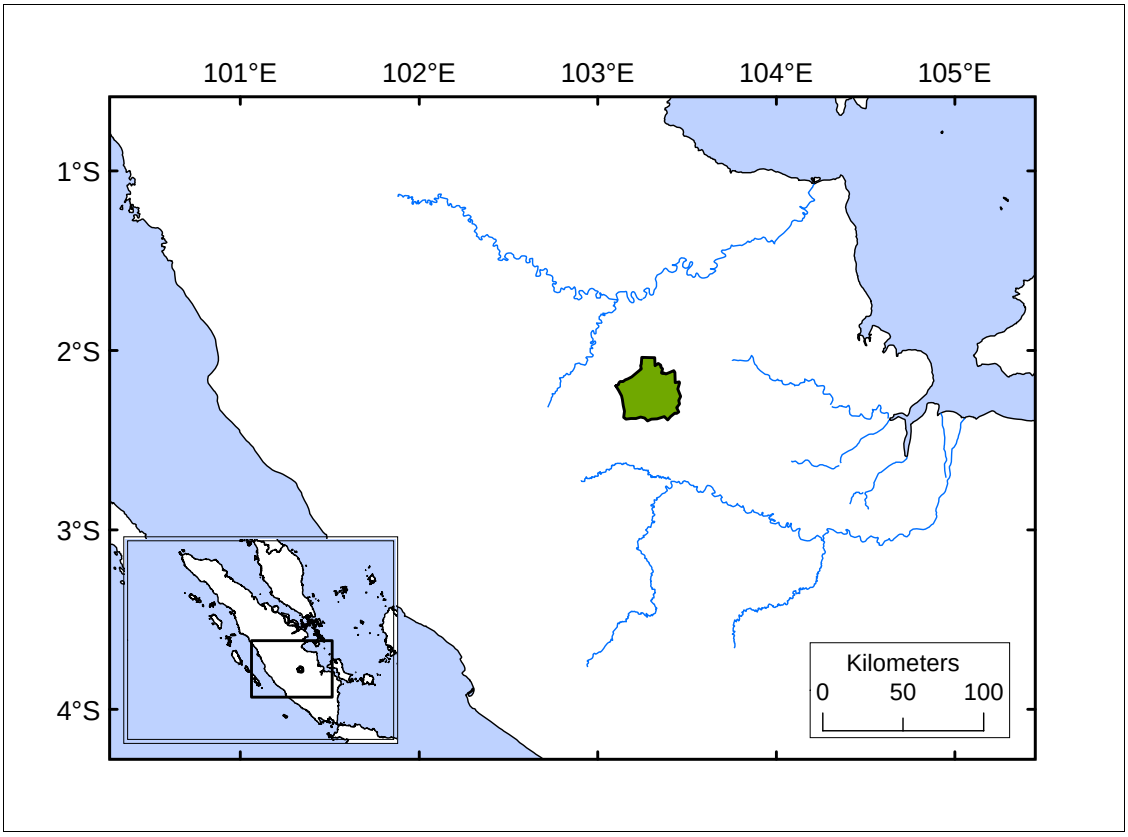
Darwin Project Information

Project Ref Number	162/16/005
Project Title	Biodiversity inventory and monitoring for conservation of threatened Sumatran forest
Country(ies)	Indonesia
UK Contract Holder Institution	The RSPB
UK Partner Institution(s)	Royal Botanic Gardens, Kew
Host country Partner Institution(s)	Burung Indonesia
Darwin Grant Value	£259,159
Start/End dates of Project	1 December 2007 – 30 November 2010
Reporting period (1 Apr 200x to 31 Mar 200y) and annual report number (1,2,3..)	December 2007 to March 2008 Annual report 1
Project Leader Name	Jeremy Lindsell
Project website	www.harapanrainforest.org
Author(s), date	Jeremy Lindsell, April 2008

1. Project Background

Sundaic lowland forest is one of the most biodiverse habitats in the world yet one of the most threatened. Current pressure to convert forest to oil palm for biofuel production has resulted in the large-scale loss of lowland forest from Sumatra. Very few areas of lowland forest remain outside of protected areas and large areas of logging concessions are at risk of permanent conversion to alternative landuse. In response to this, the Indonesian government recently introduced a new management category for production forests: Conservation, Restoration and Rehabilitation. Harapan Rainforest, in south-central Sumatra (Jambi and South Sumatra provinces), is the first (and so far only) area to be designated to this category. The management licence for this site has been awarded to the Yayasan Konservai Ekosistem Hutan Indonesia (Yayasan KEHI), a new foundation established by a consortium of The Royal Society for the Protection of Birds (RSPB), Burung Indonesia and BirdLife International.

Management activities on the site have now commenced. Effective management of the site requires good quality biological data to inform management decisions and to monitor progress. This Darwin project is focussing on collecting good baseline data through inventory fieldwork and establishing a monitoring system for ongoing assessment. This is being delivered through the development of a research centre in the forest and the provision of training to project staff.



2. Project Partnerships

A memorandum of understanding has been signed between the RSPB and Yayasan KEHI for the delivery of this Darwin Project. Under the terms of this MOU, funds have been transferred to Yayasan KEHI to deliver the work programme. This has worked well and resulted in a great deal of experience in developing an international conservation and research programme within Sumatra. The project is making use of Burung Indonesia's office in Bogor resulting in constant interaction with staff there.

Collaboration with the herbarium at Royal Botanic Gardens, Kew has proceeded well and resulted in a visit in March-April 2008 by a four-person team (led by Dr Rogier de Kok – Head of SE Asia Team) to the site to provide training in plant collection and herbarium techniques and to undertake some botanical collection. To further enhance this collaboration, the project will provide Kew with duplicates of plant specimens collected at the site. In return, Kew will identify the taxa to genus or species level and provide ongoing guidance in plant collecting and herbarium techniques. The involvement of Kew will also help the project develop collaborations with forest restoration projects elsewhere.

Collaboration with Bogor Herbarium – Indonesian Institute of Sciences (LIPI) - has developed extremely well and included two staff (led by Dr Teguh Triono – Head of Taxonomy and Research Group) accompanying and assisting on the Kew training course held at the Harapan Rainforest site. After successful discussions with Dr Triono, future collaborations will include the project providing the Herbarium with duplicates of all botanical specimens collected at the project site, in return for receiving plant identifications. Bogor Herbarium will also offer ongoing advice regarding the design of habitat surveys, tree species inventories and forest restoration. There is scope to develop a collaborative tree inventory survey of important forest fragments and habitats at the site. Discussions have been held with Dr Triono about the possibility of sending two project staff to the Herbarium for a two-week mentoring programme. During this time they will be given the opportunity to further develop their herbarium and plant identification skills alongside the best botanists and plant taxonomists in Indonesia, while working on specimens collected from the Harapan Rainforest site. This will: improve the project's capacity to identify tree species, particularly valuable in relation to forest condition and restoration; assist

in identifying habitat relationships of important birds and mammals; continue, successful plant collection; help develop the on-site herbarium; and aid understanding of the plant communities at the site.

Meetings have taken place with Dr Dedy Darnaedi, the Director of the Research Centre for Biology, LIPI (The Indonesian Academy of Sciences), who has provided his support for the project's research programme. LIPI's emphasis is on long-term collaboration/partnership, which is very promising from the project's point of view. Through ongoing discussion and regular communication, LIPI will endorse the research components of the project. This is particularly useful for obtaining sanctioned research collaborations with overseas institutes and organisations. LIPI will support research permit applications appropriate to the project's objectives, and the development of the on-site herbarium as a valuable research resource.

Introductory meetings have taken place with Anwar Purwoto, Director of the Research and Development Centre of Forest and Nature Conservation, FORDA. These have proven very promising and include the possibility of setting up a research team comprising members of both parties, with the potential for inviting individuals from other institutions.

Links are being developed with the Universities of both Jambi and Palembang (South Sumatra Province). Palembang University has an Environmental Graduate Studies Department, which will hopefully become the point of contact for the project. This department includes expertise in lowland forest ecology and forestry, social and cultural empowerment in indigenous communities, and links with CIFOR. Jambi University, although smaller than Palembang University, has a Biology Department that is keen to develop a partnership with the project.

Strong links have been developed with another Darwin project in the region (Facilitating Forest Restoration for Biodiversity Recovery in Indochina), led by the Forest Restoration Research Unit (FORRU) at Chiang Mai in Thailand. This has resulted in two members of Yayasan KEHI staff presenting at their end of project workshop in Thailand in March 2008 and plans to translate FORRU materials into Indonesian. A follow-up visit to the FORRU forest restoration site by two project staff is planned for later in 2008 and it is hoped leading members of FORRU will be able to visit the project site.

Preliminary meetings have been held with staff from the Centre for International Forest Research (CIFOR) and the International Centre for Research into Agroforestry Systems (ICRAF) in their Bogor offices, highlighting the potential research collaborations available with the Harapan Rainforest initiative.

3. Project progress

3.1 Progress in carrying out project activities

Outputs 1. Baseline biodiversity inventory completed

Some progress in activities towards the baseline inventory has already been made. Key items of research equipment have been purchased in the UK and have been shipped to Sumatra, including binoculars, weather station, field recording equipment, reference books and bird call recordings. Other items are more readily available in Indonesia and are being sourced there, e.g. plant collection equipment, digital cameras, camcorder.

The first data to contribute to the baseline inventory has been a collection of botanical specimens, obtained during a training course run by Kew (see report in Annex 6). Three areas each of c.20ha were surveyed for fruiting and flowering specimens. So far approximately 150 specimens have been processed, a complete set of which is kept on site. The most significant find by the team was a low growing shrub belonging to Myrsinaceae family (genus

Emblemantha), only recorded in Jambi Province on a single previous occasion. The Sumatran endemic Urticeae poikilospermum was also found.

The project is currently considering how best to provide suitable long-term storage facilities for plant specimens on site. Duplicates of the specimens collected at the site have been sent to both Kew and Bogor Herbaria for identification and their own collections.

A computer database of recent records of birds, mammals and trees from the concession area has been compiled and will be added to continually and further developed in parallel with the GIS data. A preliminary land cover map of the concession has been produced from Landsat Earth Observation imagery. This provides a basic stratification of the site in terms of forest cover and will greatly aid survey planning. This classification is currently unverified but conforms well with past classifications made of the site. A GIS database of important types of land cover is being compiled by an Indonesian member of staff. The availability of higher resolution satellite imagery is being investigated; this will more accurately map smaller patches of forest that retain important biodiversity attributes.

A training workshop for survey staff covering a range of taxa and survey methods has begun. This will most likely be implemented as a series of shorter training events organised by the lead scientist who is particularly well qualified in this area. The first short, but ongoing, training programme - for surveying hornbill species at the site - started in February-March. Hornbills were identified as an ideal taxonomic group with which to introduce survey training. Many project staff have some familiarity with these species; their populations are likely to be limited by the availability of suitable nesting trees; and it is also likely they serve an important role in forest restoration. Four supra-transects of c.30km have been surveyed. These will be stratified into smaller sub-transects and analysed accordingly.

Habitat survey training is scheduled to begin in June 2008.

The timings for some of the activities under this output should be adjusted in accordance with the revised start date for the overall project.

Output 2. Understanding of relationship between forest condition and species response yields practical outcomes

There is little progress to report on these activities, except to say that the data collected by the ongoing survey work will be central to ultimately understanding the relationship between forest condition and species' responses.

Output 3. Plan for monitoring key taxonomic groups established

During this period, most of the work relevant to this output has focussed on establishing contact with individuals and organisations that are expert in surveying particular taxonomic groups.

The South East Asian team of Kew has initiated botanical surveys, with support from Bogor Herbarium. These surveys are ongoing and conducted by trained staff from the project. There will be further input from Bogor Herbarium, particularly regarding tree inventory surveys at various locations across the site.

Dr David Wells, who has extensive regional ornithological knowledge, has expressed interest in assisting the lead scientist in training staff in bird survey techniques. This training is scheduled to begin in July/August.

Dr Djoko Iskander, the lead herpetologist in Indonesia, has been contacted about the possibility of supporting herpetological surveys at the site.

Technical support for informing forest restoration of degraded/destroyed habitats is being provided by the Forest Restoration Research Unit (FORRU) at Chiang Mai in Thailand.

The timings for some of the activities under this output should be adjusted in accordance with the revised start date for the overall project.

Output 4. Capacity of local staff to undertake monitoring established and secured.

The South East Asian team from Kew has run a training workshop in botanical specimen collection and herbarium techniques. This consisted of a week of class and field-based training followed by a week of field collecting. Twenty members of Harapan Rainforest staff were enrolled on the course, along with one staff member from Burung Indonesia. All participants were awarded certificates of course completion (see Annex 4), while six individuals who showed special aptitude received 'Distinctions', as recommended by the Kew and Bogor Herbarium training staff. Staff from the Bogor Herbarium assisted in the training and collecting.

A hornbill identification training programme has been initiated by the lead scientist and a seconded staff member from Burung Indonesia. This is an ongoing programme to enable as many staff members as possible to be able to survey this group of species, identified as important to the forest restoration process. The training consists of class-based training (visual and vocal identification), followed by a week of practical training and collecting field data from line transects. In total, twelve project staff have undergone training in hornbill line transect surveys, and have carried out four hornbill surveys to date (see Annex 5). Five of these twelve individuals also achieved 'Distinctions' from the Kew botanical training programme.

The timings for some of the activities under this output should be adjusted in accordance with the revised start date for the overall project.

Output 5. Research and training centre established

The lead scientist, David Lee (see Annex 3 for CV), was appointed in mid January and on site by early March. The Yayasan KEHI has a staff of c.60 from which survey and monitoring team members will be selected. To date, six individuals have been identified with an aptitude for biological survey work. Other staff members will be rotated into the team to provide a broad base of expertise in survey work. A GIS and remote sensing expert has also been appointed and a field biologist has been seconded from Burung Indonesia.

Contact has been made with various potential collaborators and interest has been expressed in undertaking research work on the site:

Fangyuan Hua, from the School of Natural Resources and Environment, University of Florida. will be visiting the site in May-August 2008 to conduct her PhD research. She will be assessing post-logging ecosystem recovery, specifically on under-storey bird communities.

The lead scientist's research links with Manchester Metropolitan University (Drs Martin Jones and Barry Stevens-Wood) have led to discussions with the School of Biology, Chemistry and Health Science about MSc Conservation Biology students visiting the site to conduct their research alongside project staff. It is hoped this collaboration could develop to include a biodiversity training programme for Harapan Rainforest staff.

Dr Djoko Iskander, Department of Biology, Bandung Institute of Technology, and the lead herpetologist in Indonesia, has been contacted about assisting in amphibian and reptile surveys at the site. He has a long-standing interest in Sumatra, and is currently looking at the effects of logging/human disturbances on amphibian populations in Sumatra and Borneo. Consequently, he is interested in conducting research in the area.

Dr David Wells, author of The Birds of the Thai-Malay Peninsula has expressed in an interest in becoming involved in the bird surveys conducted at the site. His regional expertise would be invaluable to the project, including field training of project staff, and he has been contacted about involvement with the project later in 2008.

The World Pheasant Association (WPA) has expressed a strong interest in supporting any research on galliformes at the site. Discussions with Dr Philip McGowan, Director of the WPA, have been very positive, with the possibility of developing collaborations on the role of habitat disturbance and restoration on this important and threatened group of bird species that can also act as indicator species for the 'health' of lowland forest habitat.

The timings for some of the activities under this output should be adjusted in accordance with the revised start date for the overall project.

3.2 Progress towards Project Outputs

Output 1. Baseline biodiversity inventory completed

Formal survey work has only just commenced with a short botanical survey undertaken by the South East Asian team from Kew. This has resulted in the early establishment of a specimen collection and early training in collection techniques for project staff. Four hornbill line transect surveys have been completed along c.30km routes cut in 2005 for rapid assessment. The completion of a preliminary landcover classification from satellite imagery has provided the basis for stratifying the wider survey of vegetation, trees and birds that will be commenced in the next phase.

The indicators for this output remain appropriate and realistic and the assumptions continue to be upheld.

The baseline survey is the most important output from this project and the one that is least likely to fail. It may not be possible to complete a full survey for all the taxonomic groups envisaged, but it is fully expected that collaborations with other researchers will result in coverage of groups not listed.

Output 2. Understanding of relationship between forest condition and species response yields practical outcomes**.**

Little progress has been made against this output. The project is currently considering whether to modify the details of this output and will come back to Darwin staff for their views if any changes are planned.

Output 3. Plan for monitoring key taxonomic groups established

Substantial progress has already been made into reviewing appropriate methods for monitoring, drawing on the experience of the project leader in West Africa and the lead scientist in the Philippines.

It is now considered that appraisal of individual staff activities by qualified trainers would be a more appropriate way of indicating the success of the field manual, rather than attempting to make statistical comparisons of two datasets that may vary for a number of uncontrollable reasons. Otherwise, the indicators remain appropriate.

Output 4. Capacity of local staff to undertake monitoring established and secured.

Good progress has already been made in training key staff of Yayasan in biological survey methods with the successful completion of a botanical collection training programme and initiation of a hornbill survey training scheme. The current assumption seems entirely reasonable since these staff are local to the area.

Output 5. Research and training centre established

At present, activities are based out of the site headquarters situated on the edge of the concession area. Plans are underway to establish forward camps at various sites around the concession to improve access to the site. Preparation of one such site has begun.

There is a steady stream of interest in undertaking research in the concession area and some work has already commenced.

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	Total planned from application
5	10 Indonesian staff trained in survey techniques to conduct field data collection for baseline survey and monitoring over three years.						10
6A	30 people trained during course of 3 training programmes (one per year) of 4 weeks duration. Covering design, basic survey techniques, and analysis. 12 weeks in total						30
6B	12 weeks in total	2				2	12
7	5 training manuals produced to cover survey design, survey techniques for birds, mammals and trees, data analysis	0				0	5
8	18 weeks in total for J Lindsell and others	2				2	18
9	Data supplied for the management plan for forest						1
10	1 field manual covering elements of monitoring protocol for the forest						1
11A	1 paper published with initial observations from survey work						1
11B	3 papers submitted to journals covering forest inventory, wildlife-habitat relationships and human impacts						3
12A	4 databases developed covering wildlife, habitat, human	2				2	4

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Total planned from application
	impacts (including logging history) and geographic information						
13A	3 collections established covering essential trees and shrubs, invertebrates and herptiles	1				1	3
13B	3 national collections enhanced (herbaria, invertebrates and herptiles)	1				1	3
14B	3 conferences attended	1				1	3
15A	6 national press releases, one in each year						6
15B	6 local press releases, two per year						6
15C	6 UK national press releases, one at the beginning and one in year two						6
17A	1 research station website to be established						1
18A	1 in each year						1
18B	1						1
19A	1 in each year	1				1	1
19B	1						1
20	£46,205						
21	1 research and training centre established in the forest						1
22	Up to 1,000 habitat and wildlife monitoring plots (0.2 ha in size) established throughout the forest						
23	£208,400 raised from other sources						

Table 2 Publications

Type * (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £

3.4 Progress towards the project purpose and outcomes

All activities reported above are necessary components required to deliver the overall purpose and as such represent significant progress. A memorandum of understanding has been signed with the local partner organisation charged with delivering this Darwin project. The appointment of a lead scientist early on in the project has been key in ensuring that the project will be delivered. The baseline inventory has been commenced with the visit from Kew Herbarium, who have also initiated the training programme to ensure that ongoing work is sustainable.

At present, the assumptions are upheld, and there is a high level of political support for the current work.

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

A range of activities undertaken by the wider Harapan Rainforest Initiative, such as the refurbishment of a base camp, installation of communications, the development of teams for area management and forest patrolling and co-ordination with local forest and government agencies, has resulted in a significant reduction in the unsustainable rate of habitat loss through illegal logging and forest clearances. The presence of Darwin-funded research workers in the forest undertaking monitoring activities will have helped improve the conservation status of the site, too.

4. Monitoring, evaluation and lessons

A memorandum of understanding has been signed between the RSPB and the Yayasan KEHI. This specifies the commitment of Yayasan to deliver the requirements of the Darwin project as laid out in the second stage application. It includes clear reporting requirements of both activities and finances. The Lead Scientist has been appointed as an RSPB member of staff seconded to the Yayasan KEHI. He is under direct line management from the Project Leader in the UK and as such is in regular email and telephone contact with him. As his line manager, the Project Leader is responsible for ensuring he is adequately trained and qualified, and undertakes regular appraisals with him. Since he remains a member of staff of the RSPB, this ensures that he remains accountable to the lead organisation. He is required to report regularly on project progress to RSPB.

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

N/A

6. Other comments on progress not covered elsewhere

As agreed with Darwin, the start date of this project was delayed by some months. This was partly due to the need to ensure an adequate level of organisation on the ground and partly due to a need to ensure a good quality appointment to the role of lead scientist. Some further delay is expecting in the next phase to ensure that the lead scientist has an opportunity to acquire the necessary language skills to operate independently on site.

The bureaucratic processes involved in establishing the project in-country have also been slow as many aspects of the work are novel and institutional linkages sometimes unclear. However, good linkages have now been established with relevant authorities as outlined above and support for the project is high. The issue, in February, by the Ministry of Forests of the first ever Ecosystem Restoration licence in Indonesia covering the southern half of the Harapan Rainforest area confirms that political support has led to practical results.

7. Sustainability

The profile of the wider Harapan Rainforest Initiative within Indonesia is very high, and was showcased at the COP 13 of the UNFCC in Bali in December 2007. Area management is in place and has demonstrated its effectiveness in reducing threats to the forest and habitat. As discussed in the original application, the project partners in this conservation project are establishing a trust fund that will provide ongoing revenue for the management of the site including a research and training station.

8. Dissemination

So far, little publicity has been generated for the Darwin-funded project.

The wider Harapan Rainforest Initiative, however, has been widely disseminated through discussions with interest groups, government agencies, research and academic institutes and work with the Indonesian MoF. The initiative was show-cased at the UNFCC in Bali in December 2007 and benefited from a formal press launch and licence award ceremony in Jakarta in February presided over by the Minister of Forests. The initiative was also promoted at the UNEP Business for the Environment conference in Singapore in April 2008.

Ian Rowland, the RSPB staff member charged with liaison with the Harapan Rainforest, gave a radio interview to Indonesian station SmartFM, broadcast in every provincial capital in Indonesia, on the Kew training programme, and the Darwin support for the intiative, in March 2008.

9. Project Expenditure

Table 3 Project expenditure during the reporting period (Defra Financial Year 01 April to 31 March)

Item	Budget (please indicate which document you refer to if other than your project application) *(Note 1)*	Expenditure	Balance
Rent, rates, heating, overheads etc			
Office costs (eg postage, telephone, stationery)			
Travel and subsistence			
Printing			
Conferences, seminars, etc			
Capital items/equipment			
Others			
Salaries (specify) *Staff costs in Sumatra* *Project officer costs in UK* *RSPB staff cost in UK*			
TOTAL			

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

Note 1.
The budget shown is the revised version agreed.

Note 2
The overspend on travel and subsistence was the result of unexpected extra costs involved in the setting up of the project and in providing support to the Senior Scientist whilst in the UK. This was offset by lower than expected spend on salaries.

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

Probably not applicable at such and early stage in the project.

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
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*		*(report on any contribution towards positive impact on biodiversity or positive changes in the conditions of human communities associated with biodiversity eg steps towards sustainable use or equitable sharing of costs or benefits)*	*(do not fill not applicable)*
Purpose Biodiversity inventory undertaken and monitoring methods and capacity developed for management of one of the last remaining lowland forests in Sumatra	-Management plan is informed by and incorporates biodiversity inventory and monitoring strategy	Lead scientist appointed, training programme commenced, appointment of survey staff commenced, and inventory work commenced (botanical).	Identification and appointment of further survey staff. Training in other survey techniques. Establishment of survey design and commencement of survey work in other taxa.
Outputs 1. Baseline biodiversity inventory completed	-Species lists compiled for birds, mammals, trees, herptiles, Lepidoptera, herbaceous plants -Accumulation curves approach asymptote, even geographical coverage achieved, abundance estimated for some groups and habitat structure and condition measured - Specimens and photographic records collected for some groups	Database compiled of past record of birds, trees and mammals. Botanical collection commenced with a collection of plants during a visit by Kew Herbarium. Indicators remain appropriate.	
-All survey equipment purchased by end of yr 1.		Binoculars, weather station, field recording equipment, reference books and recordings, sound recording equipment purchased in UK. Other items to be purchased in Indonesia.	

-Training workshop for survey staff with input from UK expertise in first four months of yr 1.		Botanical collection training provided by team of four experts from Kew Herbarium in year 1. Training in hornbill survey methods commenced.
-Completed datasheets from surveys in multiple plots across forest by end yr 1 and 2.		
-Herbarium storage facility constructed yr 2. Samples added yrs 2-3.		Some samples have already been collected. Methods for long-term storage on site being considered. Specimens are being deposited at the Bogor Herbarium.
-Computer facilities and storage space for data repositories established yr 2.		
-Field data collection 80% completed yr 2. Data computerised for analysis yr 2. Baseline survey report published yr 3.		Timings should be adjusted in accordance with revised start date for the project. Data collection mostly done by year 3 and report published in year 4.
Output 2. Understanding of relationship between forest condition and species response yields practical outcomes	-Models of influence of forest condition predict distributions in other parts of the forest with statistical significance -Management prescriptions developed -Key outstanding research needs identified	The project is considering whether the details of this output need to be modified.
-Historic data on forest condition and logging sourced yr 1. Data accessible and computerised yr 2.		Timings should be adjusted in accordance with revised start date for the project.
-Predictive models developed yr 3. Models tested yr 3.		Timings should be adjusted in accordance with revised start date for the project.
-Report published yr 3. Research papers in review and submissions for publication acknowledged yr 3.		Timings should be adjusted in accordance with revised start date for the project.
Output 3. Plan for monitoring key taxonomic groups established	-Monitoring protocols conform with published best practise and agreed by independent relevant taxa experts -Field manual test data statistically indistinguishable from baseline data.	Indicators remain appropriate though statistical testing of the manual would be unnecessary.
-Initial consultation of literature and taxa experts made in yr 1. Detailed		A range of experts have already been contacted and literature consulted. Timings should be adjusted in accordance with revised start date for the

discussion in yr 2. Review in yr 3.		project.
-Draft monitoring manual in review yr 1. Final draft produced yr 2.		Timings should be adjusted in accordance with revised start date for the project.
-Trainee surveyors test protocols in field in yr 2. Adjustments made to manual yr 3.		Timings should be adjusted in accordance with revised start date for the project.
Output 4. Capacity of local staff to undertake monitoring established and secured	-Majority of monitoring data collected by project-trained staff in accordance with protocols	Botanical training has already been undertaken.
-Local staff trained for baseline surveys yr 1.		Botanical training already undertaken, and training in hornbill survey methods commenced. Timings should be adjusted in accordance with revised start date for the project.
Monitoring training programme for project staff yrs 2 and 3.		
Comparison of trainee data with baseline data yrs 2 and 3.		Comparison of trainee data may not be as appropriate as in-the-field assessment by trainers.
Output 5. Research and training centre established	-Regular collaboration with visiting researchers by year 3 -Regular training courses being held by year 3 -International recognition achieved	
-Lead scientist appointed early in yr 1. Remainder of staff during yr 1.		Lead scientist has been appointed and on site since March 2008. Some survey staff have also been selected.
-Initial training provided in yr 1. Rolling programme developed by yr 2.		
-Initiation of international research collaborations yr 3.		A number of international collaborations are being considered, and some contacts have already been made.

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 Biodiversity inventory undertaken and monitoring methods and capacity developed for management of one of the last remaining lowland forests in Sumatra	-Management plan is informed by and incorporates biodiversity inventory and monitoring strategy	-Interim management plan for "the forest"	Political changes in Indonesia do not impede management of "the forest" by the conservation consortium
Outputs 1. Baseline biodiversity inventory completed	-Species lists compiled for birds, mammals, trees, herptiles, Lepidoptera, herbaceous plants -Accumulation curves approach asymptote, even geographical coverage achieved, abundance estimated for some groups and habitat structure and condition measured - Specimens and photographic records collected for some groups	Field data sheets and computerised database of records. Biodiversity survey reports. Specimen and photographic collections (including herbarium).	Political conditions or natural disasters do not prevent fieldwork
2. Understanding of relationship between forest condition and species response yields practical outcomes	-Models of influence of forest condition predict distributions in other parts of the forest with statistical significance -Management prescriptions developed -Key outstanding research needs identified	Report on predictive modelling Research reports and papers	

3. Plan for monitoring key taxonomic groups established	-Monitoring protocols conform with published best practise and agreed by independent relevant taxa experts -Field manual test data statistically indistinguishable from baseline data.	-Accreditation from relevant experts -Field manual comparison report	
4. Capacity of local staff to undertake monitoring established and secured	-Majority of monitoring data collected by project-trained staff in accordance with protocols	-Training assessment reports, field data sheets	Sufficient numbers of trained staff are retained by the project
5. Research and training centre established	-Regular collaboration with visiting researchers by year 3 -Regular training courses being held by year 3 -International recognition achieved	-Visitors book -Training course enrolment records -Coverage in independent media	
Activities 1. Baseline inventory	**Activity Milestones** -All survey equipment purchased by end of yr 1. -Training workshop for survey staff with input from UK expertise in first four months of yr 1. -Completed datasheets from surveys in multiple plots across forest by end yr 1 and 2. -Herbarium storage facility constructed yr 2. Samples added yrs 2-3. -Computer facilities and storage space for data repositories established yr 2. -Field data collection 80% completed yr 2. Data computerised for analysis yr 2. Baseline survey report published yr 3.		**Assumptions**
2. Improvement of understanding of forest condition–species response link	-Historic data on forest condition and logging sourced yr 1. Data accessible and computerised yr 2. -Predictive models developed yr 3. Models tested yr 3. -Report published yr 3. Research papers in review and submissions for publication acknowledged yr 3.		

3. Planning of monitoring	-Initial consultation of literature and taxa experts made in yr 1. Detailed discussion in yr 2. Review in yr 3. -Draft monitoring manual in review yr 1. Final draft produced yr 2. -Trainee surveyors test protocols in field in yr 2. Adjustments made to manual yr 3.	
4. Capacity-building	-Local staff trained for baseline surveys yr 1. Monitoring training programme for project staff yrs 2 and 3. Comparison of trainee data with baseline data yrs 2 and 3.	
5. Centre establishment	-Lead scientist appointed early in yr 1. Remainder of staff during yr 1. -Initial training provided in yr 1. Rolling programme developed by yr 2. -Initiation of international research collaborations yr 3.	

Annex 3 CV of David Lee

Annex 4. Sample certificate of botanical training awarded to project staff

Annex 5. Project staff undertaking hornbill survey work in the field.

Annex 6. Report from Kew on Plant Collecting Course