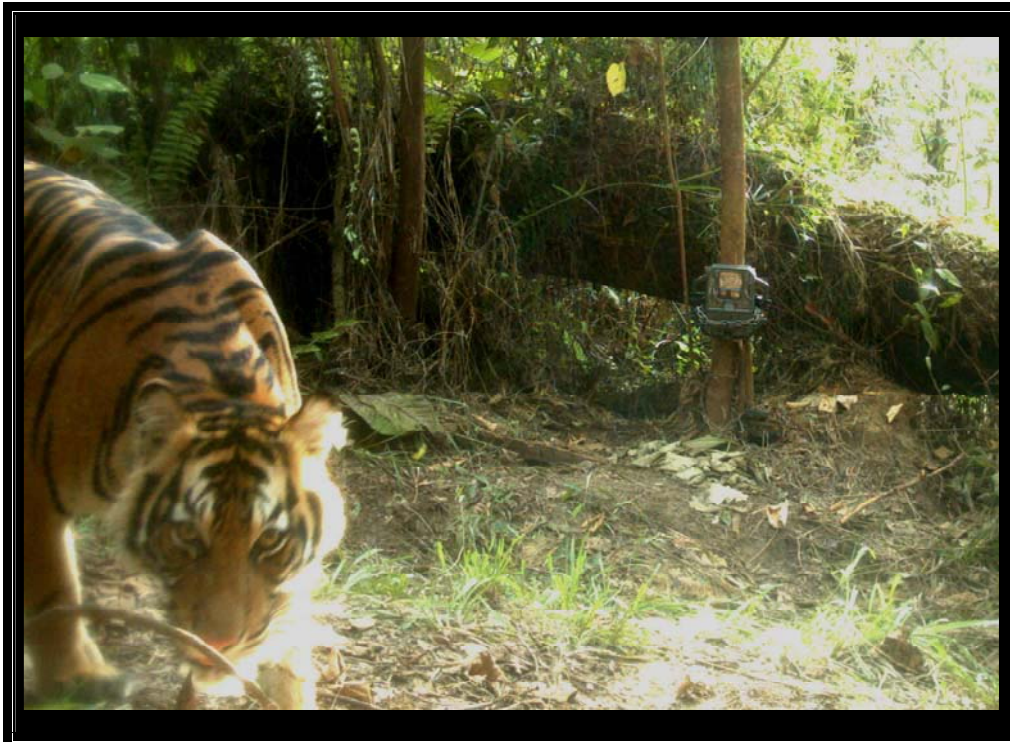


Biodiversity inventory and Monitoring for Conservation of Threatened Sumatran Forest



Final Report



Submitted by



The Royal Society for the Protection of Birds
The Lodge, Sandy, Bedfordshire, SG19 2DL, UK

in partnership with:



March 2011

ENQUIRIES CONCERNING THIS APPLICATION

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March 2011

Darwin Initiative – Final Report

(To be completed with reference to the Reporting Guidance Notes for Project Leaders (<http://darwin.defra.gov.uk/resources/reporting/>) - it is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

Darwin project information

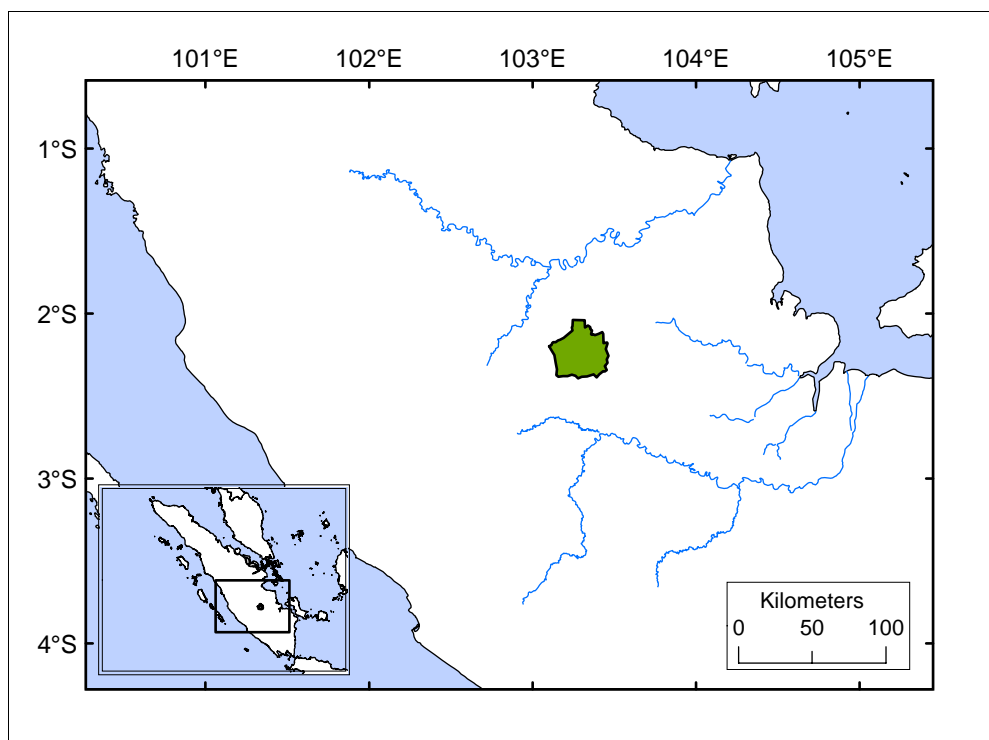
Project Reference	162/16/005
Project Title	Biodiversity inventory and monitoring for conservation of threatened Sumatran forest
Host country(ies)	Indonesia
UK Contract Holder Institution	The Royal Society for the Protection of Birds (RSPB)
UK Partner Institution(s)	Royal Botanic Gardens, Kew
Host Country Partner Institution(s)	Burung Indonesia
Darwin Grant Value	£259,159
Start/End dates of Project	1 st December 2007 – 30 th November 2010
Project Leader Name	Jeremy Lindsay (Senior Conservation Scientist, RSPB)
Project Website	www.harapanrainforest.org
Report Author(s) and date	David Lee (Senior Scientist), Jeremy Lindsay, Ian Rowland February 2011

1 Project Background

Sundaic lowland forest is one of the most biodiverse habitats in the world yet one of the most threatened. Few areas of unprotected forest remain and exhausted logging concessions are at risk of landuse conversion. In 2007, Harapan Rainforest (HRF) in southern Sumatra (Figure 1) became the first production forest to be managed for ecosystem restoration in Indonesia.

This project aims to undertake a biodiversity inventory and establish a sustainable monitoring system for HRF, which will help guide and monitor the management of one of the last remaining Sumatran lowland forests. At the end of the project, fully trained staff and a research centre will ensure sustainability.

Figure 1: Location of Harapan Rainforest (in green), Sumatra, Indonesia



2 Project support to the Convention on Biological Diversity (CBD)

The project was directly relevant to a number of CBD Articles – most notably Articles 7 (Identification and Monitoring), 8 (In Situ Conservation), 10 (Sustainable Use of Components of Biological Diversity) and 12 (Research and Training), but also Articles 6 (General Measures for Conservation and Sustainable Use), 11 (Incentive Measures) and 13 (Public Education and Awareness). For more detail, please see Annex 3.

In addition, it related to the Thematic Programme on Forest Biodiversity, and the following Cross-Cutting Issues:

- Communication, Education and Public Awareness
- Economics, Trade and Incentive Measures
- Forest Biodiversity
- Impact Assessment
- Identification, Monitoring, Indicators and Assessments
- Protected Areas
- Sustainable Use of Biodiversity

Project activities have contributed to the implementation of the Indonesian Biodiversity Strategic Plan and the national Biodiversity Action Plan (jointly called the IBSAP).

The IBSAP has five objectives, and the project has contributed to four of them as summarised in Table 1.

Table 1: Project contributions to IBSAP objectives

Objective and relevant goals	Project contribution to goal
<p>Objective: To develop the quality of Indonesian individuals and society who are concerned with the conservation and sustainable use of biodiversity.</p> <p>Goal: There is a shift in behaviour and attitude so as to create quality individuals and communities who are concerned and empowered and are able to actively participate in the management and conservation, utilisation and conservation of biodiversity at the national, regional and local level.</p>	<p>Trained 40 Indonesian project staff in various biodiversity survey techniques.</p> <p>Translated a manual entitled <i>How to plant a forest: the principles and practice of restoring tropical forest</i> from English into Indonesian.</p> <p>Disseminated forest biodiversity conservation messages to both to the population around Harapan and nationally, through a range of meetings, media channels and conferences.</p>
<p>Objective: To strengthen resources for supporting the development of science, technology and the application of local wisdom for the conservation and sustainable use of biodiversity.</p> <p>Goal: Implementation of a national biodiversity census during 2004–2007 to be used as a foundation for planning sustainable management of biodiversity for the period 2009–2020.</p>	<p>Species lists, abundance estimates for key species, and reference collections of trees and shrubs, invertebrates and herptiles created for Harapan Rainforest (which contains 20% of the remaining lowland dry-ground rainforest in Sumatra.</p> <p>Enhanced three national collections.</p> <p>Developed four databases covering wildlife, habitats, human impacts and geographic information.</p> <p>Revised biodiversity-monitoring protocols in collaboration with the Ministry of Forests.</p> <p>Established 1,000 habitat and wildlife monitoring plots throughout the forest.</p>
<p>Objective: To reduce and stop the rate of biodiversity degradation and extinction at the national, regional and local levels within the 2003–2020 period along with rehabilitation and sustainable use efforts.</p> <p>Goal: Reduction in the deforestation rate of natural forests to zero level in 2020, beginning in 2003 for lowland forests in Java, Sumatra and Kalimantan.</p> <p>Goal: Rehabilitation of natural forest at an average annual rate of one million hectare, starting in 2004</p>	<p>Developed systems to monitor species harvested by the local population.</p> <p>Carried out a baseline survey and developed a research strategy to enable prioritisation of species and habitats for recovery or restoration.</p>
<p>Objective: To empower institutional, policy and law enforcement arrangements at the national, regional, local as well as a customary level so as to be effective and conducive for the management of biodiversity in a synergic, responsible, accountable, fair, balanced and sustainable manner.</p> <p>Goal: Elimination of illegal logging and harvesting of flora and fauna, including their illegal trade, beginning in 2004.</p> <p>Goal: Improvement in the capacity and competence of regional government officials in conducting biodiversity valuation as an instrument for</p>	<p>Established Harapan Rainforest as a research centre for species conservation and ecosystem restoration studies, and as a resource for undergraduate students.</p>

Objective and relevant goals	Project contribution to goal
<p>developing management policies at the local and regional levels.</p> <p>Goal: Improvement in the capacity of government and communities, at the national and regional level, to sustainably use biodiversity, but ensuring conservation priorities.</p>	

The project worked closely with the Indonesian Ministry of Forestry (MoF) since this is the government office that ecosystem restoration licence holders report to.

The project has worked with the local government nature conservation office on tackling illegal wildlife trade and CITES-related conservation issues.

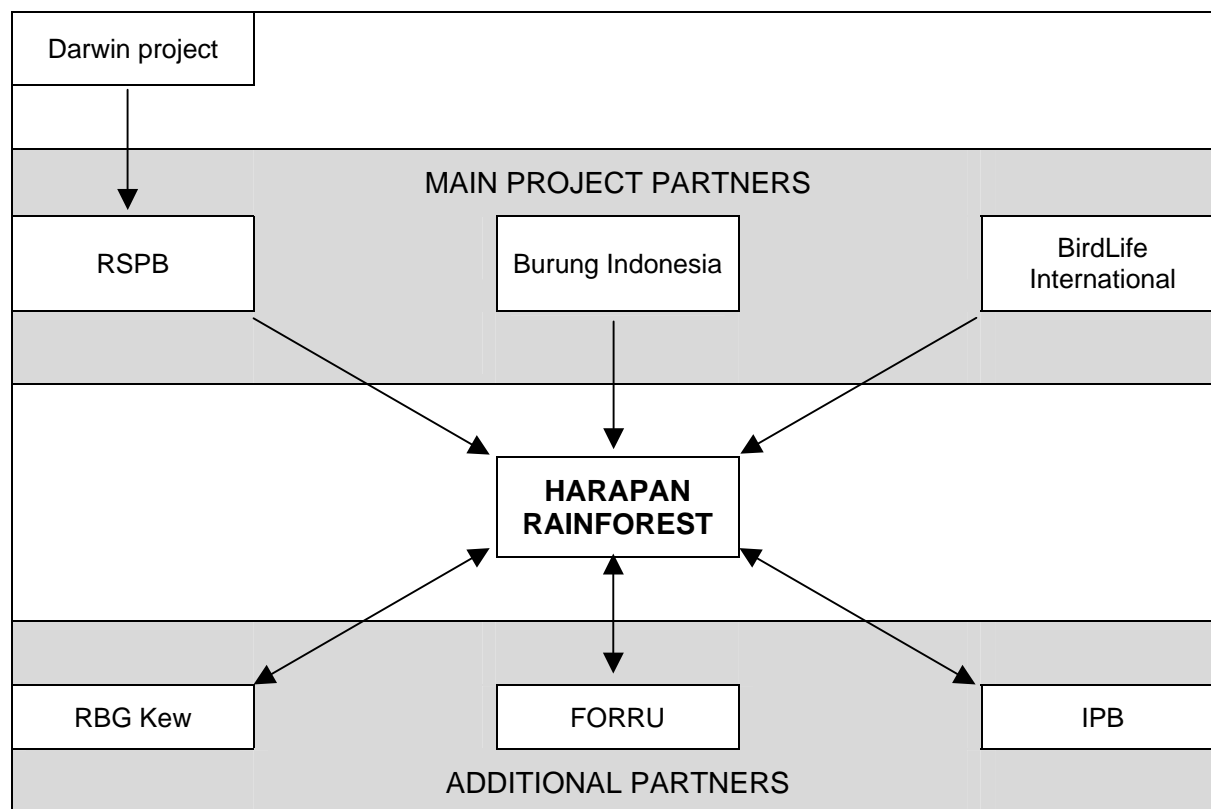
3 Project Partnerships

UK and host country partnership:

The project has been delivered by the key partnership between RSPB, Burung Indonesia and BirdLife International working through the HRF management structure (Figure 2). The project's fieldwork, survey efforts and staff development have been well supported within the HRF management structure. In turn, the project has successfully supported the wider aims of HRF. Links with key external organisations have also developed well (see below).

A number of key staff from RSPB have visited HRF, including Jeremy Lindsell (Darwin project leader; Senior Conservation Scientist), David Gibbons (Head of Conservation Science), Dieter Hoffmann (Head of Global Programmes), Ian Rowland (Tropical Forest Conservation Manager) and Geoff Welch (International Management Plans Adviser). Marco Lambertini from BirdLife has been to site, and both Sukianto Lusli and Agus Budi Utomo have visited. There are frequently other staff from Burung Indonesia visiting.

Figure 2: Flow diagram of project partner involvement with Harapan Rainforest



Memorandum of Understanding:

In 2007, a memorandum of understanding (MoU) was signed between the RSPB and Yayasan Konservasi Ekosistem Hutan Indonesia (KEHI) for the delivery of this Darwin Project. Yayasan KEHI is the foundation set up under Indonesian law by the partner consortium of RSPB, Burung Indonesia and BirdLife International to manage the HRF ecosystem restoration concession. Under the terms of this MOU, funds were transferred to Yayasan KEHI to deliver the work programme. Through the course of the project this has worked well and resulted in a great deal of experience in developing an international conservation and research programme within Indonesia.

Mid Term Review:

In August 2009, there was a Darwin Mid Term Review (MTR) of the project. This was very positive, recognising the efficient and effective manner in which it was being delivered and reporting on excellent evidence of long-term sustainability. A revised log-frame was developed and agreed. The MTR advised that the project’s targets for standard measures should be indicative rather than definitive, optimising the achievement of the project’s purpose.

Key organisations:

Royal Botanic Gardens (RBG) Kew: The Southeast Asia team has collaborated in a number of areas including provision of training, participation in data collection under their expeditionary programme and identification of plant specimens,. Members of the Southeast Asia team ran a two-week training course in 2008 covering plant collection and herbarium techniques, while also undertaking some botanical collection. Duplicate specimens collected at HRF are held at RBG Kew, who also help with their identification. Staff at RBG Kew have provided technical support in developing the on-site herbarium and provide ongoing guidance in plant collecting and vegetation classification, particularly in the development of detailed vegetation mapping approaches to help identify areas requiring particular restoration prescriptions.

Forest Restoration Research Unit (FORRU), Chiang Mai, Thailand: FORRU has provided expertise in forest restoration and contributed to developing project capacity. Dr Stephen Elliott, co-

founder of FORRU, visited HRF to provide training in phenology surveys and rapid forest assessments, and supported two successful funding proposals to the International Association for Bear Research & Management (IBA) for work on Malayan Sun Bear (*Helarctos malayanus*) in HRF. HRF staff have presented project work at a FORRU conference in Chiang Mai, Thailand, and arranged the translation into Indonesian of the key FORRU publication *How to Plant a Forest - The Principles and Practice of Restoring Tropical Forest*. This is now available on the websites of FORRU (http://www.forru.org/FORRUEng_Website/Pages/enghome.htm) and HRF (<http://www.harapanrainforest.org>) and as an ebook (see Annex 36). The project's Lead Scientist on site, David Lee, met again with Stephen Elliott at the 2010 International meeting of the Association for Tropical Biology and Conservation (ATBC) and later in Chiang Mai to help facilitate a nursery and restoration training course for key HRF in Thailand in March 2011.

Bogor Agricultural University (Institut Pertanian Bogor - IPB): As the leading institution in Indonesia for natural sciences, IPB has provided the project with expertise in biodiversity research to help develop the training programme and undertake herpetile surveys. This collaboration has been formalised through regular meetings and resulted in HRF staff giving presentations at IPB and undergraduate students of the Department of Forest Resources, Conservation and Ecotourism conducting research projects at HRF. Through informal agreements with key IPB staff, Drs Yeni A. Mulyani and Mirza Dikari Kusri, it is anticipated that each year undergraduates of IPB will carry out their project work at HRF. Dr Mirza also provides assistance in identifying herpetiles from photos in the HRF database.

Other institutions, organisations:

Bogor Herbarium of the Indonesian Institute of Sciences (Lembaga Ilmu Pengetahuan Indonesia – LIPI): Leading botanists and plant taxonomists in Indonesia have supported the RBG Kew training and plant collection activities at HRF. Bogor Herbarium holds duplicates of HRF herbarium specimens for identification. Dr Teguh Triono (Head of the Taxonomy and Research Group) and Mr Ismail (Taxonomist) helped HRF translate the technical parts of FORRU's book into Indonesian and supported one of the successful HRF sun bear research projects. Ismail has also visited HRF to help identify herbarium specimens and conduct a rapid inventory of tree species. A team from LIPI working alongside staff from the Indonesia Office of Environment (Kantor Lingkungan Hidup - KLH) and HRF has conducted botanical surveys at HRF to support two important projects: the International Tropical Timber Organization (ITTO)-CITES project on ensuring sustainable international trade in *Gonystylus* species; and a tree diversity comparative study across different land cover types in lowland Indonesia.

Forestry Research and Development Agency (FORDA): FORDA has provided support to the project as a centre of excellence for forestry science and technology that supports sustainable forest development in Indonesia, and an Indonesian government institution under the MoF. Staff from FORDA have visited HRF to conduct biodiversity and forest management monitoring in a plot set-up under the previous logging concession. Mr Uhaedi Sutisna a taxonomist at FORDA has visited HRF to assist in tree species identification, provide some training to forestry staff and initiate forest plot surveys with HRF. Discussions are underway to try to secure his longer-term involvement with the on-site herbarium.

Local and national universities: A programme of presentations and follow-up discussions identified a number of universities as potential project collaborators. Following guidance from the Annual and Mid-Term Reviews, the project focuses on working with four universities: Jambi (UNJA), Andalas in Padang (UA), Muhammadiyah (UM) in Palembang, as well as IPB (see above). Students from UM have been awarded internships at HRF, while students from UNJA and UM have conducted undergraduate projects at HRF and received formal training courses in basic biodiversity surveys and conservation. David Lee has worked closely with Dr Bambang Hariyadi, Head of the Faculty of Biology at UNJA, to develop undergraduate projects that support HRF's conservation work, and provide project resources to support these student studies. Students of UNJA will continue to conduct undergraduate projects at HRF after project end. Dr Bambang Irawan at UNJA provides input to nursery and restoration techniques focusing on the Vulnerable Borneo Ironwood (*Eusideroxylon zwageri*). David Lee and other HRF staff have given lectures at UNJA. A Memorandum of Agreement (MoA) has been drafted between HRF and UA. Mr Nasri

Janra, a lecturer at UA, assists an ongoing study of understorey bird populations in mixed forest habitats at HRF. Dr Novarino Wilson, the IUCN Tapir Specialist Group's country coordinator, supports project research on Malayan Tapir (*Tapirus indicus*) at HRF.

Centre for the Conservation of Natural Resources (Balai Konservasi Sumber Daya Alam - BKSDA): As the government office responsible for nature conservation, the project has developed a close working relationship with BKSDA-Jambi. This office has supported two successful research projects at HRF and helped with identifying herptiles from photos. David Lee has given training presentations to BKSDA staff to help build capacity in biodiversity monitoring, and refined BKSDA strategies for releasing confiscated Sunda pangolins (*Manis javanica*) and rehabilitated sun bears; both activities took place in HRF. The project has encouraged BKSDA to develop a communication network between conservation organisations in the local region.

Wildlife Conservation Society – Indonesia Program (WCS-IP): Has supported the large mammal work of the project by providing two HRF staff training courses in survey methods, specifically for tigers and elephants, basic data analysis, and mammal ecology and conservation. Hariyo Wibisono, the Tiger Conservation Programme Coordinator of WCS-IP supports ongoing cat conservation work at HRF, including a proposed Research MSc. Donny Gunaryadi, Asian Elephant Programme Coordinator of WCS-IP, alongside Drs Simon Hedges and Martin Tyson (WCS-Elephant Programme Coordinators), supports the elephant work at HRF. Long-term collaborative elephant surveys, integrated with the island-wide elephant conservation programme, are planned between HRF and WCS-IP, with a MoU being finalised in spring 2011.

The Environmental Leadership & Training Initiative (ELTI): ELTI contributes to the conservation of forest ecosystems and biodiversity in tropical regions of Latin America and Asia. In part, it achieves this by providing individuals and organisations with the knowledge, tools and skills to advance the protection and adequate management of these systems. David Lee met and participated with David Neidel, Coordinator of ELTI's Asia Training Programme, in a forest restoration network-developing workshop at the 2010 International meeting of the ATBC. Since then, the project has helped arrange an ELTI-led training programme in restoration strategies for HRF staff due to take place in spring 2011. This ongoing collaboration will benefit project staff capacity-building and conservation strategies for HRF.

Bornean Sun Bear Conservation Centre (BSBCC), Sabah: Dr Siew Te Wong, Chief Executive Officer of the BSBCC and former co-chair of the Sun Bear Expert Team, under the IUCN/Species Survival Commission's Bear Specialist Group, has helped support two successful sun bear research funding proposals submitted by HRF. He continues to provide advice on sun bear conservation and research, including the recent release of a rehabilitated sun bear in the concession.

Nature Society Singapore (NSS): Members of NSS have visited HRF to help develop a formal agreement between the two organisations. Under this, NSS may be able to provide taxonomic expertise to help support biodiversity research at HRF. NSS is a membership organisation with only one permanent staff member, however it has a body of skilled and engaged members. The NSS board has agreed that it will approach members with specific requests for volunteer support from HRF – including support with taxonomic expertise if required.

Management structure of the Research and Conservation team:

Over the course of the project, the staffing of HRF's research and conservation (R & C) team has developed and expanded from having no on-site staff in 2008 to a team of nine fully trained and experienced, locally-recruited, staff in 2010. The current team comprises two Biodiversity Officers (BOs; Elva Gemita, Irfan Fitriawan; see Annex 7 for their CVs) and seven Research Assistants (RAs).

Over the last three years, two BOs left the project to pursue other careers. In early 2010, Marthy Willy started a PhD in hornbill feeding ecology, with the research based in HRF and supporting work on a key species group for forest restoration and conservation. In mid-2010, Jeri Imansyah joined Yayasan Keanekaragaman Hayati Indonesia (Indonesian Biodiversity Foundation) as a Conservation Specialist supporting the development, monitoring and evaluation of forest

conservation projects in Sumatra. Neither of them would have had these opportunities without the training and development provided by this project.

Harapan Rainforest's GIS Officer and IT Officer, some of whose time was spent working in the on-site herbarium developed during this project, have also been part of the R & C team (in 2009, they were transferred to a Data Management division). Staffing of the herbarium activities is now largely managed by the Executive Head of HRF, and shared between the R & C and Forest Restoration teams.

Of six HRF Forest Patrol staff seconded to the R & C team in 2009, five have been full-time RAs for the last 18 months. To support the expanding monitoring and research activities and to help develop computer-based team skills, two recent graduates (Dedy Rahman, Dani Ramdani; see Annex 7 for their CVs) were recruited to the team as RAs after a three-month internship at HRF during which they were trained in biological field techniques. It is anticipated they will develop into Research Officers capable of helping the BOs manage research activities beyond the lifespan of this project.

4 Project Achievements

4.1 Impact: achievement of positive impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits

Species inventories and research: The headline result from this Darwin project is that a high level of biodiversity remains within a substantially degraded forest site demonstrating that such old logging concessions can remain extremely valuable for biodiversity conservation and warrant efforts to prevent their conversion to alternative landuse. This has positive implications for biodiversity recovery and how this contributes to species conservation in the region. A summary report of the biodiversity surveys and research is presented in Annex 8

More specifically, the project's surveys have generated abundance and population size estimates for some important species, including Agile Gibbon, Malayan Sun Bear, Malayan Tapir, hornbills and Great Argus. Significantly, the Great Argus abundance data, and the survey method employed, will allow conservation assessments of this species, to be based more on actual abundance than their detectability, as has been the case to date. The densities estimates for sun bears and tapirs result from a new use of camera trapping rate data and are a promising development for conservation assessments of these species.

The surveys have contributed important distributional data for Dhole (*Cuon alpinus*; Endangered), Marbled Cat (*Pardofelis marmorata*; Vulnerable), and confirmed the presence of Sunda Clouded Leopard (*Neofelis diardi*) and Binturong (*Arctictis binturong*; both Vulnerable) in the site.

Conversely, the absence of records of Siamang (*Symphalangus syndactylus*; Endangered) from project surveys suggest the species may have either become extirpated since pre-project surveys in 2005 or that it was misidentified during those surveys. In addition, Fishing Cat (*Prionailurus viverrinus*; Endangered) has been removed from HRF's species list following recent debate about its verifiable distribution (Duckworth *et al.* 2009¹). The site record of this species – based on field signs - pre-dated the project.

¹ Duckworth *et al.* 2009. Does the Fishing Cat inhabit Sumatra? *Cat News* 51: 4-9.

An additional impact, though, of this positive conservation outcome is the possibility that biodiversity and populations of important species are becoming concentrated in HRF due to increasing forest loss and land conversion in the surrounding landscape and site isolation. This raises the importance of developing landscape-based approaches to studying species populations and supporting their conservation. The project's achievements in developing skilled staff and a recognised research centre supported by a range of collaborations should benefit this.

Training impact on biodiversity: There is now a functioning, highly trained and capable biodiversity monitoring team in place. This has brought with it an increased sensitivity and

understanding of the importance of biodiversity, which goes beyond the team through regular training and interaction with other HRF staff and stakeholders. Members of local universities, government offices and other NGOs have been exposed to a high level of biodiversity fieldwork and research through their involvement with the project. This wide group of stakeholders and individuals are being influenced by the conservation priorities and legacy the project has put in place.

Research centre, legacy impact on biodiversity: Through HRF's management plan (see Annex 9 for the relevant biodiversity section of the management plan), the conservation of biodiversity is now integrated with wider management issues to help achieve further research and training. Of importance is how this now lays the foundations for monitoring the impacts of management interventions on biodiversity, particularly tracking trends in key species populations and increasing site knowledge to help in priority setting. A greater species-specific understanding will help guide management actions in the future.

4.2 Outcomes: achievement of the project purpose and outcomes

The project's purpose was to undertake a biodiversity inventory and establish a sustainable monitoring system for the HRF initiative, which will guide the conservation management of one of the last remaining lowland forests in Sumatra.

The project made excellent progress towards achieving its purpose and outcomes. In spite of some delays to specific activities in years 1 and 2, by the end of the project we had completed formal baseline surveys and inventories for birds and mammals. These are supported by ongoing or rapid surveys for amphibians and reptiles, fish and trees. Initial surveys of butterflies are supported by a desk-based review producing potential species lists for the site and Sumatra as a whole. Research staff of HRF have been trained fully in the techniques and skills necessary to maintain sustainable monitoring of biodiversity under-pinned by agreed and robust methods.

Other HRF staff, namely from the Forest Patrol and Forestry work divisions, have been well-trained in biodiversity survey approaches relevant to their roles, greatly improving overall understanding in important conservation issues and goals. Representatives from other stakeholders have also participated in aspects of the baseline surveys and training.

Project staff now have much greater access to equipment for collecting good quality and useful biological data, as well as an increase in awareness of online resources that can support their work. Key staff have had the opportunity to attend and participate in conservation and restoration workshops, seminars and symposia, providing opportunities to improve their own understanding and develop local, national and regional links. The two R & C BOs are now involved with national conservation groups – the Harimau Kita ('Our Tiger') conservation forum and the Indonesian Ornithologists' Union (IdOU) – while one of the RAs is now working with local government officials on wildlife trade issues.

The project has engaged with local communities, either directly through informal discussions or more formally through arranged forums and providing information to the Community Development and Government Liaison divisions of HRF. This approach has seen a substantial increase in community awareness in conservation and restoration values during the lifespan of the project. With a newly expanding Community Development division at HRF this will form the basis for helping to make a positive difference to the livelihoods of local communities, including their ability to participate in and benefit from ecosystem restoration, while understanding the value of key species and habitats.

Consequently, although there remain threats to some species and habitats at HRF, understanding of these threats and means for tackling them has increased because of the project.

Better staff, resource and data management is evident at HRF due to the systems put in place and training coming out of this project.

4.3 Outputs (and activities)

Through the MTR, some revisions were agreed to the original outputs and activities. Overall, all the project outputs were achieved (see Annex 1). Key points are:

1. Biodiversity inventory and baseline surveys completed

Species lists have been compiled for the key taxonomic groups – birds, mammals, trees, herptiles and butterflies (see Annex 8, Biodiversity Summary Report). Due to ongoing difficulties of securing long-term botanical expertise at HRF, there is no species list for herbaceous plants.

Following the MTR, it was agreed that asymptotic species accumulation curves were unlikely to be reached during the lifespan of the project due to a lack of capacity and the length of time required to achieve them.

Following the site-wide systematic sampling design, baseline surveys proportionally represented the main land cover types of HRF. A summary of the respective survey efforts is given in Table 2. However, uneven geographical coverage resulted from accessibility problems and safety issues. HRF does not have any good road access, making it extremely difficult to reach some areas, especially with all the field equipment required. There were also occasional localised incidents with illegal loggers in some site areas, making them unsafe to visit.

Data collection has been successful in generating abundance estimates for a number of key species (See Annex 8 - Biodiversity Summary Report).

Table 2: Summary of biodiversity survey effort

Survey		Sites	Effort	Total Effort
Bird points		8	460 points	616 points (78 points repeated 3 times)
Line transects		9	104.6 km (38 transects)	143 km (3 transects repeated twice; 6 transects repeated 3 times)
Camera traps	Random	8	42 locations	1,265 camera days
	Fixed	10	32 locations	898 camera days
Habitat plots		8	460	460
Gibbon points		5	30	120
Recce surveys		8	~200 km	~200 km

The on-site herbarium holds 212 specimens, with duplicates held either at RBG Kew or Bogor Herbarium. Photographic records have been compiled for herptiles and butterflies, and have been used to identify species and add them to the site list, while photos of mammals and birds have been collected to help with training in species identification and supporting media outputs.

2. Plan for monitoring selected taxonomic groups established

All biodiversity monitoring protocols conform to published best practice and were agreed by independent relevant taxonomic experts by year 2. These are in place to be followed after project end for monitoring species' responses to management interventions as outlined in the management plan.

In September 2010, the MoF presented new requirements that, although not completely appropriate for ecological monitoring, have at least evolved to consider better approaches, in part through the project's indirect engagement with them.

However, one difficulty in fulfilling this output was developing open and regular communication with the Ministry of Forestry about improving their ecosystem concession ecological monitoring requirements.

3. Focused ecological research to support baseline inventory and monitoring activities

The research strategy drafted in year 1 laid the foundations for guiding focused research activities during the project (see Annex 10). This remains the guiding document post-project. Internal studies have focused on hornbills, sun bears, gibbons and large mammals, while external projects are guided to consider important seed dispersers, threatened species and their responses to management interventions.

Additional research funds were secured during the project for a number of research studies on key species, which have now been completed. The details of these are as follows:

- Homes for Hornbills: An artificial nest box scheme for Sumatran hornbills, Harapan Rainforest. Supported by the Disney Worldwide Conservation Fund (see Annex 11 for the final project report)
- Population assessment and distribution of Agile Gibbon *Hylobates agilis* in Harapan Rainforest, Sumatra. Supported by the USFWS Great Ape Conservation Fund (see Annex 12 for the final report)
- Hornbill nest boxes for forest restoration in Sumatra. Supported by the SeaWorld and Busch Gardens Conservation Fund (see Annex 13 for the final report)
- Population survey and assessment of broad habitat preferences of Malayan Sun Bear *Helarctos malayanus* in Harapan Rainforest, Sumatra. Supported by the International Association for Bear Research and Management (see Annex 14 for the final report)

Two other research projects are currently underway:

- Resource Use and Habitat Utilisation of Malayan Sun Bear (*Helarctos malayanus*) in Harapan Rainforest, Sumatra Supported by the International Association for Bear Research and Management (see Annex 15 for the successful project proposal)
- Conservation Assessment of Felids in a Degraded Lowland Forest in Sumatra. Supported by The Kaplan Graduate Awards Program of Panthera (see Annex 16 for the successful project proposal). This project is providing the opportunity for Elva Gemita, HRF Biodiversity Officer, to collect field data for her proposed research MSc at Manchester Metropolitan University, UK

4. Training and capacity building of local staff secures monitoring sustainability

After the initial assessment of staffing requirements and then training needs, an organised training programme for R & C staff lead by the Lead Scientist, and with external trainers brought in to support the activities, has resulted in all monitoring data now being collected by project-trained staff following the agreed protocols. Half-yearly evaluations of project staff showed steady and marked improvements in their field skills and understanding through regular training and ongoing practical experience.

Although there has been some change in the R & C staff during the project, this has not impacted upon the activities of the project since sufficient time was available to recruit new and suitable staff, providing handover of duties. Providing the current staffing is not reduced, current monitoring activities are sustainable.

The project would have benefited from a HRF-wide skills analysis and training needs assessment put in place as this would have provided a mechanism for more strategic targeting of individuals needing specific biological training. Instead, training of staff outside the R & C division was largely on an availability basis, although training was still specific to the individuals' needs.

5. Research infrastructure and training centre established

The project has successfully established HRF as a research centre for species conservation and ecosystem restoration studies. A programme of presentations at local universities during years 1 and 2 has resulted in undergraduate students now regularly visiting HRF to conduct thesis projects. It is anticipated this will expand to include key post-graduate studies.

The research profile of HRF has been raised by R & C staff attending national, regional and international symposia, including presenting research results at the 5th International Galliformes Symposium in Thailand, the 2010 International Meeting of the Association for Tropical Biology and Conservation in Bali, and the 5th International Hornbill Conference in Singapore.

The HRF and project partner websites reach a wide online audience, specifically through the network of BirdLife partners and local and national NGOs in Indonesia.

4.4 Project standard measures and publications

See Annexes 4 and 5. The project has exceeded the anticipated standard measures in many areas.

4.5 Technical and Scientific achievements and co-operation

The key technical achievement of this project has been the collection of a large quantity of high quality field data, cataloguing the biodiversity of HRF in a range of taxonomic groups (birds, mammals, butterflies, herptiles and habitat) and establishing a baseline against which future monitoring will be possible. The details of this work and the results are given in Annex 8. Various field forms, research protocols and identification guides were prepared in order to achieve this and these are shown in Annexes 26-33. A number of species or group specific studies were undertaken (with supplementary funds from other organisations to cover additional equipment or personnel costs). These included gibbons, hornbills, sun bears and cat species. The results from some of these studies are presented in Annex 8, but the individual reports to those other funders are also shown (Annexes 11 –14).

Participation by key partners is reflected in a field training course undertaken by RBG Kew (Annex 35), results from a rapid botanical assessment by RBG Kew (Annex 17), a field visit by Steve Elliot of FORRU (Annexes 18 and 19) and a number of student projects from undergraduates at IPB (Annex 25).

CVs of key staff in the research team are shown in Annex 7.

Abstracts of presentations given at conferences and meetings (Annex 22, 23).

Draft scientific papers submitted to journals (Annex 24). Further scientific papers are in preparation.

4.6 Capacity building

This Darwin project has been running during an extremely important establishment phase of the overall HRF initiative. Over the course of the last three years there has been a great deal of consolidation of working arrangements between the partners involved which will be important for many years into the future. In particular, the mechanism by which the work programme is delivered through the Yayasan KEHI and the management team at HRF has been critical and the Darwin project has been fundamental in ensuring that appropriate skills for effective management of the site are resident within the management team.

The RSPB has been the lead UK partner in this project. This has required considerable investment of human resources to ensure effective operation and has, at least in part, resulted in an increase in staff to support such work. The appointment of a lead scientist based in the field in Sumatra, funded by this Darwin, has allowed for substantial development of expertise within the RSPB and far greater insight into effective structures for managing such projects in demanding conditions. This development of expertise and capacity has already resulted in improved prospects for gaining

additional funding for the continuation of the programme commenced under Darwin, which is now secured until 2012 and provisionally until 2015.

The project has supported greatly the capacity building of key staff of the wider HRF initiative as well as representatives of local stakeholders. This has taken the form of formal training programmes for staff and visiting personnel, sourcing appropriate equipment and expertise to support biodiversity surveys and monitoring, and assisting in developing an organisational structure that identifies the roles of individuals and work divisions to help fulfil stated and agreed management objectives and outputs. An effective staff evaluation and incentive process has been put in place by the project, which now helps form the model for use across all management divisions of HRF. In addition, further research funding has been successfully obtained to provide sustainable support to research and monitoring activities.

A complete summary of the personnel who have received training is given in Annex 4. Outputs relating to training activities are shown in Annexes 34 – 39. Key direct benefits of how the project's Biodiversity Officers (BO) have benefited from this support include: successful enrolment for Marthy Willy to conduct a PhD focusing on hornbill feeding ecology at HRF; securing a place at Manchester Metropolitan University, UK for Elva Gemita to conduct a research MSc on forest cats at HRF; attendance and training at the ATBC conference; and active involvement with the Indonesian Ornithologists' Union and Sumatran Tiger forum, which both strengthen research links with other Indonesian organisations.

Capacity of the local government conservation offices has been enhanced by their inclusion in some training activities, as well as receiving regular presentations about biodiversity conservation and surveying. This has helped improve their own understanding of assessing conservation priorities. The capacity of IPB and UNJA has increased as a direct result of presenting project work to them and inviting students to conduct undergraduate research projects, which was supported by the project.

4.7 Sustainability and Legacy

The project's baseline survey results will endure through the production of the site biodiversity report (see Annex 8), research strategy (Annex 10), a number of publications that are in preparation (see Annex 22 for abstracts), two scientific papers in press (Annex 24) and by informing HRF's 20-year management plan (see Annex 9). The biodiversity report and management plan are important documents for guiding and monitoring future management actions and their effectiveness for conservation of key species and habitats in HRF. Within HRF, the project has led the way in integrating its core activities with those of other work divisions, which has benefited the development of the organisation's systems and planning.

All local R & C staff will be retained by HRF after the project ends. David Lee has returned to RSPB in the UK and recruitment of a new Head of R & C for HRF is now underway. The focus of this position will now shift more to ecosystem restoration rather than biodiversity surveying. This is in part because the project has successfully trained local staff to manage biodiversity monitoring activities, while there will be continued support of more detailed research activities by the partners, specifically from international research staff at RSPB. Project resources have been handed over to HRF to support continuing biodiversity surveys and monitoring activities.

The partners will remain in communication since they have secured the management rights of HRF for 100 years. As part of their partnership they have created the company PT REKI for the purposes of holding the ecosystem restoration licences for two areas that combine to form HRF. One of the licences is for 100 years, beginning in 2008, and the second is for 60 years, with an option of a 35-year extension, beginning in 2010. Long-term funding streams have been sourced to achieve this while a trust fund has been established that will guarantee financial support of the initiative's management activities into the future. (See section 7.2 for more details).

Revenue funding is secured until the end of 2013, from the German government's International Climate Initiative, with a total project value of slightly more than €14 million. An application for

further £10 million support is currently being considered by the Danida development aid agency in Denmark.

5 Lessons learned, dissemination and communication

The primary beneficiary of the information and outputs from this Darwin is the HRF initiative. In particular, the biodiversity survey work is forming the baseline for the site management plan and has framed the ongoing research and monitoring requirements for the successful management of the site for biodiversity. This has been achieved by regular communication and information sharing within the organisation and participation of the research team in the development of the management plan.

Lessons learned from this project are also feeding through to the national process for ecosystem restoration licences. The experience at HRF is being watched closely as it is setting a precedent for further sites throughout Indonesia. This is being achieved through the regular contact that the project has with the Ministry of Forestry.

Specific conclusion from research work have been disseminated at international meetings, namely the 5th International Galliformes Symposium in Thailand, the 2010 International Meeting of the Association for Tropical Biology and Conservation in Bali, and the 5th International Hornbill Conference in Singapore. The abstracts of presentations given at conferences and meetings are shown in Annex 22 and a poster in Annex 23.

The HRF website has been a key portal for dissemination of information about work at HRF (www.harapanrainforest.org). Besides depicting various aspects of the work, there are also blogs that have allowed interested people to follow progress. The research work at HRF has also featured regularly on the RSPB's blog (<http://www.rspb.org.uk/community/blogs/sumatra>). Details of media releases relating to the Harapan initiative are shown in Annexes 40-42. In October 2010, RSPB produced a 14 minute film entitled "*Protecting nature, sustaining livelihoods*" about the work at HRF. In interviews with project staff (including research and conservation staff) it shows how biodiversity research and monitoring is vital for informing the forest restoration at HRF, which in turn has positive impacts on sustainable livelihoods for local communities.

A number of scientific publications are underway and these will be submitted to peer-reviewed journals in due course. Details of two already at that stage are in Annex 24. A full report on the biodiversity surveys with further analysis than that shown in Annex 8 will be produced which will form the baseline for future monitoring at HRF.

It has been a challenge to integrate the project smoothly into the wider activities of HRF, which are funded through other streams and have their own stated objectives, outputs and indicators. The project was reliant on co-funding from HRF for transport and services costs and there were times when these resources were stretched across a wide range of work areas. With many priority work areas to consider, an element of compromise was adopted by the project when sharing transport and trainee resources. This benefited from clear explanation to other management divisions about how the project fitted in with the wider work programme, and is related to improving capacity and developing human behaviours supportive of biodiversity research and conservation. By project end, this did not compromise any of the stated outputs and measures.

5.1 Darwin identity

The Darwin Initiative logo was used on all HRF outputs the project was involved in. These include presentations to the full range of stakeholders, including MoF, at meetings, seminars, workshops and symposia. The logo was also incorporated to HRF letterheads and other communication tools. A 1.5 m x 1.5 m Darwin Initiative logo has been positioned outside HRF's herbarium and library since year 2 and is clearly visible to all visitors to HRF. Referring to Section 5, the Darwin Initiative has been promoted and acknowledged on the HRF website, the RSPB website, at the international symposia where project results have been presented, in all presentations to stakeholders and

collaborators visiting HRF, and in RSPB *Birds* magazine. The three peer-reviewed scientific papers currently being produced will also acknowledge the Darwin Initiative's support.

Within HRF, the Darwin Initiative support was recognised as supporting a distinct project – HRF's research programme. Externally, this support was presented as supporting and strengthening the overall work of HRF.

All the project's partners are familiar with the Darwin Initiative. Within HRF, at the outset of the project there was little understanding of what the Darwin Initiative aim is and what it supports. This has developed during the project to a clear understanding of what the Darwin Initiative sets about to achieve and the benefits of this are recognised through the successes of this project.

6 Monitoring and evaluation

In August 2009, Pat Hardcastle of LTS International visited HRF to oversee a MTR of the project. A number of changes to the logframe were agreed through the MTR:

Output 1:

- Measurable indicator, Species accumulation curve – Due to a lack of capacity and time, this would not be achievable for trees and plants in the lifespan of the project.
- Measurable indicator, Habitat structure and condition – Removed

Output 2:

- Important assumption – Identified willingness of MoF to engage in discussions
- Activity – Added in consultation with MoF

Output 3:

- Measurable indicator, Predictive models of the influence of forest condition predict distributions of selected species in other parts of the site are statistically validated – Removed
- Activity – Predictive modelling system developed – Removed

Project outputs:

- 6a – It was recognised to be more cost-effective to train project staff from other project areas for shorter periods of time, e.g. two project staff for 1-2 weeks, but more frequently
- 7 – Fewer manuals can be produced, providing the intent to produce these outputs can be displayed
- 11b – Fewer manuscripts can be submitted, providing the intent to produce these outputs can be displayed
- 12c – It was considered appropriate to describe this output as consolidating the named databases into one GIS for the project
- 13a – Invertebrate and herptile collections will be based on digitisation (of specimen photos) rather than wet specimens, reducing curation costs
- 13b – Since invertebrate and herptile collections will focus more on digitisation rather than wet specimens, it may be harder to define how these two onsite electronic collections may enhance more traditional national collections
- 15b – Local media are less driven by press releases; *In lieu*, site visits by journalists are more typical
- 15c – Clarification that two UK press releases were required to fulfil this output
- 22 – Precise details will change here

6.1 Actions taken in response to annual report reviews

The project start up was delayed to allow basic organisation to be put in place and the Lead Scientist to be recruited, so the annual report for year 1 (April 2008) only covered four months. The review for that year did not raise any major issues other than to submit a more comprehensive than normal half-year report. This was submitted as requested.

Seven issues were raised in the review of the annual report for year 2 (April 2009):

- Consider the possible management distraction of too many partnerships – Efforts focused on developing fewer but stronger, active partnerships over the second half of the project. The success of this approach was recognised in the annual review for year 3.
- Consider monitoring the conversion ratio between enquiries from researchers and fieldwork – Linked to the above, the conversion ratio increased with a more focused approach to securing project partnerships. This was recognised in the annual review for year 3.
- Proposals for modifications to Output 2 [of the project's logframe] should be clarified urgently – In August 2009, proposed changes to the original agreement were discussed with Pat Hardcastle of LTS International during the MTR visit. These changes were agreed by both parties and made to the project outline.
- Consider continuous assessment for trained staff – As a matter of course, staff were assessed in the field to check for any 'drift' in implementing the agreed protocols. Formal evaluations were given every six months, and in line with wider organisational policy on staff evaluation.
- Dissemination plan required – Revisions were made to the standard output measures in the course of the MTR and the dissemination plan was elevated to full output status.
- Provide update on progress with fundraising for trust fund – This was provided in the half-year report for year 2 (October 2009).
- Provide more detail in expenditure report – This was provided in the annual report for year 3 (April 2010).

Only one issue was raised in the review of the annual report for year 3 (April 2010):

- Develop and put into practice a plan for increasing communication with the MoF to maximise the possibility that the project's recommendations for improving monitoring of ecological restoration concessions may be acted upon – MoF monitoring and reporting requirements are onerous, resource-hungry and costly. The information demanded is not fully congruent with the needs of effective biodiversity monitoring and does not deliver wider utility. As a new initiative, it was important to develop close links with the MoF. This was largely achieved through monthly reporting to its provincial offices. However, this did not maximise the opportunity to improve monitoring requirements. For this, regular, direct discussions were made between the executive management of HRF and the MoF on a number of issues. In terms of influencing ideology, some progress has been made with a revision to the monitoring requirements made in September 2010. Although far from ideal, they are more suitable for ecological monitoring. The executive management of HRF is currently in discussion with the MoF to try and further influence these newly proposed monitoring requirements. The October 2010 half-year report identified this point: the project endeavoured to increase communication through more frequent discussions with the MoF, but while the results of any improvements made will take place as a result of this project's effort, this will happen after project completion.

Overall, the annual reviews recognised that the project has been successful and very effective, and remained on target throughout to achieve its purpose and have a substantial positive impact on biodiversity.

All reviews were discussed with the partners, agreeing strategies for addressing any issues raised. All annual reports were made available to the partners and key collaborators.

7 Finance and administration

7.1 Project expenditure

The required details of project expenditure are given in the table below.

Category	Original Budget (£)	Final Budget (£)	Expenditure (£)	Variance (%)
Rent, rates etc				
Office costs				
Travel and subsistence				
Printing				
Conferences, seminars etc				
Capital items / equipment				
<i>Computers</i>				
<i>Voltage regulators</i>				
<i>Software</i>				
<i>Office furniture</i>				
<i>Binoculars</i>				
<i>GPS</i>				
<i>Rangefinder</i>				
<i>Tapes/survey</i>				
<i>Storage materials</i>				
<i>Camera</i>				
<i>Clothing/footwear</i>				
<i>Sound recording</i>				
<i>Weather and misc.</i>				
<i>Field guides (books, tapes)</i>				
<i>Two way radios</i>				
<i>Equipment replacement (Y2 and Y3)</i>				
<i>Motorbike</i>				
<i>Bicycles</i>				
<i>Office rehabilitation</i>				
Other costs				
<i>External consultation</i>				
Salaries				
<i>Research Scientist on site</i>				
<i>Station Coordinator</i>				
<i>Site staff (5)</i>				
<i>Survey staff</i>				
<i>RSPB staff in UK</i>				

<i>Project Leader in UK</i>	
TOTAL	

No amendments from the original budget were sought during the course of the project.

Variations in expenditure of +/- 10% of budget were observed on the following categories:

- Capital items / equipment – This small overspend of more than 10% was due to changing exchange rates during the project. Spend incurred was in Indonesian rupiah and then converting back to British pounds, which weakened over the three years of the project.
- Other costs – The provision of external consultation was provided at a cheaper cost than expected when the budget was drawn up.

7.2 Additional funds or in-kind contributions secured

The EU project commenced as planned, which was stated as matched funding in the project's proposal. In December 2009, HRF partners and Yayasan KEHI secured EUR7.575 million from the German government-owned development bank, Kreditanstalt für Wiederaufbau (KfW). Within this, funds are allocated to biodiversity research and monitoring until the end of 2013.

The trust fund set up by the RSPB to support the long-term management of HRF received \$3 million from Singapore Airlines in the summer of 2010. Conservation International and the RSPB have contributed a further \$3.5 million to the fund, while a number of other donations mean the trust fund capital now stands at around \$7 million.

A number of small grants were received which supported specific aspects of biodiversity survey work to enhance the funding from Darwin. These were:

- Homes for Hornbills: An artificial nest box scheme for Sumatran hornbills, Harapan Rainforest. Supported by the Disney Worldwide Conservation Fund (see Annex 11 for the final project report). \$10,000.
- Population assessment and distribution of Agile Gibbon *Hylobates agilis* in Harapan Rainforest, Sumatra. Supported by the USFWS Great Ape Conservation Fund (see Annex 12 for the final report). \$32,000.
- Hornbill nest boxes for forest restoration in Sumatra. Supported by the SeaWorld and Busch Gardens Conservation Fund (see Annex 13 for the final report). \$10,000.
- Population survey and assessment of broad habitat preferences of Malayan Sun Bear *Helarctos malayanus* in Harapan Rainforest, Sumatra. Supported by the International Association for Bear Research & Management (see Annex 14 for the final report). \$10,000.
- Resource Use and Habitat Utilisation of Malayan Sun Bear (*Helarctos malayanus*) in Harapan Rainforest, Sumatra Supported by the International Association for Bear Research & Management (see Annex 15 for the successful project proposal). \$5,000.
- Conservation Assessment of Felids in a Degraded Lowland Forest in Sumatra. Supported by The Kaplan Graduate Awards Program of Panthera (see Annex 16 for the successful project proposal). This project is providing the opportunity for Elva Gemita, HRF Biodiversity Officer, to collect field data for her proposed research MSc at Manchester Metropolitan University, UK. \$12,845.

7.3 Value of DI funding

Darwin Initiative funding has allowed a range of activities to be undertaken that would not have been otherwise prioritised. The most significant contribution has been to establish a biological baseline in a ground-breaking forest conservation initiative. Our understanding of the biological

importance of this site has been greatly advanced by the systematic application of survey methods that has been possible with the allocated funding. This has ensured that biodiversity survey and monitoring retains a key position in the management priorities of a large conservation concession, which might otherwise be dominated by other issues.

Just as importantly, the grant has provided resources to train a large number of people and sensitise an even wider group in the practise of biological monitoring and the values of practical conservation work. This does a great deal to establish a long-term legacy of knowledge, equipment and skills that will continue to serve the conservation of the site in years to come. The development of organisational processes and skills regarding biological survey and monitoring are now well established within the HRF structure which will ensure the work undertaken during this project will continue to influence management in the future.

Annex 1 Report of progress and achievements against final project logframe for the life of the project

Project summary	Measurable Indicators	Progress and Achievements - December 2007- November 2010	Actions required/planned for next period
<p>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</p> <ul style="list-style-type: none"> • The conservation of biological diversity, • The sustainable use of its components, and • The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources 		<p>The overall project underpins the biological understanding required to inform effective ecosystem restoration and conservation at HRF and future restoration initiatives in Indonesia.</p> <p>A sustainable survey and monitoring programme of key biodiversity established.</p> <p>Local staff fully trained in appropriate field techniques.</p> <p>Greatly strengthened relationships between HRF, other NGOs, universities and government in Indonesia.</p> <p>Greater understanding in HRF staff and project stakeholders of the conservation value of HRF and important species therein.</p>	
<p>Purpose</p> <p>Biodiversity inventory undertaken and monitoring methods and capacity developed for management of one of the last remaining lowland forests in Sumatra</p>	<p>Management objectives, in the form of the management plan, require an integrated biological monitoring system consisting of baseline species and habitat information and a detailed monitoring strategy</p> <p>Sustain and develop this work in the form of a permanent research</p>	<p>Completed. All objectives relating to biodiversity inventories and habitat assessments and some information on key species' populations and, distribution completed. Detailed monitoring plan incorporated in the management plan for HRF.</p> <p>Completed. A permanent research centre established, receiving</p>	<p>It is necessary to continue the surveys following the monitoring plan to assess impacts of restoration interventions beyond the lifespan of the project. This needs integrating with the range of strategic tree planting and silviculture approaches employed.</p> <p>It will be necessary for HRF</p>

	<p>the form of a permanent research and training facility, an ongoing training programme and training materials.</p>	<p>regular visits by researchers and students from the region. Ongoing training of staff informed by strengths and weaknesses assessment. Training materials produced to support existing research programme.</p>	<p>management to agree on the long-term monitoring sites, capturing integrated research and restoration activities. Current staff resources probably allow monitoring of 8-10 sites, each visited every two years.</p> <p>Continued efforts by HRF management to secure MoUs with appropriate external collaborators as dictated by research requirements at that time are required.</p>
<p>Output 1. Biodiversity inventory and baseline surveys completed</p>	<p>Species lists compiled for birds, mammals, trees, herbaceous plants, herptiles and Lepidoptera</p> <p>Species accumulation curves approach asymptote</p> <p>Representative geographical coverage achieved</p> <p>Abundances estimated for key species and/or taxonomic groups</p> <p>Herbarium specimens and photographic records collected for some taxonomic groups</p>	<p>Completed for birds and mammals. Herptile list is probably not completed, but a PhD student researching herptiles will be adding to this from 2011. A Lepidoptera checklist for HRF has been produced and is supplemented by field records by project staff or LIPI's formal surveys. Tree and herbaceous plant lists are incomplete, partly due to a lack of permanent botanical expertise retained at HRF, and that, due to the high level of diversity exhibited by these groups, these lists are likely to be added to over a number of years beyond project end – a point acknowledged in the MTR.</p> <p>Habitat types are proportionally represented in the surveys. Geographical coverage has been restricted by some areas of the site being very difficult to access and occasional incidents with illegal loggers/encroachers making some areas unsafe to visit.</p> <p>Site abundances estimated for sun bear, agile gibbon, tapir, great argus and presented at international symposia. Results are in preparation for publication in international peer-reviewed journals.</p> <p>Specimens stored in on-site herbarium. Photographic records collected and stored for Lepidoptera, dragonflies and fish.</p>	
<p>Activity 1.1. Methods developed, piloted and refined</p>	<p>Completed – see Annex 8 (Biodiversity Summary Report)</p>		

Activity 1.2. Survey logistics systems finalised		Completed – see Annex 8 (Biodiversity Summary Report)
Activity 1.3. Data collection, compilation and analysis		Completed – Data collected from multiple plots across the site (see Annex 8, Biodiversity Summary Report) data computerised and backed-up; analyses supporting scientific paper preparation.
Activity 1.4. Baseline reporting		Completed – see Annex 8 (Biodiversity Summary Report); baseline data incorporated to HRF management plan (Annex 9)
Output 2. Plan for monitoring selected taxonomic groups established	<p>Ecosystem concession ecological monitoring requirements identified for improvement on current Ministry of Forestry (MoF) requirements</p> <p>Monitoring protocols conform with published best practise and agreed by independent relevant taxonomic experts</p> <p>Field methods validated through established error checking procedures</p>	Communicated options for appropriate ecological monitoring to MoF via HRF executive management. Slow progress in the willingness of MoF to consider approaches that are more suitable. Recent changes made to MoF monitoring requirements more inline with ecological needs, but requires further input and discussion. Monitoring protocols accredited by relevant experts. Staff progress/ability assessed every six months. Staff monitored in the field and any 'drift' in the application of protocols addressed.
Activity 2.1. Planning and design of monitoring programme		Completed – see Annex 8 (Biodiversity Summary Report)
Activity 2.2. Guidelines for field implementation		Completed – see Annex 8 (Biodiversity Summary Report)
Activity 2.3. Collection, quality assurance and analysis of monitoring data		Completed – data collected, checked, computerised, cleaned; analyses underway
Activity 2.4. Reporting initial findings		Completed – see Annex 8 (Biodiversity Summary Report), Annex 22 (Conference abstracts), Annex 24 (Scientific papers); three scientific papers in preparation
Activity 2.5. Testing and validation of protocols		Completed

Activity 2.6. Finalisation of monitoring programme design		Completed for birds, mammals and habitat – see Annex 8 (Biodiversity Summary Report)
Activity 2.7. Consultation with Ministry of Forestry		Ongoing beyond project end due to slow progress in MoF recognising alternatives to commercial logging monitoring requirements
Output 3. Focused ecological research to support baseline inventory and monitoring activities	Key research needs identified, including specific studies on species of conservation importance and research that supports site restoration activities, e.g. seed dispersers Contribution to the development of site management prescriptions and protocols	Research strategy summarised in key document (Annex 10, Research Strategy). Additional funds raised to support key research needs. Monthly internal reports to inform MoF of activity progress.
Activity 3.1. Compilation of background and historical information		Completed where possible. Some historical information held by a logging company previously managing half of HRF was lost because of an office fire.
Activity 3.2. Formulation of research strategy		Completed – see Annex 10 (Research Strategy)
Activity 3.3. Dissemination of research findings		Completed – Presentations on research findings given at international symposia (see Annex 22, Symposium abstracts). Scientific papers in press (Annex 24). Three research papers in preparation for publication.
Output 4. Training and capacity building of local staff secures monitoring sustainability	Majority of monitoring data collected by project-trained staff in accordance with established protocols Appropriate and effective training courses being held regularly	Permanent research team established. All monitoring data collected by project-trained staff in accordance with agreed and established protocols. Staff training course attendances and assessment records held.
Activity 4.1. Initial training needs assessed and reviewed		Completed

Activity 4.2. Training programme delivery		Completed - Local staff introduced to and trained in selected and appropriate baseline survey methods
Activity 4.3. Training evaluation, review and refinement		Completed – Staff assessed regularly in the field; twice yearly formal evaluations
Activity 4.4. Skills analysis and training needs assessment		Completed – Research staff skills base assessed regularly and informs individual's responsibilities and duties via twice yearly evaluations that follow organisational policy
Output 5. Research infrastructure and training centre established	Appropriate resources available for research activities Regular collaboration with visiting researchers Value of research centre and activities recognised nationally and internationally	All appropriate resources available for current activities. Terms of reference and MoU agreed with appropriate with research organisations. Research activities supporting HRF recognised through media coverage, international symposia and national networks. Substantial funds secured from donor organisations for sustaining a research and monitoring programme.
Activity 5.1. Herbarium and library built		Completed – Both on-site, maintained by project staff. Requires continued specimen collection by HRF forestry and restoration staff during habitat surveys, and permanent botanical expertise on-site
Activity 5.2. Data information storage systems established		Completed - Computer facilities and electronic data storage in place. Requires continued management, including backing-up, by HRF IT staff, integrating data into central database.
Activity 5.3. Collaborative research support systems		Completed – Standard operating procedures tailored to specific research partnerships; international research collaboration initiated

Annex 2 Project's final logframe, including criteria and indicators

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Goal:</p> <p>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising out of the utilisation of genetic resources</p>			
<p>Purpose:</p> <p>Biodiversity inventory, monitoring methods and capacity developed for the management of a lowland forest in Sumatra</p>	<p>Site management plan is informed by and incorporates biodiversity inventory and monitoring strategy</p>	<p>Interim management plan for the site, Harapan Rainforest</p>	<p>Political changes in Indonesia do not impede management of the site by the conservation consortium</p>
<p>Outputs</p>			
<p>1. Biodiversity inventory and baseline surveys completed</p>	<p>Species lists compiled for birds, mammals, trees, herbaceous plants, herptiles and Lepidoptera</p>	<p>Completed field data sheets and computerised database of records</p>	<p>Political conditions or natural disasters do not prevent fieldwork</p>
	<p>Species accumulation curves approach asymptote</p>	<p>Sampling design proves effective and biodiversity survey reports</p>	
	<p>Representative geographical coverage achieved</p>		
	<p>Abundances estimated for key species and/or taxonomic groups</p>		
	<p>Herbarium specimens and photographic records collected for some taxonomic groups</p>	<p>Onsite photographic and botanical specimen collections, including herbarium</p>	

2. Plan for monitoring selected taxonomic groups established	Ecosystem concession ecological monitoring requirements identified for improvement on current Ministry of Forestry requirements	Communication with forestry authorities	Willingness of the Ministry of Forestry to engage in this discussion
	Monitoring protocols conform with published best practise and agreed by independent relevant taxonomic experts	Accreditation from relevant experts	
		Monitoring guidelines	
	Field methods validated through established error checking procedures	Statistical robustness of monitoring manual procedures	
		Assessment of trainee competence	
	3. Focused ecological research to support baseline inventory and monitoring activities	Key research needs identified, including specific studies on species of conservation importance and research that supports site restoration activities, e.g. seed dispersers	
Additional research funds raised			
Contribution to the development of site management prescriptions and protocols		Internal reports	
4. Training and capacity building of local staff secures monitoring programme sustainability	Majority of monitoring data collected by project-trained staff in accordance with established protocols	Training assessment, completed field data sheets	Sufficient numbers of trained staff are retained by the project
		Permanent team of local research assistants with adequate expertise	
	Appropriate and effective training courses being held regularly	Training course records and trainee assessment results	

5. Research infrastructure and training centre established	Appropriate resources available for research activities	Equipment asset list, herbarium	
	Regular collaboration with visiting researchers	Visitors book	
		Collaborative research reports	
		Terms of reference and memoranda of agreement with research organisations	
	Value of research centre and activities recognised nationally and internationally	Coverage in independent media	
		Scope, extent and results of collaborative research	
		Positive feedback from the Ministry of Forestry on piloting ecosystem restoration biodiversity research	

Annex 3 Project contribution to Articles under the CBD

Project Contribution to Articles under the Convention on Biological Diversity

Article No./Title	Project %	Article Description
6. General Measures for Conservation & Sustainable Use	5	Develop national strategies that integrate conservation and sustainable use.
7. Identification and Monitoring	15	Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities that have adverse effects; maintain and organise relevant data.
8. In-situ Conservation	30	Establish systems of protected areas with guidelines for selection and management; regulate biological resources, promote protection of habitats; manage areas adjacent to protected areas; restore degraded ecosystems and recovery of threatened species; control risks associated with organisms modified by biotechnology; control spread of alien species; ensure compatibility between sustainable use of resources and their conservation; protect traditional lifestyles and knowledge on biological resources.
9. Ex-situ Conservation	0	Adopt ex-situ measures to conserve and research components of biological diversity, preferably in country of origin; facilitate recovery of threatened species; regulate and manage collection of biological resources.
10. Sustainable Use of Components of Biological Diversity	15	Integrate conservation and sustainable use in national decisions; protect sustainable customary uses; support local populations to implement remedial actions; encourage co-operation between governments and the private sector.
11. Incentive Measures	5	Establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.
12. Research and Training	20	Establish programmes for scientific and technical education in identification, conservation and sustainable use of biodiversity components; promote research contributing to the conservation and sustainable use of biological diversity, particularly in developing countries (in accordance with SBSTTA recommendations).
13. Public Education and Awareness	10	Promote understanding of the importance of measures to conserve biological diversity and propagate these measures through the media; cooperate with other states and organisations in developing awareness programmes.
14. Impact Assessment and Minimizing Adverse Impacts	0	Introduce EIAs of appropriate projects and allow public participation; take into account environmental consequences of policies; exchange information on impacts beyond State boundaries and work to reduce hazards; promote emergency responses to hazards; examine mechanisms for re-dress of international damage.
15. Access to Genetic	0	Whilst governments control access to their genetic

Article No./Title	Project %	Article Description
Resources		resources they should also facilitate access of environmentally sound uses on mutually agreed terms; scientific research based on a country's genetic resources should ensure sharing in a fair and equitable way of results and benefits.
16. Access to and Transfer of Technology	0	Countries shall ensure access to technologies relevant to conservation and sustainable use of biodiversity under fair and most favourable terms to the source countries (subject to patents and intellectual property rights) and ensure the private sector facilitates such assess and joint development of technologies.
17. Exchange of Information	0	Countries shall facilitate information exchange and repatriation including technical scientific and socio-economic research, information on training and surveying programmes and local knowledge
19. Bio-safety Protocol	0	Countries shall take legislative, administrative or policy measures to provide for the effective participation in biotechnological research activities and to ensure all practicable measures to promote and advance priority access on a fair and equitable basis, especially where they provide the genetic resources for such research.
Other Contribution	0	Smaller contributions (e.g. of 5%) or less should be summed and included here.
Total %	100%	

Annex 4 Standard Measures

Code	Description	Totals (plus additional detail as required)
Training Measures		
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification (i.e. not categories 1-4 above)	<p>10 out of 10 Indonesian staff trained in survey techniques to conduct field data collection for baseline survey and monitoring:</p> <p>Y2 – 2 Biodiversity Officers (Marthy Willy, Jeri Imansyah)</p> <p>Y2-3 – 6 Research Assistants</p> <p>Y3 – 1 Biodiversity Officer (Elva Gemita)</p> <p>Y3-4 – 1 Biodiversity Officer (Irfan Fitriawan)</p>
6a	Number of people receiving other forms of short-term education / training (i.e. not categories 1-5 above)	<p>Following the MTR, the stated training periods of 4 weeks duration was changed to a more flexible approach, acknowledging some difficulties in seconding staff from other work areas for training.</p> <p>53.5 training weeks covering 243 person-weeks were completed, during which staff and stakeholder representatives participated in training courses in survey design, basic survey techniques, and analysis:</p> <p>Y1 – 0</p> <p>Y2 – 21 weeks, 136 person-weeks (pw)</p> <ul style="list-style-type: none"> - 21 project staff; two weeks training in plant collecting techniques by a Royal Botanic Gardens, Kew and Bogor Herbarium team (April '08); 42 pw - 12 patrol staff; trained in mammal and hornbill survey methods and species identification by David Lee and Marthy Willy, HRF Biodiversity Officer (May '08-March '09); 24 pw - 12 forestry staff; one week training in habitat survey and inventory methods by Marthy Willy (Aug. '08); 12 pw - 15 nursery/restoration staff; one week training in framework tree species restoration techniques by Dr Steve Elliott, FORRU (Oct. '08); 15 pw - 11 research/patrol staff; one week training in large mammal survey techniques (recce transects, camera trapping) by Hariyo Wibisono, Tiger Conservation Program Coordinator, Wildlife Conservation Society-Indonesia Program (WCS-IP) (Dec. '08); 11 pw - 8 project staff; four weeks training in tree climbing and nest box mounting techniques by Rakata Adventure (Dec. '08); 32 pw <p>Y3 – 21 weeks, 64 pw</p>

Code	Description	Totals (plus additional detail as required)
		<ul style="list-style-type: none"> - 4 restoration staff; one week training in tree phenology and species identification by Mr Uhaedi Sutisna, Forestry Research and Development Agency (FORDA, Bogor) (April '09); 4 pw - 12 patrol staff; trained in mammal survey methods, including transects and camera trapping, and habitat surveys by David Lee, Marthy Willy, Jeri Imansyah, HRF Biodiversity Officer (April '09-March '10); 24 pw - 1 project GIS Officer; scholarship for two weeks training in the application of GIS for the conservation of species and natural resources by the Society for Conservation GIS (SCGIS), California (July '09); 2 pw - 8 research staff: one week training in gibbon survey methods by David Lee and Dr Victoria Powell (Aug. '09); 8 pw - 4 project staff; four weeks training in advanced tree climbing skills by IndoRope (Dec. '09); 16 pw - 7 undergraduate students, Jambi University; one week training in basic biodiversity survey methods by David Lee, Jeri Imansyah, Dr Victoria Powell, Research Scientist (Feb. '10); 7 pw - 21 project staff; one day training workshop on gibbon ecology and surveying by Dr Victoria Powell, Jeri Imansyah (Feb. '10); 3 pw <p>Y4 – 11.5 weeks, 43 pw</p> <ul style="list-style-type: none"> - 8 patrol staff; trained in mammal survey methods, including transects and camera trapping, and habitat surveys by David Lee, Elva Gemita, Irfan Fitriawan, both HRF Biodiversity Officers (April-Nov.'10); 16 pw - 1 Biodiversity Officer; one week training in experimental design, data analysis and scientific paper writing by Dr Rhett Harrison, Association for Tropical Biology and Conservation (July '10); 1 pw - 17 research and patrol staff; one week training in elephant surveying by Donny Gunaryadi and Martin Tyson, Elephant Project Coordinators, WCS-IP (Sept. '10); 17 pw - 7 research staff; one week training in Coleoptera and Lepidoptera survey and collection techniques by Warsito Tantowijoyo, Indonesian Institute of Sciences (LIPI), as part of the UNESCO project '<i>Developing monitoring system of global climate change using arthropods as bio-indicators in the tropical rainforest heritages of Sumatra, Indonesia</i>' (Oct. '10); 7 pw - 4 research staff; 0.5 weeks training in Distance sampling and analysis by David Lee (Nov. '10); 2 pw

Code	Description	Totals (plus additional detail as required)
6b	Number of training weeks not leading to formal qualification	<p>53.5 out of 12 weeks completed:</p> <p>Y2 – 21 weeks: Plant collecting techniques (2 weeks); Biodiversity surveys (12 weeks); Habitat surveys (1 week); Restoration approaches (1 week); Mammal surveys (1 week); Tree climbing (4 weeks)</p> <p>Y3 – 21 weeks: Tree phenology (1 week); Biodiversity surveys (13 weeks); GIS (2 weeks); Gibbon ecology & surveys (1 week); Tree climbing (4 weeks);</p> <p>Y4 – 11.5 weeks: Biodiversity surveys (8 weeks); Survey design and analysis (1 week); Elephant surveys (1 week); Invertebrate surveys (1 week); Distance sampling (0.5 weeks)</p>
7	Number of types of training materials produced for use by host country(s)	<p>5 out of 5 types of training materials produced, covering survey design, survey techniques for birds, mammals and trees, and data analysis:</p> <p>Posters – Series of threatened species posters, including one outlining IUCN classifications</p> <p>Leaflets – Hornbill identification leaflet distributed to HRF staff and local stakeholders, including a local community development NGO</p> <p>Field manuals – Field manual and data sheets for forest inventory and survey methods, commensurate with MoF requirements</p> <p>Presentations – Translated and distributed to local stakeholders, including universities</p> <p>Species identification tests – Twice-yearly staff tests using photos of animals and their signs; also used with some local stakeholders (BKSDA officers, students)</p>
Research Measures		
8	Number of weeks spent by UK project staff on project work in host country(s)	<p>28 out of 18 weeks completed. These include visits made by Jeremy Lindsell, David Gibbons and Ian Rowland, but do not include the full time permanent posting of David Lee on the project who was present on site for the full term of the Darwin Project.</p> <p>Y1 – 2 weeks</p> <p>Y2 – 5 weeks</p> <p>Y3 – 15 weeks</p> <p>Y4 – 6 weeks</p>
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country(s)	Information supplied for the management plan for HRF. This information will be added annually after project end over the rolling 20-year lifespan of the management plan. See Annex 9 for the relevant text.

Code	Description	Totals (plus additional detail as required)
10	Number of formal documents produced to assist work related to species identification, classification and recording	<p>3 out of 1 training manuals produced covering survey design, survey techniques for birds, mammals and trees, and data analysis:</p> <p>Y1 – 0</p> <p>Y2 – 1: Hornbill survey methods and nest box manual</p> <p>Y3 – 1: Mammal field signs and identification guide (final version; Annex 28)</p> <p>Y4 – 1: Gibbon survey manual, covering ecology, behaviour, methods and analysis</p>
11a	Number of papers published or accepted for publication in peer reviewed journals	<p>2 out of 1 paper accepted for publication (Annex 24)</p> <p>Y4 – 2:</p> <p>Lee, D. and Rombang, W. 2011. Homes for Sumatran Hornbills. <i>Raffles Bulletin of Zoology</i>, Supplement No. 24, in press.</p> <p>Hua, F., Marthy, W., Lee, D. and Janra, M.N. 2011. Globally threatened Sunda Blue Flycatcher <i>Cyornis caerulatus</i>: synthesis of global records and recent records from Sumatra. Submitted to <i>Forktail</i>; final review.</p>
11b	Number of papers to be submitted to peer reviewed journals	<p>The MTR stated that fewer could be produced.</p> <p>0 out of 3 papers submitted to journals covering forest inventory, wildlife-habitat relationships and human impacts. However, three papers are in preparation for submission to scientific journals for first review in April 2011.</p> <p>Y1-3 – 0</p> <p>Y4 – 3: Manuscripts covering camera trap surveys of Galliformes, sun bears and tapir, and gibbon survey method assessments and recommendations (based on presentation given at international symposia; see Annex 22 for abstracts)</p>
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country	<p>The MTR recommended the originally stated four databases be consolidated into one database.</p> <p>1 out of 1 database developed covering wildlife, habitat, human impacts (including logging history) and geographic information</p> <p>Y1 – 0</p> <p>Y2 – Bird, mammal, tree and habitat data accumulated separately</p> <p>Y3 – Biodiversity and habitat data consolidated in one database serving HRF</p> <p>Y4 – Biodiversity and habitat data updated in HRF database</p>
13a	Number of species reference	The MTR reported that photographic collections

Code	Description	Totals (plus additional detail as required)
	collections established and handed over to host country(s)	<p>were valid for certain taxonomic groups, considering on-site curatorial costs of 'wet specimens'.</p> <p>3 out of 3 collections established covering essential trees and shrubs, invertebrates and herptiles:</p> <p>Y1 – 0</p> <p>Y2 – 1: Herbarium specimen collection began in April 2008</p> <p>Y3 – 2: Collection of photos of herptiles, dragonflies and Lepidoptera started</p> <p>Y4 – Continued collection of photo specimens and herbarium specimens</p>
13b	Number of species reference collections enhanced and handed over to host country(s)	<p>The MTR recognised that it would be very difficult for HRF's photographic collections to enhance national collections, recommending that only one of the three originally stated national collections need be enhanced.</p> <p>1 out of 1 national collections enhanced (herbarium):</p> <p>Y1 – 0</p> <p>Y2 – Herbarium (ca. 150 specimens) started in April 2008; duplicate specimens stored at national herbarium</p> <p>Y3-4 – Ongoing collection of duplicate specimens stored at national herbarium</p>
Dissemination Measures		
14b	Number of conferences/seminars/workshops attended at which findings from Darwin project work will be presented/disseminated	<p>4 out of 3 conferences attended:</p> <p>Y1 – 1: UNEP Business for the Environment conference, Singapore in April 2008</p> <p>Y2 – 0</p> <p>Y3 – 1: 5th International Hornbill Conferences, Singapore in April 2009 (Annex 22, Abstract; Annex 24, Scientific paper)</p> <p>Y4 – 2: The International Meeting of the Association for Tropical Biology and Conservation, Bali, Indonesia in July 2010; 5th International Galliformes Symposium, Chiang Mai, Thailand in November 2010 (Annex 22, Abstracts)</p>
15a	Number of national press releases or publicity articles in host country(s)	<p>7 out of 6 national press releases; additional journalist visits not included (Annex 40; although the MTR recognised these are a common and informal means of host country media collecting information for future reference):</p> <p>Y1 – 0</p> <p>Y2 – 1:</p> <p>Republika (online and printed versions), <i>Flora dan</i></p>

Code	Description	Totals (plus additional detail as required)
		<p><i>Fauna di Kawasan Restorasi</i> (Flora and Fauna in Restoration Area), 24 October 2008</p> <p>Y3 – 3:</p> <p>Kompas (Compass; online and printed versions), <i>109 Spesies Terancam Punah (109 Endangered Species)</i>, 20 August 2009</p> <p>Jakarta Post (online and printed versions), <i>Harapan Rainforest raises hope amid overexploitation</i>, 25 September 2009</p> <p>Republika (online and printed versions), <i>Jerman Kucurkan 7.5 juta Euro untuk Hutan Sumatera (German government gives 7.5 million Euros to Sumatran forest)</i>, 28 March 2010</p> <p>Y4 – 3:</p> <p>Koran Tempo (Tempo Newspaper; online and printed versions), <i>Mengembalikan Harapan kepada Rangkong (Restoring Hope to Hornbills)</i>, 24 June 2010; and see Annex 40</p> <p>Plus, four national web-based articles:</p> <p>Kabarindonesia.com, <i>Masyarakat rambah 7000 ha Hutan HRF (Communities encroaching on 7000 hectares in Harapan Rainforest)</i>, 3 November 2008</p> <p>Globalreview.com, <i>Hibah Pemerintah Jerman untuk HRF (Germany government grant for Harapan Rainforest)</i>, 30 March 2010</p> <p>Kabarindonesia.com, <i>SAD Kelola Kawasan Restorasi (Suku Anak Dalam [indigenous people] look after restoration area)</i>, 17 April 2010</p> <p>Vetonews.com, <i>Dukungan Dunia Internasional terus mengalir ke Hutan Harapan (International support continues to flow into Harapan Rainforest)</i>, 27 August 2010</p>
15b	Number of local press releases or publicity articles in host country(s)	<p>6 out of 6 local press releases; additional journalist visits not included (the MTR recognised these are a common and informal means of host country media collecting information for future reference):</p> <p>Y1-3 – 0</p> <p>Y4 – 6: See Annex 40</p>
15c	Number of national press releases or publicity articles in UK	<p>5 out of 6 UK national press releases, plus 3 in the six months prior to the start of the project (see Annex 41). Regular RSPB web blogs about the work at HRF</p> <p>Y1 – 0</p> <p>Y2 – 3</p> <p>Y3 – 2</p>

Code	Description	Totals (plus additional detail as required)
		Y4 – 0
17a	Number of dissemination networks established	1 out of 1 research station website established (http://www.harapanrainforest.org)
18a	Number of national TV programmes/features in host country(s)	<p>4 out of 3 national TV features in the host country:</p> <p>Y1-2 – 0</p> <p>Y3 – 1: TRANS 7 TV station, 22/03/10, <i>Si Bolang - Bocah Petualang (The Adventurer Boy)</i>; included filming on site with a number of HRF staff</p> <p>Y4 – 3: Jambi Ekspres Televisi station, 13/06/10, <i>Perambahan hutan di Harapan Rainforest (Forest encroachment in HRF)</i> TVRI Jambi Station, 16/06/10, <i>Jambi Dalam Berita - Perambahan hutan di Provinsi Jambi semakin tak terkendali (Jambi in the News - Forest encroachment in Jambi Province is out of control)</i> TVRI Jambi Station, 13/08/10, <i>Dunia Pendidikan - Generasi hijau hutan Harapan (Harapan Rainforest's green generation)</i></p>
18b	Number of national TV programme/features in the UK	1 out of 1 feature. In October 2010, RSPB produced a 14 minute film entitled " <i>Protecting nature, sustaining livelihoods</i> " about the work at HRF. In interviews with project staff (including research and conservation staff) it shows how biodiversity research and monitoring is vital for informing the forest restoration at HRF, which in turn has positive impacts on sustainable livelihoods for local communities.
19a	Number of national radio interviews/features in host country(s)	<p>3 out of 3 national radio features in the host country:</p> <p>Y1 – 1: Ian Rowland, Tropical Forest Conservation Manager at RSPB and liaising with HRF, gave a radio interview to Indonesian station Smart FM, broadcast in every provincial capital in Indonesia, on the Kew training programme, and the Darwin support for HRF (March 08)</p> <p>Y2 – 0</p> <p>Y3 – 1: Radio feature about the project on KBR68H radio station in Jakarta, 16/12/09, titled <i>Hutan Harapan (Harapan Rainforest)</i></p> <p>Y4 – 1: Agus Budi Utomo (Director of Burung Indonesia) gave an interview on Smart FM's <i>Burung dan Kita (Birds and Us)</i> programme, titled <i>Pemulihan hutan melalui restorasi ekosistem (Forest restoration through ecosystem restoration)</i> (October 2010)</p>

Code	Description	Totals (plus additional detail as required)
19b	Number of national radio interviews/features in the UK	Two podcasts produced featuring HRF and Sun bears. http://www.rspb.org.uk/podcasts/
Physical Measures		
20	Estimated value (£s) of physical assets handed over to host country(s)	£46,205 out of £46,205 of physical assets handed over: - Total amount of capital items = £28,974 from Darwin. Balance from RSPB matched funding.
21	Number of permanent educational / training / research facilities or organisation established	1 out of 1 research and training centre established at the main camp in HRF
22	Number of permanent field plots established	As agreed in the MTR, the details of this could change; up to 1,000 monitoring plots. 972 of 1,000 habitat and wildlife monitoring plots (0.2 ha in size) established throughout the forest: Y1 – 0 Y2 – 286: 16 R & C, 270 Forestry Y3 – 411: 307 R & C, 104 Forestry Y4 – 275: 275 R & C
23	Value of additional resources raised for project	£342,325 out of £208,400 raised from other sources: Y1 – 0 Y2 – £12,490 (The Disney Worldwide Conservation Fund, SeaWorld Busch Garden Conservation Fund) Y3 – £26,105 (International Association for Bear Research and Management – IBA; US Fish and Wildlife Service Great Ape Fund) Y4 – £11,175 (IBA, Panthera's Kaplan Graduate Awards Program) Plus £208,400 (European Community's Programme on Tropical Forests and Other Forest in Developing Countries) and £84,155 (Kreditanstalt für Wiederaufbau, KfW, German government-owned development bank)
Other Measures used by the project and not currently including in DI standard measures		

Mid-Term Review Standard Measures notes:

- 6a – Due to the nature of other HRF project activities and divisional work plan schedules, it is more cost effective to train project staff from other work areas for shorter periods of time, e.g. two project staff for 1-2 weeks, but more frequently. The overall training investment remains the same.

- 7 and 11b – Fewer manuals and manuscripts can be produced providing the intent to produce these outputs can be displayed.
- 12a – It may be appropriate to describe this output as consolidating the named databases into one GIS for the project; this is currently being considered in light of the possible incorporation of Management Information System (MIST).
- 13a – Invertebrate and herptile collections will be based more on digitisation (of specimen photos) rather than wet specimens, which reduces on-site curation costs and is easier to manage.
- 13b – Since invertebrate and herptile collections will focus more on digitisation rather than wet specimens, it may be harder to define how these two onsite electronic collections may enhance more traditional national collections.
- 15a, b – National and local media are less driven by press releases. Instead, site visits by journalists are more typical and are reported here as such.
- 22 – Precise details will change here.

Project note from the 3rd Annual Report:

- 9 – Harapan Rainforest's management plan will evolve over time. Consequently, research activities constantly feed in to this document. Therefore, for each year the output is '1' while the total planned remains at '1'. With the likely adoption of MIST as the main recording and reporting tool for the project (see Indicator 12a above), biodiversity data collection will be a major source of information for directing site management decisions.

Annex 5 Publications

Type *	Detail	Publishers	Available from	Cost £
Manual, CD	<i>How to Plant a Forest: The Principles and Practice of Restoring Tropical Forest</i> , Forest Restoration Research Unit (FORRU), 2006; translated from English to Indonesian by Harapan Rainforest, 2008	FORRU, Chiang Mai; Harapan Rainforest, Jambi	www.harapanrainforest.org ; http://www.forru.org/FORRU_Eng_Website/Pages/enghome.htm	Free
Manual, CD	Research For Restoring Tropical Forest Ecosystems: A Practical Guide (2008); translated from English to Indonesian by Harapan Rainforest, 2010	FORRU, Chiang Mai; Harapan Rainforest, Jambi	www.harapanrainforest.org ; http://www.forru.org/FORRU_Eng_Website/Pages/enghome.htm	Free
Newsletter article	<i>From the field: Harapan Rainforest</i> , David Lee, 2008	International Newsletter of The World Pheasant Association (WPA), Newcastle	WPA, Biology Field Station, Newcastle University, Close House Estate, Heddon-on-the-Wall, Newcastle-upon-Tyne NE15 0HT, UK; www.pheasant.org.uk	Free
Leaflet	<i>Selamat Datang di Harapan Rainforest</i> (Welcome to Harapan Rainforest); 2008	PT. Restorasi Ekosistem Indonesia	www.harapanrainforest.org	Free
Paper*	Homes for Sumatran Hornbills. Lee, D.C. and Rombang, W.	Raffles Bulletin of Zoology, scientific journal, 2011		
Paper*	Globally threatened Sunda Blue Flycatcher <i>Cyornis caerulatus</i> : synthesis of global records and recent records from Sumatra. Hua, F., Marthy, W., Lee, D. and Janra, M.N., submitted to Forktail; final review.	Forktail scientific journal, 2011		

Annex 6 Darwin Contacts

Ref No	162/16/005
Project Title	Biodiversity inventory and monitoring for conservation of threatened Sumatran forest
UK Leader Details	
Name	Dr Jeremy Lindsell
Role within Darwin Project	Oversee project from the UK. Provide support to seconded RSPB staff and local project staff
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Other UK Contact (if relevant)	
Name	Dr David Lee
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Partner 1	
Name	Yusup Cahyadin
Organisation	Restorasi Ekosistem Hutan Indonesia (Harapan Rainforest)
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