2/989

Submit by 5 January 2007

DARWIN INITIATIVE APPLICATION FOR GRANT ROUND 15 COMPETITION:STAGE 2

Please read the Guidance Notes before completing this form. Applications will be considered on the basis of information submitted on this form and you should give a full answer to **each** question. Please do not cross-refer to information in separate documents except where invited on this form. The space provided indicates the level of detail required. Please do not reduce the font size below 11pt or alter the paragraph spacing. Keep within word limits.

1. Name and address of organisation (NB: Notification of results will be by post)

Name:	**Address:**
The Royal Society South East Asia Rainforest Research Programme (SEARRP) Department of Geography University of Wales Swansea	Singleton Park Swansea SA2 8PP United Kingdom

2. Project title (not exceeding 10 words)

Biodiversity and ecosystem functioning: Building research capacity in SE Asia

3. Project dates, duration and total Darwin Initiative Grant requested

Proposed start date: July 2007		**Duration of project:** 3 years		**End date:** July 2010	
Darwin funding requested	**2007/08** **£ 63,275.00**	**2008/09** **£ 53,982.00**	**2009/10** **£ 55,602.00**	**2010/11** **£ 26,746.00**	**Total** **£ 199,605.00**

4. Define the purpose of the project (extracted from logframe)

To increase and sustain the capacity of SE Asian research institutes and conservation organisations to conduct effective research on the linkage between biodiversity and ecosystem functioning

5. Principals in project. Please provide a one page CV for each of these named individuals

Details	**Project Leader**	**Other UK personnel (working more than 50% of their time on project)**	**Main project partner and co-ordinator in host country/ies**
Surname	Reynolds		Mohamed
Forename (s)	Glen		Maryati
Post held	Programme Manager & Senior Scientist		Director
Institution	University of Wales Swansea		Universiti Malaysia Sabah
Department	The Royal Society SEARRP, Department of Geography		Institute for Tropical Biology and Conservation

6. Has your organisation received funding under the Darwin Initiative before? If so, give details

Reference No	Project Leader	Title
15020	Dr Carlos Gardia de Leaniz	Reducing the impact of exotic aquaculture on Chilean aquatic biodiversity
12023	Dr B Brendan Godley	Darwin Biodiversity Action Plan for Anegada, British Virgin Islands
7006	Dr G Graeme Hays	Assessing the status of Ascension Island green turtles

7. IF YOU ANSWERED NO TO QUESTION 6 describe briefly the aims, activities and achievements of your organisation. (Large institutions please note that this should describe your unit or department)

Aims (50 words)
Activities (50 words)
Achievements (50 words)

8. Please list the UK/collaborative (where there are partners <u>in addition</u> to the applicant organisation) and host country partners that will be involved, and explain their roles and responsibilities in the project. Describe the extent of their involvement at all stages, including project development. This section should illustrate the capacity of host country partners to be involved in the project. Please provide written evidence of partnerships.

Partner	**Details (including roles and responsibilities and capacity to engage with the project):**
Prof. Andrew Hector Head – Biodiversity Research Group Institute of Environmental Sciences University of Zurich Switzerland *(The project will also involve other UK staff from University of Zurich – Dr Lindsay Turnbull & Christopher Philipson)*	• Analysis of skills-gaps in host country/regional partner institutions • Assisting in the development of teaching materials • Leading the courses on experimental design & advanced methods of data analysis • Assisting host country/regional university partners in the incorporation of course material into their own curricula • Assisting in the development of policy briefing documents • Analysis of data from research component Prof. Hector leads the research programme on the Sabah Biodiversity Experiment and collaborates with colleagues at Universiti Malaysia Sabah and the Sabah Forestry Department on this experiment. Prof. Hector develops and teaches courses on experimental design and statistical analysis at the University of Zurich

Partner	**Details (including roles and responsibilities and capacity to engage with the project):**
Prof. Georgina Mace FRS Director NERC Centre for Population Biology Imperial College at Silwood Park United Kingdom *(The project will also involve other members of CPB staff who will contribute to training courses)*	• Assisting in the development of teaching materials • Contributing to the courses on experimental design/data analysis • Assisting in the development of policy briefing documents • Analysis of data from research component The NERC Centre for Population Biology (CPB) runs highly regarded courses in ecological methods. CPB has also been involved with the development of the Sabah Biodiversity Experiment. Several of its staff have collaborated with colleagues from Universiti Malaysia Sabah, Yayasan Sabah and the Sabah Forestry Department

Partner	Details (including roles and responsibilities and capacity to engage with the project):
Prof. Maryati Mohamed Director Institute for Tropical Biology and Conservation (ITBC) Universiti Malaysia Sabah Sabah, Malaysia *(Training component of project will also involve former Darwin Scholars employed at ITBC who will act as trainers on basic courses)*	• ITBC will be the lead project partner and local coordinating agency • ITBC lecturers and post-doctoral research fellows will receive training in experimental design and advanced methods of statistical analysis • Research assistants and field staff will receive training in research methods, data management and archival protocols and in basic data analysis • Former Darwin scholars, now employed at ITBC, will contribute to the training of research assistants and field staff ITBC have been involved with numerous Darwin Initiative projects and have a long-standing collaborative relationship with the Royal Society SEARRP of over 15 years. Prof. Maryati is extremely supportive of this project, recognising that it will help fill a major skills gap within ITBC and other partner organisations.

Partner	Details (including roles and responsibilities and capacity to engage with the project):
Roland Yap Acting Executive Director Director – Networking, Partnership and Resource Mobilization ASEAN Centre for Biodiversity (ACB) Laguna, Philippines	• ACB aims to co-ordinate biodiversity research in the ASEAN region and will assist in the co-ordination/promotion of this project – especially by sourcing course participants from the wider SE Asian region • They will be a key partner in the development of common experimental and data management protocols • ACB will also assist in the development of policy statements and briefings and their dissemination to key stakeholders in the ASEAN region

Partner	Details (including roles and responsibilities and capacity to engage with the project):
Dr Waidi Sinun Group Manager Conservation & Environmental Management Division Yayasan Sabah Group (YS) Sabah, Malaysia	• YS (who manage Danum Valley Field Centre) will provide substantial logistic and management support – and make Danum Valley available as a training base for the project • YS conservation officers and forest managers will participate on the advanced courses and their research assistants on the more basic training • Data previously collected by YS as part of its regular forest monitoring operations, and on forest rehabilitation projects under its management, will be used as sample datasets on the training courses

Partner	Details (including roles and responsibilities and capacity to engage with the project):
Dr Robert Ong Group Leader – Natural Forest Management Forest Research Centre Sabah Forestry Department (SFD) Sabah, Malaysia	• Senior research, conservation and forestry officers from SFD will participate on the advanced courses – and their research assistants and other field staff on the more basic courses • As a department of the Sabah State Government, SFD will be a key partner in the development of policy statements and briefings

Partner	Details (including roles and responsibilities and capacity to engage with the project):
Dr Junaidi Payne Senior Advisor WWF-Malaysia Sabah, Malaysia	• The training base for this project (Danum Valley) is within WWF's 'Heart of Borneo' project area. The project includes extensive biodiversity monitoring programmes • WWF are keen to work with us to develop common data collection protocols and to improve the basic data handling and analysis skills of its technical staff • Participation from WWF will include staff from their operations in Malaysia, Kalimantan and Brunei

Partner	Details (including roles and responsibilities and capacity to engage with the project):
Prof. Keping Ma Director General Institute of Botany (IoB) Chinese Academy of Sciences University of Beijing China	• IoB are currently developing research capacity in the field of biodiversity/ecosystem functioning – including the establishment of a large forest biodiversity experiment • IoB work closely with colleagues from the University of Zurich and are keen to work with us to develop common data collection protocols and gain practical experience of establishing and managing a large-scale biodiversity experiment • IoB post-docs will participate in the advanced training courses

9a. Have you consulted stakeholders not already mentioned above? ☒ **Yes** ☐ **No**
If yes, please give details:

- The British High Commissioner to Malaysia and Environmental staff from the High Commission have been briefed on the proposal, will be invited to attend the opening a closing workshops and will be circulated into policy briefings developed as part of the project

9b. Do you intend to consult other stakeholders? ☒ **Yes** ☐ **No**
If yes, please give details:

- Participation in the training courses will be sought from various research institutes and conservation organisations throughout SE Asia (mainly through the offices of the ASEAN Centre for Biodiversity (ACB) – please note supporting letter)

9c. Have you had any (other) contact with the government not already stated? ☒ **Yes** ☐ **No**
If yes, please give details:

- The Director of the Malaysian Government's Economic Planning Unit (Sabah office) has been briefed on this proposal and will be invited to attend the opening and closing project workshops. They will also be circulated into policy statements and briefings developed as part of the project

PROJECT DETAILS

10. Please provide a Concept note (Max 800 words) (repeat from Stage 1, with changes highlighted)

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

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

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

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

This project aims to address these issues through a multi-level training programme involving key research and conservation institutions in SE Asia (plus China) and through collaboration with regional coordinating organisations. Training and capacity building will be aimed at three levels:

1) *Heads of research institutes, conservation organisations and NGOs:* Introductory workshop to highlight the need for long-term monitoring programmes and large-scale experiments on biodiversity and ecosystem functioning and closing workshop/conference to present project outputs and policy statements developed from these
2) *University lecturers, post-doctoral and PhD research students, conservation and forest managers:* Training in the design of biodiversity experiments and monitoring programmes, statistical analysis (using the open licence 'R' statistical package) and data management using Ecological Metadata Language (EML) protocols.
3) *Research assistants, conservation officers etc:* Field and classroom based training in data collection, management and basic analysis – this will include each participant carrying out an individual research project as part of the Sabah Biodiversity Experiment

The project will utilise an existing SE Asian centre of excellence (the Danum Valley Field Centre) with its on-going biodiversity monitoring and experimental programmes as a training platform and as an example of the monitoring programmes and experimental science.

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

The project will be coordinated by the Royal Society SEARRP, which has supported a research and training programme at Danum Valley for over 20 years, with extensive input from UK and European research institutes with key experience in biodiversity research and training in statistical methods (the NERC Centre for Population Biology and UK staff from the Institute of Environmental Sciences, University of Zurich).

A novel aspect of this project, and one intended to capitalise on the training given as part of previous Darwin Initiative projects based in Sabah, will be the involvement of Malaysian and SE Asian former Darwin scholars (several of whom now hold key posts within local/regional research institutions). These staff will play a major role as trainers on the project, particularly in the courses aimed at research students and assistants, and will themselves receive additional training in experimental design and advanced statistical analysis.

11a. Is this a new initiative or a development of existing work (funded through any source)? Please give details:

- The training component of the project is a new initiative, though it builds strongly on previous and ongoing Darwin Initiative projects in Sabah
- The research component builds on existing work at Danum Valley (especially the Sabah Biodiversity Experiment) with funding from the Royal Society SEARRP, University of Zurich, NERC CPB, Yayasan Sabah and others

11b. Are you aware of any other individuals/organisations/Darwin Initiative projects carrying out similar work? ☐ **Yes** ☒ **No**

If yes, please give details explaining similarities and differences, and explaining how your work will be additional to this work and what attempts have/will been made to co-operate with and learn lessons from such work for mutual benefits:

12. How does this project meet a clearly identifiable biodiversity need or priority defined by the host country? Please indicate how this work will fit in with National Biodiversity Strategies or Environmental Action Plans, if applicable.

The project is consistent with Malaysia's National Policy on Biological Diversity, particularly the following objectives:

i. *To utilise economic benefits from sustainable utilisation of the components of biological diversity*

iii. To maintain and improve environmental stability for proper functioning of ecological systems

iv. To ensure preservation of the unique biological heritage of the nation for the benefit of present & future generations

v. To enhance scientific and technological knowledge…of biological diversity

And strategies:

1. Improve the scientific knowledge base:

1.4 Intensify research on the functional aspects of biological diversity

1.8 Evaluate the economic contributions of biological diversity to the value of goods and services in the national economy

2. Enhance the sustainable utilisation of the components of biodiversity:

2.5 Undertake research and monitoring of the impacts of resource utilisation on biological diversity

7. Enhance skill, capabilities and competence:

7.1 Identify critical skill requirements and undertake programmes to develop the human resource base

7.3 Enhance research, planning and management capabilities through collaborative programmes amongst local organisations and between local organisations and established foreign institutions

7.5 Develop or re-orientate education and training programmes with specific reference to conservation and sustainable use of biological diversity

10. Minimise impacts of human activities on biological diversity:

10.5 Rehabilitate degraded habitats where biological diversity has been reduced, in particular those within conservation areas and their adjacent areas

13. Promote international cooperation and collaboration:

13.1 Identify areas of research and technology requirements where cooperation and collaboration are needed

13.2 Identify and develop collaboration with relevant international and national institutions involved in biological diversity which would promote mutual benefits

13.3 Develop bilateral and multilateral arrangements…..for technology transfer and technical and scientific information exchange

13.4 Promote regional collaboration in biological diversity

14. Exchange of information:

14.2 Establish or strengthen systems for the exchange of such information at national & international levels through networking and by establishing databases and information centres

13a. How will the project assist the host country in its implementation of the Convention on Biological Diversity? Please rank the relevance of the project to the relevant article(s) of the CBD thematic programmes and/or cross-cutting themes by indicating percentages.

Articles	% Relevance	Themes	% Relevance
5. Co-operation	5%	Access and Benefit Sharing	
6. General measures for Conservation and Sustainable Use	10%	Agricultural Biodiversity	
7. Identification and Monitoring	10%	Alien Species	
8. *In-situ* Conservation	5%	Biodiversity and Tourism	
8h. Alien Species		Biosafety	
8j. Traditional Knowledge		Climate Change and Biodiversity	10%
9. *Ex-situ* Conservation		Economics, Trade and Incentives	
10. Sustainable use of components of Biological Diversity	20%	Ecosystems approach	35%
11. Incentive measures		Forest Biodiversity	30%
12. Research and Training	35%	Global Strategy for Plant Conservation	
13. Public education and awareness	5%	Global Taxonomy Initiative	
14. Impact assessment and minimizing adverse impacts		Impact Assessment, Liability and Redress	
15. Access to genetic resources		Indicators	
16. Access to and transfer of technology	10%	Inland Waters Biodiversity	
17. Exchange of information	15%	Marine and Coastal Biodiversity	
18. Technical and scientific co-operation	20%	Mountain Biodiversity	
19. Handling of biotechnology and distribution of its benefits		Protected Areas	
20. Financial resources		Public Education and Awareness	5%
21. Financial mechanism		Sustainable Use and Biodiversity	15%
22. Relationship with other international conventions		Traditional Knowledge, Innovations and Practices	
23. Conference of the Parties			
24. Secretariat			
25. Subsidiary Body on Scientific, Technical and Technological advice			
26. Reports			

13b. Is any liaison proposed with the CBD national focal point in the host country? ☒ **Yes** ☐ **No**
If yes, please give details:

The CBD focal point for Malaysia (Ministry of Natural Resources and the Environment) will be invited to the introductory and closing workshops and circulated into policy-related material arising from the project

14. If relevant, please explain how the work will contribute to sustainable livelihoods in the host country. (Max 200 words)

Much of the population of SE Asia, especially those living in cash-poor rural communities, are highly dependent on the ecosystem services provided by forests, most particularly watershed protection, soil stabilisation, soil fertility and primary production. This project will contribute to sustainable livelihoods in SE Asia by:

- Demonstrating the links between biodiversity and ecosystem functioning, and hence to the importance of sustainable management and biodiversity conservation to the provision of key ecosystem services and forest productivity
- Increasing the capacity of regional research institutes to design their own research and monitoring programmes in this field

And:

- Contributing to the evidence base for policy makers and natural resource managers to make informed decisions on the conservation and management of the SE Asian forests

15. What will be the impact of the work, and how will this be achieved? Please include details of how the results of the project will be disseminated and put into effect to achieve this impact. (max 200 words)

The primary impacts of this work will be to demonstrate the need, and increase the capacity, for SE Asian research institutes to conduct research that links biodiversity and ecosystem functioning. This will be achieved by:

- Introducing the project and research in this field to key national and regional policy makers and research practitioners
- Furthering the training of a core-team of research assistants who will collect data as part of the existing Sabah Biodiversity Experiment
- Training of postgraduate and post-doctoral researchers and research managers from conservation/forest management organisations in the design and establishment of biodiversity experiments, and data analysis using model datasets collected as part of the research component of the project
- Training research assistants and field staff from partner institutions in data collection, management and basic analysis
- Incorporation of the training programmes developed onto the courses of partner universities
- Presentation of results of research component of project to key stakeholders (and the public) in an accessible form, and to key policy makers and natural resource managers through policy statements and briefings

16. How will the work leave a lasting legacy in the host country or region? (max 200 words)

This project will leave a sustainable legacy in Malaysia and the wider SE Asian region by:

- Supporting research facilities that will act as a long-term training base and example of experimental best-practice (project contribution to the Sabah Biodiversity Experiment)
- Training key staff from within major SE Asian research and conservation organisations
- Building capacity within local and regional research institutes to establish their own long-term ecological experiments and biodiversity monitoring programmes
- Developing common data collection, management and analyses protocols
- Incorporating experimental design and statistical analysis teaching modules, developed as part of this project, into the teaching programmes of collaborating universities
- Contributing to national and regional policy development
- Contributing to the Malaysian and other regional governments' implementation of the CBD

17. Please give details of a clear exit strategy and state what steps have been taken to identify and address potential problems in achieving impact and legacy. For example, what steps have been taken to ensure the benefits of the project will continue despite any staff changes in these organisations? (max 200 words)

This project will contribute to an ongoing research and training programme (the Royal Society SEARRP), to an established experiment (the Sabah Biodiversity Experiment) and major host-country and SE Asian research and teaching institutions, forest management and conservation organisations. Project benefits will therefore have a high degree of sustainability beyond the lifetime of the grant.

The relatively large number of people who will be trained on the project (±60), most of whom are employed in permanent positions, and the teaching materials that will be incorporated to established university courses, will ensure that project benefits will have considerable independence of any staff changes.

Finally, the use of open-source software on all training courses will ensure that participating organisations are able to freely download and upgrade analytical software, even in the absence of additional funding

18. How will the project be advertised as a Darwin project and in what ways will the Darwin name and logo be used? (max 100 words)

The project will be widely publicised by all project partners – especially through the ACB who have a dedicated publicity unit and extensive links with regional media. Measures to advertise the project in print, web-based and broadcast media will include:

- Circulating annual newsletters (printed and web-based) which will include the Darwin and partner logos
- Inviting national and regional media to attend opening and closing workshops – with Darwin and partner logos included in workshop backdrops and briefing materials
- Placement of the Darwin logo on the Sabah Biodiversity Experiment signboard
- Posting project details (including outputs, policy statements etc) on partner websites – Darwin logo will be used on all posts

19. If your project includes training and development, please indicate a) who the trainees will be, b) the criteria for selection, c) what the level and content of training will be, d) how many people will be involved, e) which countries will they be from, f) how will you measure the effectiveness of the training, g) will those trained then be able to train others and h) how will trainee outcomes be monitored after the end of the training? (max 300 words)

a) *Advanced courses* (3.2, 3.3, 3.4 in the Activity Table): University lecturers, research fellows, senior conservationists and forest managers

Basic courses (4.2, 4.3, 4.4): Research assistants and field staff

Sabah Biodiversity Experiment (SBE): Additional vocational training for research assistants

b) Heads of partner organisations will select candidates according to criteria set by UK partners. For the advanced courses these will include qualification to at least MSc level. Candidates for basic courses will be expected to have a diploma, other vocational qualifications and/or 5+ years field experience

c) *Advanced courses*: progressive training in experimental design and data analysis (including the use of Linear and Generalised Linear models in 'R')

Basic courses: Progressive training in the use of standard data management and archival protocols, simple analysis and graphing

Note: All courses will utilise datasets collected during the research component of the project

d) *Advanced courses*: 25 participants

Basic courses: 20 participants

SBE: 12 research assistants

Total trained: 57

e) *Advanced courses*: 10 - 12 participants from Malaysia (Sabah, Sarawak and Peninsular Malaysia), 2 from China and 10 – 12 from other SE Asian nations

Basic courses: All participants from Malaysia, Kalimantan and Brunei (Borneo)

SBE: Malaysian and Indonesian project staff

f) All course participants will be individually assessed on the completion of each course

g) Advanced courses: Participants will be qualified to teach post-graduate and undergraduate students

Basic courses and SBE: Research assistants will be qualified to train other field staff

Note: Trainers on basic courses will include former Darwin Scholars now employed at UMS – who will themselves receive additional training on the advanced courses

h) UK project partners will conduct a final assessment of trainee progress after course completion – this will be circulated to in-country project partners for comment, and findings incorporated into the development of teaching materials

LOGICAL FRAMEWORK

20. Please enter the details of your project onto the matrix using the note at Annex C of the Guidance Note. This should not have substantially changed from the Logical Framework submitted with your Stage 1 application. Please highlight any changes.

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

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

Activities	**Activity milestones (summary of project implementation timetable)**	**Assumptions**
1.1 Conduct detailed review of latest international practices and results	Report prepared and circulated for comment and review. Feedback incorporated and final version circulated	
1.2 Introductory workshop for policy makers, university department heads, senior conservationists and forest managers to introduce the importance of research linking biodiversity with ecosystem function and the application of the latest experimental design and analytical techniques	Workshop held for 30+ participants and feedback incorporated into training and research programme development	Key players all willing and available to attend workshop
2.1 Conduct detailed review of current practices and standards and prepare analytical report	Report prepared and circulated for comment and review. Feedback incorporated and final version circulated	
2.2 Develop and validate revised research protocols including experimental design, layout, data collection and analysis systems	Report prepared and circulated for comment and review. Feedback incorporated and final version circulated	Collect sample datasets for analysis and use in training courses using revised protocols
2.3 Collect sample datasets for analysis and use in training courses using revised protocols	Data collection on Sabah Biodiversity Experiment – continues for duration of project	Data collected and available for analysis
3.1 Conduct detailed skills gap analysis for postgraduate and post-doctoral researchers and research managers	Report prepared and circulated for comment and review. Feedback incorporated and final version circulated	
3.2 Develop and deliver a course on 'Experimental design and analysis for biodiversity and ecosystem functioning'	One week course held for 25 participants	Participants willing and available to attend course

3.3 Develop and deliver a course on 'Analysis of biodiversity data using Linear Models in R incl. basic graphing in R'	One week course held for 25 participants	Participants willing and available to attend course
3.4 Develop and deliver a course on 'Analysis of biodiversity data using Generalised Linear Models and advanced graphing in R'	One week course held for 25 participants	Participants willing and available to attend course
4.1 Detailed skills gap analysis for research assistants and field staff	Report prepared and circulated for comment and review. Feedback incorporated and final version circulated	
4.2 Develop and deliver a classroom and field based course for research assistants and field staff on 'Data collection, management and archiving', including a mini-project (field based) by each participant	3 week course (1 week classroom, 2 weeks field-based) held for 20 participants	Participants willing and available to attend course
4.3 Develop and deliver a classroom and field based course for research assistants and field staff on 'Field survey, sampling and monitoring techniques', including a mini-project (field based) by each participant	3 week course (1 week classroom, 2 weeks field-based) held for 20 participants	Participants willing and available to attend course
4.4 Develop and deliver a classroom and field based course for research assistants and field staff on 'Additional biodiversity monitoring techniques and introductory data analysis', including a mini-project (field based) by each participant	3 week course (1 week classroom, 2 weeks field-based) held for 20 participants	Participants willing and available to attend course
5.1 Refereed papers on research component and associated studies	At least 6 papers published	Journals accept papers for publication
5.2 Group mini-projects carried out during training courses 4.2, 4.3 and 4.4	Projects written-up, compiled and circulated	
5.3 Project newsletter	Newsletter circulated (and posted on websites of partner organisations) to UK and regional partners, to national media and British High Commission, Malaysia	
5.4 Posters and simple publications for public consumption through participating institutions, regional media and environmental awareness programmes	Posters and publications prepared and distributed	
5.5 Development (and translation if necessary) of teaching material for incorporation into teaching programmes of partner universities	Course materials prepared and draft submitted to participating universities for comment. Final version incorporated into university teaching programmes	Material accepted by partner organisations
5.6 Policy level briefing papers summarising findings and their significance	Workshop held and final feedback incorporated into policy briefings	
5.7 Final wrap-up workshop for all project partners, CBD focal point, representatives of government departments and British High Commission, Malaysia	Presentation of policy briefings and statements to project partners and other stakeholders – for 30+ participants	Policy briefings accepted by project partners and other stakeholders

21. Provide a project implementation timetable that shows the key milestones in project activities.

Date	Financial year	Key milestones
• *June 2007*	*2007/2008*	*1.0 Pre-project planning meeting between UK partners. Preparation of detailed project implementation plan and timetable*
• Jul-Sep 2007	2007/2008	1.1 Detailed review of latest best practice. Draft report prepared and circulated for comment by Aug 2007 with final version completed by Sep 2007
• Oct 2007	2007/2008	1.2 Introductory workshop for policy makers, CBD focal point representatives, university department heads, government department representatives, heads of conservation organisations and senior forest managers. Feedback from workshop incorporated into training and research programme development
• Jul-Oct 2007	2007/2008	2.1 Detailed review of current practices and standards. Analytical report prepared and circulated for comment and review by Sep 2007. Report finalised by Oct 2007 and findings incorporated into development of training programme
• Nov 2007–Feb 2008	2007/2008	2.2 Revised protocols for experimental design, data collection and management and analytical methods developed. Draft report circulated for comment and review by Jan 2008 with final version completed by Feb 2008
• Jul 2007 to end of project	2007/2008	2.3 Sample datasets collected as part of the Sabah Biodiversity Experiment – with ongoing on-the-job training for research assistants employed on the experiment
• Jan-Feb 2008	2007/2008	3.1 Detailed skills gap analysis for postgraduate and post-doctoral researchers and research managers from conservation/forestry organisations. Findings incorporated into development of course materials
• Mar 2008	2007/2008	3.2 Course delivered on '*The links between biodiversity and ecosystem functioning and the design and analysis of biodiversity experiments*'. Course aimed at postgraduate and post-doctoral researchers and research managers from conservation/forestry organisations
• Mar 2009	2008/2009	3.3 Course delivered on '*Analysis of biodiversity data using Linear Models in R*'. Course aimed at postgraduate and post-doctoral researchers and research managers from conservation/forestry organisations
• Mar 2010	2008/2009	3.4 Course delivered on '*Analysis of biodiversity data using Generalised Linear Models in R*'. Course aimed at postgraduate and post-doctoral researchers and research managers from conservation/forestry organisations
• Jan-Feb 2008	2007/2008	4.1 Detailed skills gap analysis for research assistants and field staff. Findings incorporated into development of course materials
• Apr/May 2008	2008/2009	4.2 Classroom and field course delivered on '*Data collection and basic data management and archival*'. Field training to include mini-project by each participant. Course aimed at research assistants and field staff
• Apr/May 2009	2009/2010	4.3 Classroom and field course delivered on '*Field survey, sampling and monitoring and advanced data management techniques'*. Field training to include mini-project by each participant. Course aimed at research assistants and field staff
• Apr/May 2010	2010/2011	4.4 Classroom and field course delivered on '*Further biodiversity monitoring techniques and basic data analysis in Excel*'. Field training to include mini-project by each participant. Course aimed at research assistants and field staff
• By Jul 2010	2010/2011	5.1 Refereed papers on research component of project submitted and accepted for publication

• By Jul 2010	2010/2011	5.2 Group mini-projects written-up and circulated (and posted on websites of partner organisations)
• By Jul 2010 (through project)	2010/2011	5.3 Project newsletter printed and circulated (posted on websites of partner organisations) to UK and regional partners, to national media and British High Commission, Malaysia
• Jul 2010	2010/2011	5.4 Posters, simple publications and web-posts produced for public consumption. Made available through local/regional partners, national media and environmental awareness programmes and British High Commission, Malaysia
• May-Jul 2010	2010/2011	5.5 Development (and translation where necessary) of teaching material for incorporation into courses of partner universities. Draft submitted to project partners for comment by Jun 2010, finalised by Jul 2010.
• May-Jul 2010	2010/2011	5.6 Policy level briefing papers drafted and circulated for comment by Jun 2010, finalised by Jul 2010
• Jul 2010	2010/2011	5.7 Final wrap-up workshop for all project participants. Presentation of policy briefings and statements to project partners and participants, CBD focal point for Malaysia, representatives of government departments and British High Commission, Malaysia

22. Set out the project's measurable outputs using the separate list of output measures.

PROJECT OUTPUTS		
Year/Month	**Standard output number (see standard output list)**	**Description (include numbers of people involved, publications produced, days/weeks etc.)** *Please note: Numbering consistent with previous tables*
• July 2007 to end of project	8	• Project leader: approx. 18 weeks per year • UK partners from University of Zurich: approx. 6 weeks per year (Prof Hector/Dr Turnbull – 4 weeks each, Christopher Philipson – 6 weeks) • Staff member from NERC Centre for Population Biology: approx 3 weeks per year
• Oct 2007	14A 14B	1.2 Workshop for senior representatives of project partners etc: 1-week course/workshop for 30+ participants
• Jul 2007 to end of project	5	2.4 Data collection on the Sabah Biodiversity Experiment: 12 research assistants to receive ongoing field-based training (±3 years)
• Mar 2008	4C 4D	3.2 Course on '*The links between biodiversity and ecosystem functioning and the design and analysis of biodiversity experiments*': 1-week course for 25 participants
• Nov 2008	4C 4D	3.3 Course on '*Analysis of biodiversity data using Linear Models in R*': 1-week course for 25 participants
• Mar 2008	4C 4D	3.4 Course delivered on '*Analysis of biodiversity data using Generalised Linear Models in R*': 1-week course for 25 participants
• Apr/May 2008	4A 4B	4.2 Course on '*Data collection and basic data management and archival'*: 3-week course (1-week classroom based, 2-weeks field based) for 20 participants
• Apr/May 2009	4A	4.3 Course on '*Field survey, sampling and monitoring and advanced data management techniques'*: 3-week course (1-week

	4B	classroom based, 2-weeks field based) for 20 participants
• Apr/May 2010	4A 4B	4.4 Course on '*Further biodiversity monitoring techniques and basic data analysis in Excel*': 3-week course (1-week classroom based, 2-weeks field based) for 20 participants
• By Jul 2010	11A 11B	5.1 Data on the Sabah Biodiversity Experiment collected and analysed: 6+ papers to be submitted and published
• By Jul 2010	10	5.2 Group mini-projects (from activities 4.2, 4.3 and 4.4) written-up, printed and circulated
• July 2007 to end of project	16A 16B 16C	5.3 Project newsletter: 4 in total (1 per year + 1 final). Estimated circulation approx. 1,500. Web version also posted on partner organisation websites
• Jul 2010	14A 14B	5.7 Final wrap-up workshop for all project participants and other stakeholders. 1-week workshop for 30+ participants

PROJECT BASED MONITORING AND EVALUATION

23. Describe, referring to the Indicators in the Logical Framework, how the progress of the project will be monitored and evaluated, including towards delivery of its outputs and in terms of achieving its overall purpose. This should be during the lifetime of the project and at its conclusion. Please include information on how host country partners will be included in the monitoring and evaluation.

- Reviews of current experimental and analytical best-practice circulated to host country project partners for comment and discussed with all project participants and opening workshop
- Skills-gap analyses and new teaching materials circulated to project partners for comment and review and discussed at opening workshop
- Individual assessment of all course participants on completion of each course. Results of assessment made available to course participants and partner organisations
- UK project leader and other staff continually monitor data collection and entry on the Sabah Biodiversity Experiment as part of the research component of the project
- Papers resulting from the research component of the project submitted to refereed journals. Papers will be co-authored with researchers from host country project partners
- Teaching materials developed during the project submitted to participating universities and internally reviewed before incorporation into their teaching programmes
- Policy briefings and statements circulated to all project partners for comment and review and discussed at closing project workshop prior to publication
- Annual project review meeting with UK project partners – summary report circulated to host country and regional project partners