



App2 625



Submit by 13 January 2006

DARWIN INITIATIVE APPLICATION FOR GRANT ROUND 14 COMPETITION:STAGE 2

1. Name and address of organisation

Name: School of Biological Sciences, U Aberdeen	Address: Department of Plant & Soil Science, 23 St Machar Drive, Aberdeen, AB24 3UU
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2. Project title (not exceeding 10 words)

Buffer zone restoration and development in Knuckles Forest Reserve, Sri Lanka (Ref 625)

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

Proposed start date: 1 July 2006		Duration of project: 36 months			End date: 30 June 2009
Darwin funding requested	Total	2006/07	2007/08	2008/09	2009/2010
	£225,068	£82,471	£63,831	£59,711	£19,055

4. Define the purpose of the project in line with the logical framework

To enhance the sustainable conservation of biological diversity and ecosystem services in the Knuckles Forest Reserve (KFR), Sri Lanka, by addressing the main threats to environmental protection through the development of options for buffer zone management that improve the livelihoods of local communities.

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 or co-ordinator in host country
Surname	Pinard	Dhokal	Gunatilleke
Forename (s)	Michelle Amy	Balram	I.A.U. Nimal
Post held	Lecturer in Tropical Forestry	Research Assistant	Professor of Botany
Institution	University of Aberdeen	University of Aberdeen (to be hired on project)	University of Peradeniya
Department	School of Biological Sciences	School of Biological Sciences	Department of Botany

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

Yes. Biodiversity monitoring in forest ecosystems in Bale Mountains Park, Ethiopia (Dr Michelle Pinard, 14-009); Conservation of small vertebrates in the Tsingy Bemaraha National Park, Madagascar (Prof Paul Racey, 14-006); Conserving the southeast Asian Guano Bat - sustaining livelihoods across borders (Dr Ian Mackie, 14-036); Conservation of wetlands and associated biodiversity in Northern Zambia (Prof Paul Racey); The conservation and management of Malagasy Microchiroptera and their habitats (Prof Paul Racey; 10-024); The role of fruit bats in maintaining biodiversity in Madagascar (Prof Paul Racey; 162/07/027); The biodiversity of rheophytes and river water chemistry in Ghana (Dr Mike Swaine, Ref 3056).

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 (where there are partners in addition to the applicant organisation) and host country partners that will be involved in their project and explain their roles and responsibilities in the project. Describe the extent of their involvement at all stages, including project development. What steps have been taken to ensure the benefits of the project will continue despite any staff changes in these organisations? Please provide written evidence of partnerships.

University of Aberdeen (UA), through Dr Michelle Pinard, Dr David Burslem, Dr Mike Swaine and Mr Balram Dhakal, will take responsibility for project co-ordination, contribute to project planning, the provision of training and the implementation of the community-based activities. MP and DB have worked in KFR with colleagues at University of Peradeniya (UP) and postgraduate students from UA and UP for the past 3 y on an EU Asia Link project on restoration of degraded lands. MS has extensive experience with project administration and ecological research in the tropics. DB participated in the stakeholder workshop held in KFR in January 2005 and is conducting research on the ecological basis of forest restoration on abandoned tea estates. MP is conducting research on the contribution of forest resources and the park to livelihood options for peasant farmers in communities bordering the park. Mr Balram Dhakal will serve as the in-country project co-ordinator and will be based in the communities that border KFR; he will lead the activities with the communities and ensure that the participatory research on sustainable livelihoods is integrated into the ecological research on restoration and invasive species. He has work experience with forest user groups and income generation in community forests in Nepal. In Sri Lanka Mr Dhakal will be supported by local research assistants.

The **Centre for Ecology and Hydrology** (CEH), Dr Philip Hulme, is a UK-based partner. Dr Hulme collaborates with UA and UP co-applicants on current research projects in Sri Lanka. He visited the KFR in July 2004 and January 2006 and was involved in discussions that initiated this proposal with KFR stakeholder organisations. He has expertise in the impacts of invasive plant species on native biodiversity in temperate and tropical ecosystems and will develop the research, monitoring and management components for invasive species in the KFR buffer zone. He will also facilitate the delivery of training in GIS and vegetation mapping.

The **University of Peradeniya** delivers undergraduate and masters degrees in botany, zoology and wildlife conservation and management and undertakes research in these areas. Five UP staff (Prof IAUN Gunatilleke, Prof CVS Gunatilleke, Dr Sumedha Madawala, Dr Kushan Tennakoon, Dr Anoja Wickramasinghe) are involved in this project. They have expertise in plant ecology and conservation (IAUNG), plant systematics and biogeography (CVSG), soil science and hydrology (SM), plant responses to environment (KT) and sustainable livelihoods research (AW). Their principal role in the project will be to co-supervise the training of the masters students supported by the project with the UK-based PIs but they will also contribute to project coordination, research planning and training activities. The partners at UP have been working with UA and CEH on academic exchange schemes for the last six years and on research projects at KFR for the last three. IAUNG and CVSG participated in the preparation of the documentation for the MAB nomination of KFR as a World Heritage Site and are involved in many biodiversity conservation initiatives in Sri Lanka, hence they provide a means of communicating with senior policy makers. They co-hosted the KFR stakeholders workshop in January 2005 where the objectives and

activities of this project were defined, and discussed these further with the UK PIs during exchange visits in April 2005 and January 2006. If there were to be staff changes at UP during the project period, the responsibilities for project coordination, administration and training could easily be transferred to any of the five key collaborators at UP, all have experience with project management.

Mr. Sarath Fernando, Conservator General, **Forest Department (FD)**, Colombo, Custodians of the KFR, currently implementing initial stages of KFR management plan (i.e., demarcating forest boundaries, upgrading protective legislation, infrastructure and human resources). He was involved in defining project purpose. His role in the project will be to contribute to project planning to ensure that the project activities contribute to the overall management goals for KFR. He will also be responsible for encouraging FD staff to participate in project training and research activities and will take responsibility for the implementation of the buffer zone management plan.

Dr. Channa Bambaradeniya (Coordinator, Regional Species Programme Asia) and Dr Shantha K Hennayake (National Project Coordinator for Forest Governance Project), **IUCN Colombo**. Dr Bambaradeniya was involved in the implementation of several conservation projects in KFR and is the author of the Guide to Biodiversity of the Knuckles Forest region; he helped to identify the need for the project and the project purpose. Their role in the project will be to participate in project planning activities and to facilitate exchange of information and experience with other organisations working in conservation in Sri Lanka. Dr Hennayake is the Nation Project Coordinator for IUCN's Forest Governance Project, which will use the KFR to develop a model for forest policy development in Sri Lanka. He will participate in the sustainable livelihoods research and will oversee the work of the two projects to ensure their complementarity and integration.

Mr DHS Manatonga, is President of **Eco Friends Lanka** (a local land-owners group). Mr Manatonga has been involved in discussions about priorities for management of KFR and its buffer zone and has contributed to the project definition during the Knuckles Stakeholder Workshop (January 2005) and during interviews conducted as part of UA research on the impacts of the conservation on local livelihoods. His role in the project will be to facilitate communication between project staff and land-owners, to encourage participation by land-owners in project activities, to facilitate access to lands under private ownership and to provide limited logistical support for research activities. Mr Nishantha Jinasena is also a member of Eco Friends Lanka but also serves as the Superintendent of **Midlands Tea Estate** (located adjacent to KFR). The estate management, lead by Mr Jinasena, was involved in defining strategies for managing the KFR buffer zone. Mr Jinasena's role in the project will be as described for Mr Manatonga.

9. What other consultation or co-operation will take place or has taken place already with other stakeholders such as local communities?

Local communities, local government agents, private land holders and staff with the FD and IUCN have been interviewed in relation to the role of forest resources for livelihood options in the lands surrounding the KFR and the priorities for community development within and bordering the KFR. This work was done as part of a collaborative research project co-ordinated by UK and Sri Lankan partners during the period 2003-2006 funded by British Council and EU academic exchange programmes. A stakeholder analysis was done by the same team, culminating in a workshop held in KFR in January 2005, where all main stakeholders were represented and the management priorities for the KFR and the buffer zone were discussed. Prior to that workshop there had been no forum for representatives of the KFR stakeholder groups to meet and discuss land management issues directly affecting the KFR buffer zone. The proposed Darwin project builds on and strengthens these embryonic working relationships, and this process has inevitably required us to construct a wide-ranging project team.

The management plan for the KFR was written in 1989, revised in 1993 and is due to be updated. The FD, through the head of its Forest Resources Management Project, Mr H.M. Bandaratileke, is responsible for updating and implementing the new management plan. This project will contribute to the sections of the revised management plan dealing with conserving biodiversity and restoring ecosystem services delivered by the three most widespread degraded habitats in the KFR buffer zone: plantations of the exotic timber tree species *Pinus caribaea*, expanses of grassland that colonise areas of abandoned former tea plantation and patches of former Cardamom plantations under a natural forest canopy that are no longer exploited because

licenses have been revoked. Management of invasive alien species and development of sustainable livelihoods options will be cross-cutting issues addressed within each of these three habitats.

PROJECT DETAILS

10. Is this a new initiative or a development of existing work (funded through any source)? Are you aware of any other individuals/organisations carrying out similar work, or of any completed or existing Darwin Initiative projects relevant to your work? If so, please give details explaining similarities and differences and showing how results of your work will be additional to any similar work and what attempts have/will be made to co-operate with and learn lessons from such work for mutual benefits.

This is a new initiative that builds on a long-standing collaboration, which has included work at the same site with a different focus. Only one other Darwin Initiative project has focussed on the KFR and this was to survey the diversity of land snails and did not involve research and development activities in the buffer zone. Although the concepts of community development and sustainable resource management in the buffer zone appear in many of the national documents describing the KFR and the management goals, very little has actually been done on the ground with local people, local governments or other local institutions.

The IUCN is co-ordinating a new Forest Governance Project, Strengthening Voices for Better Choices (2005-2009), which aims to enable and actively implement forest governance arrangements that facilitate and promote sustainable and equitable forest conservation and management in priority countries of Africa, Asia and Latin America. The main focus of the FGP is on forest policy development at the national level, and no biodiversity research or monitoring is envisaged. However, because the KFR will be used as the Sri Lanka pilot site for development of a forest governance model, the National Project Co-ordinator of the FGP, Dr Shantha Hennayake, has agreed to join our project team and commit co-financing of some activities in the KFR buffer zone. The interaction with the FGP will add value to our project by creating an opportunity for us to up-scale our demonstration activities on forest restoration with incorporated livelihood options to national forest policy development. The Darwin project will be distinctive in undertaking experimental monitoring and research of biological diversity and ecosystem services in the KFR buffer zone and linking these to income generating activities.

In the early stages of the project we will consult participants in the 'Sri Lanka/Australia Natural Resources Management Project', which is developing conservation plans for forest islands surrounded by agricultural lands on the fringes of the KFR, and the Wildlife Department's 'Protected Area Management and Wildlife Conservation Project' which operates in two protected areas on either side of KFR, the Victoria, Rantembe, Randenigala (VRR) Reserve and the Wasgomuwa National Park. Neither of these projects includes direct investigations of techniques for restoring biological diversity and ecosystem services to degraded ecosystems.

11. How will the project assist the host country in its implementation of the Convention on Biological Diversity? Please make reference to the relevant article(s) of the CBD thematic programmes and/or cross-cutting themes (see Annex C for list and worked example) and rank the relevance of the project to these by indicating percentages. Is any liaison proposed with the CBD national focal point in the host country? Further information about the CBD can be found on the Darwin website or CBD website.

In Sri Lanka, the Biodiversity and Natural Resources Division of the Ministry of Forest and Environment is responsible for the implementation of the CBD. The project, by supporting the FD and IUCN in the development of the management plan for the buffer zone and wider area of KFR, and by supporting the development and dissemination of approaches to restoration of degraded lands with associated options for income generation, contributes to the implementation of Articles 6 (General measures for conservation and sustainable use, 20%), 7 (Identification and monitoring, 20%), 8h (Alien species, 20%), Article 12 (Research and training, 20%) and Article 13 (Public education and awareness, 20%) of the CBD.

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 significance of the KFR as a globally important site for biodiversity conservation is recognised

in its status as a World Heritage Site, and its nomination as an international MAB reserve will be submitted to UNESCO in 2006. The Darwin project would contribute positively to the logistic and research functions expected of MAB reserves and would be featured on the nomination proposal being prepared by the FD in consultation with local experts, including our project partners at the UP. The KFR is also about to be declared as a 'sensitive area' under the National Environment Act, which will strengthen its status as a protected area.

The first Biodiversity Action Plan for Sri Lanka, published in 1999, is currently being updated by the National Experts Committee on Biodiversity and the revision will be published in 2006. Dr Bambaradeniya, our project partner at IUCN, serves on that committee and has confirmed that restoration of degraded land using participatory approaches to develop improved forest governance models will be highlighted as a priority area in the new BAP for Sri Lanka. As a signatory of the Biodiversity Convention, Sri Lanka has a commitment "to strictly control the introduction of non-indigenous species" and supports the interim guidelines on invasive species agreed at COP5 & applying the precautionary principle in tandem with local communities to tackle the problem of invasion of alien plant species (IAP), a leading cause of biodiversity loss. Addressing the considerable threat of IAP to biodiversity in the Sri Lanka was identified as a national priority at the First National Workshop on Alien Invasive Species (1999) by the Ministry of Forestry and Environment. IAP are a serious problem in the Sri Lankan Protected Areas and key needs are to: a) raise awareness among leaders & increasing inter-sectorial cooperation; b) develop capacity to identify IAP and production of identification manuals; c) establish monitoring programmes; and, d) develop management strategies. The project will be pivotal in resolving these key obstacles to IAP management in Sri Lanka, comply with actions agreed at COP6 and help conserve global biodiversity.

13. If relevant, please explain how the work will contribute to sustainable livelihoods in the host country.

The Knuckles mountain range within the KFR comprises the headwaters of a catchment that supplies one third of the water resources for maintaining irrigated agriculture in the dry zone of Sri Lanka, and drains into three reservoirs that supply hydropower to major urban centres within central Sri Lanka. Therefore the KFR provides vital water catchment and soil protection services that are disturbed by unsustainable land-use patterns within the buffer zone. The KFR buffer zone comprises a mosaic of natural lower montane rain forest patches interspersed with plantations of tea, *Pinus caribaea* and other tree crops, natural forest disturbed by under-planting of Cardamom, and large expanses of grassland that have developed on abandoned former tea plantations. The restoration of mixed natural forest communities within the areas currently under *Pinus* plantations, inactive Cardamom plantations and degraded grassland would enhance their hydrological and soil protection service functions and contribute to the maintenance of sustainable livelihoods downstream of the Knuckles range. Local communities in the KFR buffer zone, dependent on stable water supplies for traditional irrigated paddy rice cultivation, would benefit most from these restoration activities.

The participatory research with communities in the project area aims to identify and prioritise the forest products that can be produced in the restored ecosystems of the buffer zone and that hold potential for income generation for local people. The FD is supportive of these approaches and has highlighted the importance of community participation in the nomination proposal for International MAB status for the KFR. Enrichment planting of *Pinus* plantations with native hardwood timber trees, kitul palm, spices, rattans and medicinal plants has been shown to be effective elsewhere in the uplands of Sri Lanka by our project partners at the UP and the FD. It provides opportunities for small-scale sustainable extraction of forest products by local communities once access rights have been negotiated with the FD. Similarly, as well as enhancing watershed and soil protection, restoration of grassland to forests and restoring forests damaged by Cardamom production provide long-term opportunities for sustainable extraction of non-timber forest products, medicinal plants, and small quantities of fire-wood and timber by local communities.

The local landowners involved in our project, represented by the group Eco Friends Lanka, are concerned with landscape conservation to ensure that opportunities for sensitive, small-scale ecotourism development in the KFR buffer zone are maintained and enhanced. Opportunities for ecotourism are enhanced in landscapes that support a rich biodiversity. Expanses of degraded

grassland, plantations of the exotic *Pinus caribaea* and the spread of cosmopolitan non-native plant species in Knuckles detract from the natural landscape and the subsequent loss of biodiversity results in a less attractive option for ecotourism. This project will enhance the local capacity for effective management of natural resources upon which the poor depend. Sound management of IAP helps increase ecosystem resilience and productivity, which is critical to the security of livelihoods. Project partners have considerable experience in this area, and hence the activities have been closely targeted to the needs of local communities.

14. 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.

Protection of the KFR core area will be enhanced by integration of a wide variety of buffer zone stakeholder perspectives into the revised management plan. The project will provide the FD with data and perspectives from the buffer zone stakeholders for incorporation into its revised management plan for the entire KFR. Incorporating local community and land-owner perspectives into the management planning exercise will help resolve conflicts between the custodians of the KFR, the FD, and local users of forest resources, and enhance the sustainability of land management in area.

Awareness of appropriate techniques for forest ecosystem restoration on steep slopes will increase locally and nationally. This will be achieved by experimental demonstration of the *Pinus* enrichment and grassland restoration techniques, training in those techniques, and dissemination of results by project materials including posters, booklets and publications. Uptake of these techniques on a large scale within the buffer of KFR would enhance hydrological services provided by the catchment of the Mahaweli river, which supplies one third of the water resources for irrigated agriculture in the dry zone of Sri Lanka, and prevent further siltation of the Victoria, Randenigala and Rantembe reservoirs.

Communities living within the KFR buffer zone will have increased awareness of resource monitoring techniques and options for conversion of degraded ecosystems in the KFR buffer zone to more productive ecosystems, and the income generating opportunities associated with these options. This will be achieved by community-based training on monitoring and participatory research integrating livelihood options in the restoration programme and dissemination to a broader audience through posters, booklets and a publicity campaign in host country media.

Vegetation mapping using GIS will be integrated into the process of management planning for KFR, where the project activities will result in a classification of vegetation patches for their biodiversity value and their potential for restoration of ecosystem services. The recommendations for management of the buffer zone will be developed collaboratively with the range of stakeholders in the buffer zone, and therefore will reflect the perspectives of the stakeholders.

Project materials, including reports and publications will be further disseminated through host and partner institutions and internationally through IUCN, MAB and the project website.

15. How will the work leave a lasting legacy in the host country or region?

The project will contribute to the long-term development of communities in the KFR buffer zone and engage them in the management of buffer zone resources, through their involvement in participatory research, and strengthened links between government agencies, local communities and local land-owners, and as on-going contributions to the management planning process. Lessons learned from participatory research on income generation options associated with restoration efforts will be disseminated to other sites within Sri Lanka through our partner institutions, specifically the IUCN and FD.

The training provided to M.Phil. students will lead to their appointment as resource conservation professionals within agencies such as the Forest or Wildlife Departments, the non-governmental sector or into higher academic degrees.

The physical legacy will include long-term research and monitoring plots on *Pinus* plantation enrichment, grassland restoration and Cardamom restoration trials that will continue to have a value for demonstration and yield experimental data for decades. Our partners at UP maintain similar research plots in different climatic zones of Sri Lanka and are committed to maintaining on-going measurements on the KFR plots as part of their island-wide experimental programme. Publication of these data will provide a legacy of new knowledge that will contribute to the adoption

of similar techniques in other sites and in different countries with problems of land degradation on steep slopes in mountainous regions.

The individuals receiving training and experience with vegetation mapping and GIS will be encouraged to act as trainers for others in their institutions, allowing the impacts of the training to reach more people.

16. 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.

By 3rd y of the project, recommendations for management options within the buffer zone will have been defined and presented to the working group that is updating the management plan for the entire KFR. The recommendations will have been informed by consultation with the main stakeholder groups and will be supported by project results (both ecological and sustainable livelihoods research) from the three degraded habitats common in the buffer zone.

Through the remits of their institutions, project partners (IUCN and FD) will continue to work on the implementation of the management plan in the buffer zone and the wider area of the reserve, drawing from relevant documents and project experience after the project ends.

The main concern for achieving impact and legacy in this project is the risk of conflicts among stakeholder groups and lack of capacity within communities and local institutions to implement management recommendations. The project addresses the first by incorporating activities that promote discussion amongst the stakeholder groups and by including representatives from the main groups on the project team; our project partners are well-respected and have a track record of supporting collaboration, increasing the likelihood that the project will achieve the intended impact and legacy. The training and support for communities related to sustainable livelihood options will increase awareness of opportunities to influence management planning, will provide a forum for discussion about buffer zone management and the impacts of the reserve on livelihoods and should result in an increase in confidence within the communities and local government to voice their opinions about management and the reserve's future.

17. How will the project be advertised as a Darwin project and in what ways will the Darwin name and logo be used?

The project will be profiled on posters placed in the offices of the institutions involved in the project, both nationally and locally. The logo will appear on the project vehicle and on all dissemination materials associated with the project, including posters, booklets, and video.

18. Will the project include training and development? Please indicate who the trainees will be and criteria for selection and that the level and content of training will be. How many will be involved, and from which countries? How will you measure the effectiveness of the training and will those trained then be able to train others? Where appropriate give the length and dates (if known) of any training course. How will trainee outcomes be monitored after the end of the training?

Three M.Phil. students registered at UP will be trained under the project. One student will be a nominee of the FD, drawing from the pool of current FD staff members working in KFR; one will be a nominee of IUCN and one from UP. Students will receive training in sampling and experimental design, project management, scientific writing and critical thinking, data analysis, spatial analysis using GIS, verbal and written communication skills, and discipline-specific techniques such as botanical identification, environmental monitoring and soil chemical analysis. They will benefit from close supervision by both UK and Sri Lankan supervisors and will be encouraged to submit their research for publication in international journals. The criteria for selection will be academic merit, relevant experience, future career plans (candidates in-post with relevant agencies would be favoured) and commitment to the goals of the project. The effectiveness of the training will be measured in terms of the quality and quantity of data generated by the projects, the success in thesis submission and peer-reviewed publication, and the extent of take-up of results as recommendations for the management plan. M.Phil. degrees are two-years, so trainee outcomes will be monitored by project principals during the third year of the project.

Workshop on GIS techniques for 12 participants (three M.Phil. students, 2 graduate research assistants, and the balance from FD, IUCN, local tea estates and local community). One week course at the Postgraduate Institute of Science, UP, with an emphasis on developing mapping

skills using GPS and a basic software tool such as D-map, and at least two days of excursions to Knuckles. Since GIS facilities and expertise exist at UP (Geography Department), FD (GIS unit) and local authority levels (Upper Mahaweli Authority, Kandy), there is not a demand for delivery of high-level specialist training in ARC-GIS. Instead, the training will focus on developing the skills required to generate the field data to add as layers to the existing DEM for the KFR. This training is required by all the M.Phil. candidates for their dissertation research and it is appropriate to include other stakeholders in this exercise because they need it to generate land-use maps of their own land holdings. (Cost includes 12 GPS units, visit by trainer from UK, per diems and local travel costs for participants and access to computing facilities at PGIS). The effectiveness of the training will be measured by the quantity and quality of data included in student research, the uptake of techniques by other stakeholders and hence the quantity of data overall that is available for input to the revised management plan. These metrics will be collected by project staff in the 2 y between the training course (April 2007) and the end of the project (June 2009).

Training will also be provided to members of communities with an interest in developing livelihood options within the buffer zone. The trainees, peasant farmers, will be identified during initial PRA exercises and with the assistance of the local village chief (minimum of 8). Training will be on participatory research and monitoring techniques, as well as silvicultural techniques for establishment, planting and tending of timber and non-timber species within plots in the buffer zone. The training will be conducted by project staff with the support of staff from local institutions (i.e., FD, UP and IUCN). While it is difficult to indicate at this time if these trainees will be able to train others in the communities, the intention of the project is to build capacity amongst the communities to engage in discussions about buffer zone management and the development of livelihood options in the area surrounding KFR.

LOGICAL FRAMEWORK

19. Please enter the details of your project onto the matrix using the note at Annex B 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 <ul style="list-style-type: none"> • 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 enhance the sustainable conservation of biological diversity and ecosystem services in the Knuckles Forest Reserve (KFR), Sri Lanka, by addressing the main threats to environmental protection through the development of options for buffer zone management that improve the livelihoods of local communities.	Recommendations for buffer zone management integrated in the updating of management plan for KFR New knowledge on methods for ameliorating the threat to KFR from fire and invasive species New knowledge on restoration pathways for grassland and <i>Pinus</i> plantation systems New knowledge on the compatibility of cash crop production and maintenance of ecosystem services in the forest resources and services in the KFR buffer zone	Annual reports and publications by Forest Department, IUCN Sri Lanka and private sector partner organisations. Project reports and publications.	Government policy remains supportive of conservation of KFR; Forest Department and other partner organisations remain committed to project and to implementation of outputs <i>Changes have been made here in a broadening of the project purpose and the output related to the management plan.</i> 1) <i>Our purpose statement was revised to reflect the importance of restoration of ecosystem services to livelihood sustainability, while still including the activities focused on income generation.</i> 2) <i>The KFR is very large and this project will be based in only one region. Because of this, and the need to integrate the management</i>

	Increased awareness of opportunities for sustainable development within buffer zone amongst communities, local government, Forestry Department and other stakeholders of KFR		<i>of the buffer zone with the larger management plan for the KFR, the plan for managing the buffer zone must be integrated into that of the whole reserve, therefore we will work to recommendations rather than a plan.</i>
Outputs Reports on methods of restoration of <i>Pinus</i> plantations, degraded grasslands and forest with cardamom and on the compatibility of cash crop production with conservation goals in buffer zone Risk assessments for invasive species and impacts of anthropogenic fire Recommendations for management of buffer zone of KFR	Minimum of 15 staff from 3 partner organisations trained by yr 3 in vegetation mapping and GIS. Sampling protocols for vegetation mapping defined by yr 2. Income-generating activities compatible with park management objectives identified. Risks posed by two significant alien invasive species assessed by yr 2 Risks posed by anthropogenic fire at three sites assessed by yr 3 Reports peer-reviewed and publication date established, distribution arrangements in place.	Workshop reports Participants attendance records Vegetation map of KFR and associated legend. Project reports Risk assessment reports submitted to Darwin Initiative Published reviews and feedback on report. 2 copies sent to Darwin Initiative	Trained staff remain in institutions and in positions where they can use the skills provided and train others in the skills Sites at risk identified by partner organisations

Activities	Activity milestones	Assumptions
Workshops	<p>Yr 1: Stakeholder workshop with project team to agree workplan, define tasks and priorities, establish experimental and sampling designs</p> <p>Yr 1: Participatory Appraisal with residents from 3 villages to prioritise development options for the buffer zone</p> <p>Yr 2: Workshop in GIS techniques for staff of Forest Department, IUCN and UP</p> <p>Yr 2: Community-based training on monitoring and participatory research, SWOT analysis of opportunities for livelihoods and income generation in buffer zone</p> <p>Yr 3: Community-based workshops for dissemination and planning future activities</p> <p>Yr 3: Final workshop, for dissemination and work on publications</p>	<p>Users and relevant stakeholders are willing and able to participate in the process to develop agreements and protocols.</p> <p>Local communities are interested in livelihood options within the buffer zone and are willing to participate in project activities.</p> <p>Forest Department continues to support sustainable development in the buffer zone.</p>
Research	<p>Yr 1: Collation of historical data on <i>Pinus</i> plantation planting records and fire frequency; mapping new regeneration of <i>Pinus</i> outside plantations</p> <p>Yr 2: Dendrochronological analysis of <i>Pinus</i> invasions in relation to fire frequency</p> <p>Yr 1, 2, 3: <i>Pinus</i> plantation enrichment trial established by yr 2; re-census yr 3</p> <p>Yr 1 and 2: Forest fragment trial established to monitor regeneration and recovery from Cardamom cultivation.</p> <p>Yr 1, 2, 3: Grassland restoration trial established by yr 2; re-census yr 3</p> <p>Yr 1, 2 and 3: Participatory research on production of cash crops within restoration sites in buffer zone (e.g., enrichment of <i>Pinus</i> and forest fragments with timber and non-timber species)</p>	<p>Partner organisations assist with identifying sites for plantation and grassland experiments</p>
Reports and publication development	<p>Yr 2,3: Classification of vegetation within the buffer zone based on ecological attributes, livelihood options and management requirements</p> <p>Yr 3: Booklets on livelihood options associated with restoration of degraded habitats.</p> <p>Yr 3: Analysis and synthesis of 4 research projects</p> <p>Yr 3: Management plan recommendations drafted, circulated, submitted for approval and incorporation into updated plan for the KFR</p>	

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

Project implementation timetable		
Date	Financial year	Key milestones
July 2006 August 2006	06/07 06/07	Appoint project staff and recruit Sri Lankan M.Phil. students Stakeholder workshop with project team to agree workplan, define tasks and priorities, establish experimental and sampling designs
December 2006 March 2007	06/07 06/07	PRA conducted in a minimum of 3 villages Completion of collation of historical data on <i>Pinus</i> plantation planting records and fire frequency and mapping new regeneration of <i>Pinus</i> outside plantations
April 2007	07/08	Workshop on GIS techniques for staff of Forest Department, IUCN and UP
December 2007	07/08	Community-based training on monitoring and participatory research completed
April 2008	08/09	Dendrochronological analysis of <i>Pinus</i> invasions in relation to fire frequency completed; <i>Pinus</i> enrichment, forest fragment and grassland restoration trials established
December 2008	08/09	Participatory research on production of cash crops within restoration sites in buffer zone established and assessed
December 2008	08/09	Community based meetings for dissemination and discussion of buffer zone management conducted
February 2009	08/09	Classification of vegetation within the buffer zone based on ecological attributes, livelihood options and management requirements (preliminary draft)
April 2009	09/10	<i>Pinus</i> enrichment, forest fragment and grassland restoration trials recensused
April 2009	09/10	Final workshop, for dissemination and work on publications

21. 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.)
06 July – 08 Aug	2	Three Sri Lankans complete 2 y M.Phil. programme at UP in Sri Lanka
07 April	4B	12 staff and students from partner institutions receive one week training in GIS and vegetation mapping based at UP in Sri Lanka, delivered by CEH, UK
06 July – 08 Aug	4C	Three Sri Lanka postgraduate students receive training in field methods and experimental design and analysis from UK supervisors
07 Jan – 09 Jan	4D	8 weeks of training in Sri Lanka
	6A	Minimum of 8 members of local communities receive on site training in silviculture / horticulture, participatory research and monitoring by project staff and partner institutions
06 July – 09 June	6B	Approximately 8 weeks per year, part-time
	8	12 weeks per year
09 Jan-June	9	One report with recommendations for management guidelines for the KFR buffer zone
09 Jan-June	11B	4 papers to be submitted to peer reviewed journals
08 – 09	14A	Two dissemination workshops in Sri Lanka
08-09	14B	Two conferences attended where results are presented
06/07/08/09	15A/15B/15C	One per project year
06/07/08/09	19A	One per project year
09 June	20	Second hand 4WD vehicle, estimated value £11,000
		2.5 laptop computers, estimated value £600
06/07/08	22	Number of plots will be determined during project
06 June	23	Approximately £103,000 from other sources and in-kind contributions

PROJECT BASED MONITORING AND EVALUATION

22. 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.

A core management team comprising Dr Pinard, Mr Dhakal, Prof IAUN Gunatilleke, Mr Manatunga, Dr Hennayake and a representative from the Forest Department will meet at least annually (six monthly in the first year) to review progress of the project and plan future work.

The project leader will maintain regular contact (by fax or email) with the main project partner at UP and collaborators at other institutions and will receive monthly reports from the project coordinator (Dhakal). The reports will include progress in achieving indicators and outputs. Prof IAUN Gunatilleke will assist in monitoring project progress and provide local supervision to project staff.