DEFRA
Department for
Environment,
Food & Rural Affairs

DARWIN INITIATIVE

APPLICATION FOR GRANT FOR ROUND 11 COMPETITION: STAGE 2

Please read the Guidance Notes before completing this form. Give a full answer to each section; applications will be considered on the basis of information submitted on this form. Please do not cross-refer to information in separate documents except where invited on the form. The space provided indicates the level of detail required but you may provide additional information on a separate A4 sheet if necessary. Do not reduce the font size below 10pt or the paragraph spacing.

Submit by 13 January 2003

1. **Name and address of organisation**

Centre for Ecology, Evolution and Conservation, School of Environmental Sciences, University of East Anglia, Norwich NR4 7TJ, United Kingdom

2. **Project title (not exceeding 10 words)**

Biodiversity and functional value of Amazonian primary, secondary and plantation forests

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

Details	Project leader	Other UK personnel (if working more than 50% of their time on project)	Main project partner or co-ordinator in host country
Surname	Peres	Barlow	Ferreira
Forename(s)	Carlos	Josiah	Leandro
Post held	Reader	Post-doctoral fellow	Chief Forest Ecologist
Institution (if different to above)	University of East Anglia	University of East Anglia	Museu Paraense Emilio Goeldi (MPEG)
Department	School of Environmental Sciences	School of Environmental Sciences	Ciências da Terra e Ecologia
Telephone			
Fax			
Email			

4. **Describe briefly the aims, activities and achievements of your organisation. (Large institutions please note that this should describe your unit or department)**

Aims

The School of Environmental Sciences (ENV) at the University of East Anglia (UEA) promotes high-quality, interdisciplinary research and teaching in all areas of environmental sciences, with a focus on large-scale processes of global consequences, and maintains up to date awareness of environmental problems and issues.

Activities

Provision and management of research projects and programmes in the UK and overseas over a broad range of disciplines which is crucial to understanding the interactions and feedbacks between the natural and human components of the immense environmental challenges which face us.

Achievements

ENV is unique in the UK and has few peers internationally for its multi-disciplinary research on environmental topics, and is now the largest of its kind in Europe (57 faculty, 103 full time research staff, 210 post-graduate students). ENV has the highest 5* grade in the Research Assessment exercise, denoting international excellence, and the highest Teaching government grade.

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

No.

6. Please list the overseas partners that will be involved in the project and explain their role and responsibilities in the project. The extent of their involvement at all stages in the project should be detailed, including in project development. Please provide written evidence of this partnership.

1. MPEG (Museu Paraense Emílio Goeldi [www.museu-goeldi.br]) is the premier natural history research institute in Amazonia and directly affiliated with the Ministry of Science and Technology (MCT). MPEG forest ecologists and taxonomists will conduct surveys of different faunal and floral taxonomic groups in the States of Pará and Amapá; assist with identification of voucher specimens; and help train student interns survey methodology and sampling design in situ throughout the field study. MPEG herbarium technicians and taxidermists will also participate in field campaigns, and provide official (IBAMA) collecting permits for botanical and zoological sampling. The MPEG Wood Density Laboratory will be used to measure wood cores from all tree species sampled to refine carbon storage models from aboveground forest biomass estimates. Finally, MPEG reference collections, library, remote-sensing and GIS lab, and computer facilities will be used throughout the project.

2. IEPA (Instituto de Pesquisas Científicas e Tecnológicas do Estado do Amapá [www.iepa.ap.gov.br]) is the only state-level institute charged with the mission of generating appropriate scientific information to guide the sustainable use of forest resources. IEPA will contribute with expertise in floristic and nymphalid butterfly surveys; political backing to make project logistics and access to sampling sites viable; and effectively disseminate policy-relevant project results within the State of Amapá.

3. Departmento and Museu de Zoologia, Universidade de São Paulo (USP) will be involved in field herpetological inventories, and curatorial care of voucher specimens. This is the most prestigious Zoology Museum in South America, which in consortium with the Goeldi Museum (MPEG) will lend greater credibility to biological surveys of poorly known organisms.

7. What steps have been taken to (a) engage at all appropriate levels within the host country partner organisations to ensure full support for the project and its outcomes; and (b) ensure the benefits of the project continue despite staff changes in these organisations?

The concept note of the project preproposal has been met with enthusiasm by the directors of MPEG and IEPA and our collaborators at these research institutes. Principal investigators at these institutions are high-ranking permanent members of staff and are unlikely to move to other organisations during the course of this 3-year project. MPEG is directly affiliated with the Brazilian Science Council (CNPq) and Ministry of Science and Technology (MCT) and will facilitate research visas for non-Brazilian researchers; dissemination of project results within Brazil; and access to official political channels most likely to make effective use of these project results.

8. What other consultation or co-operation will take place or has taken place already with other stakeholders such as local communities. Please include any contact with the government of the host country not already provided.

The Brazilian forestry company Jari Florestal LTD -- which controls 120,000 hectares of silvicultural stands (of Gmelina arborea, Pinus spp., and Eucalyptus urograndis) established since 1968 for large-scale fibre production -- has already been contacted and is receptive to the study, following an exploratory visit by Dr C Peres to their headquarters in Monte Dourado in October 2002. This is the largest tree plantation investment (US$2 billion) allocated to a single landholding in the humid tropics. A preliminary visit to the neighbouring Alto Cajari Extractive Reserve, Amapá -- which will provide control primary forest sites for the study -- was also undertaken to set up initial contacts and secure support from the local political leadership of this extractive reserve for the project. Finally, the EMBRAPA (Brazilian Agricultural & Forestry Agency) headquarters in Belem has been contacted so that existing floristic data sets elsewhere in the State of Amapa can become available for this study.

PROJECT DETAILS

9. Define the purpose (main objective) of the project in line with the logical framework.

We aim to quantify the ecological value of carbon sequestration projects in tropical forests in terms of their biological diversity and key ecosystem functions and services. Different types of forest regrowth at different stages of maturity (to be compared with undisturbed primary forest control sites) will include native regenerating stands (secondary forests) and the largest tracts of fast-growing tree monocultures (of Gmelina arborea, Pinus spp., and Eucalyptus urograndis) in the Amazon Basin. Ten indicator groups, including plants and several vertebrate and arthropod taxa, and 15 forest structure and composition variables will be used to describe the biodiversity and carbon retention value of different even-aged and natural forest stands. This study will address the costs and benefits of carbon-offset plantation forestry, which are becoming increasingly popular in bilateral agreements following the Kyoto Climate Convention, in contradiction with conservation priorities established by the Convention on Biological Diversity. It will also offer a much needed tiered opportunity to provide training to Brazilian forest ecologists, vertebrate biologists, and taxonomists in quantitative biodiversity inventories in terms of methodological protocols, sampling and experimental design, and data analysis.

10. Is this a new initiative or a development of existing work (funded through any source)?

This is an entirely new initiative, but all principal investigators have conducted biological surveys elsewhere in the Amazon Basin in their respective areas of taxonomic interest, while working on previous projects outside the scope of this study.

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. 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.

The eligibility of land use, land-use change and forestry project activities under the Clean Development Mechanism of the Kyoto Protocol is largely limited to afforestation and reforestation, but this can be viewed as directly antagonistic to the objectives of the Convention on Biological Diversity (CBD), which the Brazilian government ratified (28 Feb. 1994) and has taken some steps to implement. This issue remains unresolved even though it was explicitly mentioned in the 4th meeting of the CBD (Bratislava, May 1998). The project will meet key objectives of the Forest Biodiversity Thematic Programme of the CBD in shedding light on cross-cutting issues such as (1) interactions between climate change and forest biodiversity; (2) developing key bioindicator protocols to assess forest ecosystem integrity; (3) institutional capacity building; and (4) strengthening local taxonomic and curatorial expertise. The project pre-proposal was met with much enthusiasm both by the Brazilian Ministry of Environment and Amazonian Affairs (MMA) of the new government and the Director of the Goeldi Museum (MPEG), the principal ecological research institute in Amazonia which will be our main partners in developing the project. Finally, the project will operate synergistically with, but complement, the MPEG Biodiversity in Amazonia biological inventories programme (http://www.museu-goeldi.br/biodiversidade/index.asp) in addressing several questions overlooked by other studies.

12. How does the work meet a clearly identifiable biodiversity need or priority within the host country?

The total area of fast-growing tree monocultures in the tropics increased from 10M ha in 1980 to 45M ha in 1990, and further dramatic growth is expected as market-based carbon trading programs have encouraged reforestation sinks as a CO_2 mitigation strategy. This is expected to lead to greatly augmented investments in small-scale to industrial tree plantations in Brazil. The Brazilian Amazon accounts for nearly 40% of the world's remaining tropical forests, and results of this project will directly influence governmental policy incentives and restrictions, and ultimately the fate of an area equivalent to perhaps 15% of this region. Brazil's federal and Amazonian state-level governments do not have a clearly defined policy in relation to international carbon-trading incentives promoting the establishment of large tree plantations, and this remains one of the most controversial issues in every round of Climate Convention dialogues with delegations from Brazil and other tropical countries. In fact, we are surprised that a research project of this kind has not yet been funded. We have the means, the appropriate expertise, the political opportunities, and access to one of the best study regions available in the New World tropics to answer these important questions and settle the debate in relation to the biodiversity value of pristine and so-called carbon forests in the neotropical region. Results of this project will be globally significant and meet several policy-relevant biodiversity science priorities in Brazil.

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

The Brazilian Amazon, which has been affected by the fastest deforestation rate on Earth, contains an area the size of France in second-growth and degraded pastures that could be allocated to exotic tree monocultures. Carbon sequestration projects comprise an attractive option for both smallholders and large landowners in this region because alternative land-uses are economically uncompetitive. There is also a great deal of policy incentives to invest in plantation forestry enterprises which may be eventually traded in a carbon market. Yet our understanding of the functional relationship between carbon plantations, biodiversity, and valuable ecosystem services and other functions remains very limited. This project is expected to contribute significantly to our understanding of these trade-offs, and devise the most socio-economically and environmentally responsible land use options.

14. What will be the impact of the work, and how will this be achieved? Please include details of how the project outputs will be disseminated and put into effect to achieve this impact.

This study will quantify the ecological value of tree plantations, primary forests, and native second-growth in terms of their plant and animal diversity and key ecosystem services on a range of spatial scales. This will inform regional and national forestry policy in Brazil in relation to the currently controversial issue of internationally funded carbon-sequestration projects. Many data sets resulting from this study will be published in both Brazilian and international periodicals corresponding to different taxonomic groups and disciplines. A single high-impact paper integrating results of the entire study will target a highly competitive fast-track journal such as Science or Nature. A final Portuguese-written report spelling out the conservation implications of this project will be sent to the Brazilian Ministry of the Environment (MMA), the presidency of IBAMA, Brasília office (Brazilian Institute of the Environment and Natural Renewable Resources), and the Ministry of Science & Technology (MCT) which has led multilateral discussions at the highest offices on the Brazilian contribution to climate change mitigation scenarios. This will be facilitated with our official links with MPEG, USP, and IEPA. This report and journal publications will also be distributed to the six leading conservation NGOs in Brazil (Conservation International, Funatura, WWF/Brasil, Instituto Socio-Ambiental, Biodiversitas, and SOS Mata Atlantica) which will aid in disseminating results, and several of these organisations are aware of our plans to conduct this study. Our final workshop at MPEG will also assist in publicising project results within Brazil.

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

This project is expected to inform and help develop land use policy in rural areas of Latin America and other tropical regions in relation to the costs and benefits of maintaining primary forest cover and different forms of silvicultural or natural regrowth. Brazil is a key megadiversity country retaining the largest tropical forest region under the jurisdiction of a single nation; yet the Amazon basin remains the most undersampled terrestrial ecosystem confronted by a severe dearth of properly trained forest ecologists and taxonomists. This project will thus offer an opportunity to address one of the most crucial issues in tropical forest conservation and capacity building efforts in training local students in quantitative biodiversity surveys, including floristic, entomological and vertebrate inventories. The States of Pará and Amapá are also in the process of expanding their nature reserve networks, so this project will also serve to inform key conservation planners, such as the project co-investigator Leandro Ferreira, on species diversity gradients in the areas sampled. This project will contribute significantly towards building a task force of multi-taxa biodiversity inventories in Amazonia in order to inform biological conservation priorities in the region.

16. What steps have been taken to identify and address potential problems in achieving impact or legacy?

We have already contacted the main state agencies, research institutes, and collaborators who should become the key allies in developing this research programme. The field research timetable is expected to develop without major obstacles provided we secure access to one additional forestry operation in the State of Amapá, which should not be a major problem. In order to maximise impact, project results will also need to reach the highest offices in the Brazilian Ministry of the Environment and State Environmental Agencies in Pará and Amapá, which will be facilitated by our long history of political contacts in Brazil. The same results are expected to permeate to other Amazonian countries via institutional networks and our high-profile publications in leading international journals.

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

Comparable studies of this kind have not been conducted to date in neotropical forests despite growing concerns about the ecological impact of industrial-scale plantation forestry and carbon-sequestration projects. The proposed study is novel in experimental approach and in combining multiple taxonomic groups that are rarely sampled concurrently at the same sites, and will bring together forest ecologists, botanists, and vertebrate and invertebrate zoologists under a common goal. Any output resulting from this project, including all peer-reviewed publications (an estimated minimum of 15), popular science magazine articles, brochures and manuals in Portuguese, will explicitly acknowledge Darwin funding, and the project will be recognised as a Darwin initiative funded by DEFRA/UK under a cooperative research agreement between UEA and MPEG, and UEA and IEPA. The Darwin logo will also appear on all conference talks and other lectures resulting from this study, as well as on the project 4x4 vehicle.

18. Are you aware of any other individuals/organisations carrying out similar work? Are there completed or existing Darwin Initiative projects which are relevant to your work? Please give details, explaining the similarities and differences. Show how the outputs and outcomes of this work will be additional to any similar work, and what attempts have been/will be made to co-operate with such work for mutual benefits.

We are not aware of similar or complementary studies in neotropical forests, although a study comparing bird diversity associated with traditional agroforestry practices in Sumatra has been conducted by JM Thiollay; and another Indonesian study examined plant diversity of primary and secondary forests, and traditional agroforestry.

19. Will the project include training and development? Please indicate who the trainees will be and criteria for selection. 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?

All trainees will be Brazilian and preferably from the States of Pará and Amapá, and will come from the Goeldi Museum (Belém), IEPA (Macapá) and the University of Amapá (Macapá). Field training in biodiversity inventories and forest structure and composition surveys will be offered to student and technicians with an institutional affiliation at either one of these capital cities but, for logistical reasons, no more than 4 trainees will be trained and supervised in the field simultaneously. We plan to offer 'hands-on' field courses during two field campaigns of 8 months each in the first two years of study; and during a final 3 month campaign in the third and final year. A minimum of 30 and a maximum of 36 trainees will gain first-hand experience in field sampling and data analysis during periods of approximately 45 days or longer depending on the taxonomic group. Training methodology will be defined as successful if trainees are capable of 1) replicating sampling protocols independently elsewhere following their field courses; 2) conduct unsupervised data summaries and analysis using specialised software; and 3) in most cases train others to do so. We anticipate a multiplication effect in that many of these trainees are expected to go on to conduct other biological inventories under the auspices of MPEG and IEPA, and eventually other organisations, and form a small collaborative network of investigators who can adopt a comparative approach to standardised field sampling.

20. How are the benefits and/or work of the project expected to continue after the end of grant period? Please provide a clear exit strategy.

The Amazonian partner institutes involved in this project (MPEG and IEPA) are obliged, as part of their regional research extension remit, to assist the scientific and technical implementation of so-called "Ecological and Economic Macro-Zoning of Land Use" programmes within the Amazonian States of Pará and Amapá. Undoubtedly, our collaborating principal investigators (PIs) and trainees benefiting from this research programme will be involved in future biodiversity surveys in any of the 9 states of Brazilian Amazonia as mandated by federal government directives conditionally imposed by muiltilateral development agencies (World Bank & InterAmerican Development Bank). These biological surveys are therefore expected to be replicated in a highly standardised, comparable fashion according to the methodologies and spatial scales tested and applied during this study. Part of our exit workshop at the Goeldi Museum (MPEG) will therefore have a methodological focus, in taking advantage of the fact that for the first time several phylogenetically independent taxanomic groups (including plants, invertebrates and vertebrates) will be sampled simultaneously and within the same forest sites. Finally, a biological inventory programme of several taxonomic groups sampled on a basin-wide (Pan-Amazonian) scale may be coordinated in the future by PIs executing this study (LF and MM).

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

Project implementation timetable	
Date	Key milestones
1 May 2003	Project starts; Final logistical details arranged with Jari Florestal administration.
31 May 2003	All sampling sites identified and transect preparation underway;
1 July 2003	Completion of spatial mapping and ageing of forest plots within the Jari Florestal Project, and integration of data into GIS database.
1 September 2003	Completion of initial student selection and initiation of supervised training programmes.
1 September 2003	Initiation of sampling protocol, targetting specific taxa, and establishment of phenological tree plots.
September 2004	Start of analysis of data obtained in Year 1.
February 2005	Conclusion of 18 month quantification of seasonal changes and phenological patterns. Phenological tree plots handed over to control of IEPA for continued assesment.
September 2005	First high-impact publications describing the study region and some preliminary conclusions
December 2005	Termination of field data collection, supervised student training programmes, and initiation of final analysis
Febuary 2006	Workshop at MPEG, Belem. Dissemination of results to NGO's. Establishment of contact and discussion network
September 2005-April 2006	Results presented at 3 major international conferences. Press releases made.
March 2006	Information from workshop summarised and presented to Brazilian Government.
April 2006	Submission of all remaining manuscripts.

22. How will the most significant outputs contribute towards achieving the purpose of the project? (This should be summarised in the Log Frame as Indicators at Purpose level)

The pioneer approach in quantifying the biodiversity value of old-growth and regenerating native stands (primary and secondary forest) and tree plantations in neotropical forests will inform land use policy and the rapidly growing forestry sector on the Brazilian economy; Quantitative comparisons of the social, economic and ecological benefits between plantation forestry and species-rich natural forest will be used in a cost-benefit analysis aiming to achieve large scale land use mosaics that can maximise the biodiversity and ecological value of vegetation cover. The results will provide federal (IBAMA, MMA, MCT) and state government agencies (IPAAM, IMAPA, ITERPA) with validated information to help them fulfill Brazilian commitments to the Conventions on Biological Diversity and Climate. A secondary set of outputs relates to the training component of this programme in consolidating a regional effort to capacitate young field biologists to undertake quantitative biodiversity surveys in Amazonian forests.

23. Set out the project's measurable outputs using the attached list of output measures

PROJECT OUTPUTS		
Year/Month (starting April)	Standard Output Number (see standard output list)	Description (include numbers of people involved, publications produced, days/weeks etc)
July 2003- December 2005	4A & 4C	30-36 local Brazilian undergraduate and MSc (40:60 split) students to receive a minimum of 45 days training on quantitative biodiversity surveys.
June 2003- December 2005	8	80 weeks (J.Barlow; 70 wks, C.Peres; 10 wks)
Sept 2005 +	11A & 11B	15 scientific papers to be both submitted and published.
February 2006	12A	All data will be compiled into a GIS-linked database, and handed over to MPEG and posted on the Web following the termination of data collection and analysis.
February 2006	14A	1 workshop will be held at MPEG, involving all project participants and a number of invited participants including local politicians, JARI Florestal managers, and the press.
Sept 2005 – April 2006	14B	3 high-profile international ecology and conservation conferences (i.e. SCB, ATB, BES) will be attended by the principal investigators.
	15A	3 press releases in the host country (Brazil) will coincide with the publication of the highest impact papers.
September 2005 – April 2006	15B	10 local press releases of locally important findings in Brazil.
	15C	3 UK press releases coinciding with national host country press releases.
	15D	10 local UK press releases, coinciding with local releases in Brazil.
September 2003+	17A	1 network of students trained in biological surveys to be established, allowing collaborators to stay in contact and maintain a standardised apporach to field sampling
February 2006 +	17A	1 network to be established following MPEG workshop, allowing all participants to continue the exchange of ideas and views during the crucial period of policy revision and implementation.
September 2005 – April 2006	18A	Contribution to 1 Brazilian national Science documentary (Global Reporter)
	18B	2 interviews expected on national news programmes in the UK.
	19A & 19B	5 international and national interviews to be aired on radio in UK and Brazil.
April 2006	20	£10,000 of physical assets (equipment and software, including specific data-analysis programmes such as PRIMER v. 5 & CANOCO v. 4.5) to be handed over to host country at termination of project.
September 2003+	22	Phenological survey plots in primary forest will be surveyed beyond the project lifetime by IEPA, forming the only long-term baseline phenological plots in this region of Amazonia.
	23	£181,360

MONITORING AND EVALUATION

24. Describe how the progress of the project, including towards delivery of outputs, will be monitored and evaluated in terms of achieving its overall purpose. This should be both during the lifetime of the project and at its conclusion. Please make reference to the indicators described in the Logistical Framework.

The deliverance of new and unique knowledge on the ecological, economic and social costs and benefits of plantation forestry in tropical forests and will be monitored through the supervised collection of quantitative field data and the concurrent compilation of a single data base accessible by all project participants. The success of this study will be evaluated by the quality and impact of the peer-reviewed scientific papers that result from the project. The first stage of turning credible scientific outputs into revised policy will be evaluated at the MPEG exit workshop, and confirmed by the receptivity and enthusiasm with which reports sent to Brazilian governmental departments and NGO's are met. In the longer term, success of these reports will be evaluated in terms of their influence on existing environmental NGO and governmental policy, and how this is implemented across the entire Amazon region. Training programmes for Brazilian students will be monitored throughout with the use of student self-assessment forms, whilst the success of these courses will be demonstrated in the short-term by the ability and competence of students in conducting sampling protocols and completing analysis following the field course, and in the long-term by encouraging standardised sampling protocols across Amazon forests.

25. How will host country partners be involved in monitoring and evaluation of the project?

Dr Leandro Ferreira, Dr Marlucia Martins and Dr Miguel Rodrigues have already been consulted on sampling methodology issues and participated in the conceptional organisation of the study. These collaborators bring considerable experience in biological inventories and regularly publish their results in international peer-reviewed journals. The project will be implemented under the coordination of a cooperative agreement between Museu Goeldi and UEA, and will retain a management structure in which our counterpart investigators are equal in deciding sampling design and implementation initiatives. We also expect that this project will unveil several new species of plants, arthropods and terrestrial vertebrates, and voucher specimens will be deposited at the Goeldi Museum, MPEG Herbarium, or the University of Sao Paulo Zoology Museum.

26. How will you ensure that the project achieves value for money?

First of all, Darwin/DEFRA is expected to contribute only 41% of the total costs of this project, but the project could not be undertaken without these funds. Matching contributions in kind, cash or logistical support will come from conservation NGOs, our Amazonian partner institutes, the Jari Florestal company, and University of São Paulo. Secondly, in addition to the globally relevant research outputs of this study, we expect to invest a considerable amount of time and energy on 'hands-on' training of Brazilian researchers and research interns (estagiarios) who will go on to replicate the sampling methodologies tested in this study elsewhere and well beyond the lifetime of this project. After project completion, the implementation of new rapid or long-term biological inventories elsewhere -- which will serve primarily to inform nature reserve design and decide geographic priorities for biodiversity conservation -- must continue independently under the auspices of MPEG and IEPA. Experience with other tropical forest projects has shown that abrupt cessation of project support, both financial and managerial, can undermine long term project benefits. However, we do not think that that will be the case in this cooperative programme.

27. Reporting Requirements. All projects must submit six monthly reports (by 31 October each year) and annual reports (by 30 April each year). Please check the box for all reports that you will be submitting, dependent on the term of your project. You must ensure that you cover the full term of your project.

Report type	Period covered	Due date	REQUIRED?
Six month report	1 April 2003 – 30 September 2003	30 October 2003	Yes
Annual report	1 April 2003 – 31 March 2004	30 April 2004	Yes
Six month report	1 April 2004 – 30 September 2004	30 October 2004	Yes
Annual report	1 April 2004 – 31 March 2004	30 April 2005	Yes
Six month report	1 April 2005 – 30 September 2005	30 October 2005	Yes
Annual report	1 April 2004 – 31 March 2005	30 April 2006	Yes
Six month report	1 April 2006 – 30 September 2006	30 October 2006	Yes
Final report	1 April 2004 – project end date	3 months after project completion	Yes

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LOGICAL FRAMEWORK

28. 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 • 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			
Purpose To quantify the biodivsersity value of exotic plantation forests and native second-growth stands in Amazonia, critically assessing their value in terms of ecosystem functions and carbon sequestration, helping the Brazilian government and other developing countries to optimise their options in meeting international biodiversity and carbon commitments.	New and unique knowledge on biodiversity value of planatation forestry in neotropical forests. Quantitative comparison of the social, economic and ecological benefits between plantation forestry, natural regeneration, and primary forest. Results that provide the Brazilian government with information helping them fulfill commitments to the Conventions on Biological Diversity and Climate	Field survey data Publications in high-impact scientific journals Reports in Brazilian high-circulation popular science magazines (e.g. Ciencia Hoje). Reports to Brazilian governmental departments including Ministerio do Meio Ambiente (MMA) and Ministerio da Ciencia e Tecnologia (MCT).	That new knowledge will actually be used by state-level and federal government agencies to plan, design and regulate the use of plantation forestry in Amazonia That any resulting policy changes will be implemented effectively. That several of the lessons and insights from this project will be generalised to other key tropical forest countries.
Outputs Assessment of species diversity of key indicator taxa. Assessment of relative value of these forests in terms of carbon sequestration and key ecosystem functions. Local students and field technicians able to assess and monitor the biodiversity value of plantation and native forests. Publications, presentations and MPEG workshop, Belem.	Quantitative field data from 10 vertebrate, invertebrate and plant taxa. Comparable measurements of carbon value and hydrological processes within each forest type. Minimum of 30 local Brazilian students trained in quantitative biodiversity surveys, and methods of projet design. Fifteen papers in peer-reviewed scientific journals, and high-circulation Brazilian science magazines.	Survey reports, biodiversity database and correspondence files from collaborators; Survey reports, data and correspondence files from internal collaboraters Field survey reports, correspondence files from collaborators detailing student involvements and skills gained. Copies of all publications, conference abstracts and workshop proceedings sent to DEFRA (Darwin Initiative).	Proposed methods will allow reasonably rapid and standardised quantification of biodiversity. Adequate students can be identified from within partnership institutions. Results are adequate to provide novel publications. Impact of the MPEG Workshop and publications will be sufficiently significant to influence land use policy through IBAMA, MCT, INCRA, and Min. Agriculture.

Activities	Activity Milestones (Summary of Project Implementation Timetable)
Establishment of experimental design and considerations of spatial scale; Training of Brazilian counterparts; Field research programme; Data analysis; Dissemination of results; MPEG Workshop.	Yr1: Formal assessment of Jari Florestal Project, including spatial mapping and ageing of all forest plots and forestry compartments and integration into GIS database (2 months; May-June 2003). Yr1: Selection of Brazilian students from collaborating institutions. Initiation of short field courses and supervised training programme (2 months; July-August 2003). Yr 1 -Yr3: Sampling protocol of main surveys agreed by August 2003. Fieldwork begins, surveys targetting specific taxa, and including 18 month quantification of seasonal changes and phenological patterns (Sept 2003 - February 2005). Yr 3: Termination of field data collection (Dec 2005). Ongoing analysis conducted throughout the period of data collection will be enhanced and finalisedshortly after (Jan 2005) Yr 3: First high-impact publication (Sept 2005) followed by others both in Portuguese and English (Jan 2006-April 2006). Information summarised and presented to Brazilian Government.and NGO's during and following the MPEG Workshop (Feb 2006).