Darwin Initiative

Annual Report

1. Darwin Project Information

Project Ref. Number	*14-025*
Project Title	Developing integrated assessment of biodiversity in secondary forest in Belize
Country(ies)	Belize
UK Contractor	Centre for Ecology and Hydrology and the Natural History museum
Partner Organisation(s)	Belize Audubon Society, Wildtracks
Darwin Grant Value	£168 291
Start/End dates	01.05.05 to 01.05.08
Reporting period	1st May 2005 to 1st April 2006, annual report 1
Project website	http://www.ceh.ac.uk/sections/eaf/EAFBiodiversityassessmentinBelize
Author(s), date	Lindsay Maskell 28th May 2006

2. Project Background

This project is located in Belize, Central America. It was developed in response to the recognition of absence of data on the relative biodiversity value of previously impacted forests, and their role and contribution within the national protected areas system. The project arises from a need to coordinate and collate information at larger geographic scales and to take an ecosystem level approach to understand the functioning of communities.

Whilst it builds on past and ongoing experience and studies of the UK and Belize project partners, the application of this experience to address the subject of the project is a new initiative. It is a collaboration between UK partners; the Centre for Ecology and Hydrology and the Natural History museum and in Belize the Belize Audubon Society (BAS) which is the largest and leading national conservation NGO, BAS is the principal custodian for the project – providing office space, staff supervision, support and co-ordination and Wildtracks a smaller NGO.

3. Project Purpose and Outputs

Purpose

- To determine the biodiversity value of secondary forest tracts within and surrounding three protected areas, that are regenerating from past natural and anthropogenic impacts
- To create databases of habitats, plant and animal species within the three protected areas by collation of existing data and additional data collection
- To develop a basic GIS of habitat types, species and landuse within and surrounding the three areas to use as a tool for biodiversity assessment
- To compare forest regeneration in naturally regenerated forests (e.g. post-hurricane) with that from anthropogenic landuse specifically post-agricultural
- To relate past landuse and surrounding landuse to biodiversity and attempt to identify indicator species that could be used to demonstrate conservation status

Outputs

- Transfer of skills between Belizean employees and students (future employees) and UK partners including a training course in GIS and data management, a training workshop in field skills, a training workshop in integrated assessment and data analysis, other meetings and visits.
- an established database including development of forms for recording data
- Additional species and habitat information on three protected areas in Belize
- Marked field plots established
- Integration of resultant data sets into national and local site conservation planning
- Improved scientific understanding
- Collaboration and integration with other projects and organisations in Belize

The outputs and proposed operational plan have not been substantially modified, obviously plans have become more detailed, additional activities have been included but the basic framework has not been affected.

4. Progress

This is the first year of the project. The project has kept to the baseline timetable and progress has been good.

Project achievements;

The Project initiation meeting between CEH and the Belize partners took place in June. It consisted of meetings between the partners, field visits to all three study sites to visualise the structural context for the assessment techniques to be employed. Meetings were held with GIS specialists and data managers from the Meso-american Barrier Reef Systems project and the Wildlife Conservation Society. Introductions were made with the Forest Department of the Government of Belize. Methods to be employed include establishing a steering committee for the project work consisting of representatives from all partners and some external experts, establishing a web forum for communication and exchange of documents and establishing the project framework within Belize.

Websites: A website linked to CEH and a web forum for use by the project partners have been set up. An external website has not yet been set up but would be desirable.

In-Country co-ordination and Planning: There have been detailed discussions between Wildtracks and the senior staff and board of the Belize Audubon Society, to ensure the project's objectives, and those of the partners are fully met within the collaborative planning and outputs from the project.

Consultation/communication/networking: Since the initiation of the project in April, a series of meetings have been held with various biodiversity research and management stakeholders around the Country, to inform them of the concept and goals of the project, and to enlist support and input where appropriate. This enables cross-linkages with other researchers, to maximize synergies and extend the scope and legacy of the project – in developing a common approach, and enhanced data-sharing. Beyond the project partners, these meetings have extended to include research coordinators from the Wildlife Conservation Society, the Meso-American Barrier Reef System project, Toledo Institute for Development and the Environment, the Ya'axche Conservation Trust, the Bladen Management Consortium, the Belize Biodiversity Monitoring Working Group, the Forest Department of the Government of Belize, the Earthwatch Institute and independent researchers. These introductory meetings have laid the pathway for open communication and collaboration with interested stakeholders – lines of collaboration which are already resulting in beneficial extensions to the project, for example the WCS-funded addition of bat-surveys within the assessment.

Informational meetings were held with the Forest Department, and with University of Belize (UB) students to introduce the project and enlist support. The Forest Department indicated their intent to collaborate by providing assistance for fieldwork, if necessary, and participating in project training to build capacity within their staff. The UB, through its natural resource management program has identified two undergraduate students who will participate in the project as part of their curriculum. The research coordinator participated in the first ever celebration of GIS Day in Belize, which was held at Galen University on Nov 16, 2005. The Darwin project was presented to this gathering of biodiversity management stakeholders. As a direct result, Dr. Colin Young, a professor from Galen University with experience in biodiversity assessment of secondary forests has expressed interest in being involved with the project. This has been followed up and will be a useful collaboration. The research coordinator attended the GEO (Global Environmental Outlook) Belize 2006 training workshop which was held on March 30-31, 2006.

In the UK there have been meetings between the two UK partners CEH and the Natural History Museum. There has also been a meeting with the Geography Department at the University of Edinburgh who have many years experience of working in Belize. A presentation about the project was made to the Belize Research group in September held at the Institute of Commonwealth Studies, London.

Staff appointment: The project researcher – a full-time position funded under the Belize Audubon Society by the Darwin Initiative Project was appointed. There was some delay in appointing the research coordinator (appointed four months after project began) which hadn't been anticipated in the planning and budget but should have been because this process does take time. She has made very good progress.

Data collation and collection: The project researcher has coordinated this work, other project personnel have been involved. Initially data sources for the three study sites were investigated and existing data sorted and inventoried, as well any contributing data sources for the country as a whole were explored. Subsequently data has been collected on previous landuse at the sites which included field mapping and digitising field data as well as talking to local sources and using existing mapped information.

The BAS biodiversity system is being assessed and an inventory of available data sources will be a project output.

Training**:** Both the research coordinator (Ivis Chan) and the primary field technician (Normando Mora) have been given training in map reading, the use of GPS, and basic field skills. Normando will act as a teaching assistant for the broader transference of these skills to the field staff of the Belize Audubon Society and students of the University of Belize and Corozal Junior College, who will be participating in the project. A training course on GIS and database management took place in November (see Appendix 1). The aim of the course was to provide basic training in ecological field mapping, data entry and management and introduction to use and analysis of data. Ten people attended, four were from the Belizean project partners, three from the Forest Department, another from the Belize Audubon society, another from the Ya'axche Conservation project and one from the University of Belize. The course went well despite variability in the experience and abilities of participants. Feedback from the Belize project partners highlights the need for continued technical support for ongoing capacity-building in terms of GIS skills through the second year of the project – the most efficient mechanisms for which are currently being determined. Core Belize partners will also all be receiving further botanical sampling and identification training early in the second year.

Equipment**:** A project vehicle, desktop computer and laptop have been purchased with project funds. Field equipment: e.g. a GPS, rangefinder, clinometer, reference books have also been purchased.

Significant difficulties:

The ill health of the project leader has been a difficulty. Although it doesn't affect project work in the UK, project planning, sorting budgets, report writing it has restricted travel to Belize. The involvement of skilled personnel from CEH has kept this disruption to the project to a minimum, five members of staff have been on project visits, two of these have visited twice to ensure continuity. The project leader had previously worked in the country for many months so this knowledge and association as well as a good working relationship with the in Belize project coordinator has also minimised disruption. It is hoped that ill health will not be a problem in the coming year but every effort to ensure good communication will be made.

The lack of botanical skills available within the country is a difficulty, this was known at the beginning of the project and hopefully by the end, some personnel will have dramatically improved such skills. There has been liaison with Dr. Sam Bridgewater from the UK Natural History Museum which has been very useful and the research coordinator will participate in a workshop on botanical identification in April 2006. The Belize country coordinator has also made contact with a researcher at the University of Galen and another at the University of Belize who will hopefully contribute some skills to botanical identification and research aims. We will try to involve personnel from outside Belize with botanical skills to assist. We will also develop methodologies such as collection of specimens, photography and concentration on canopy trees that will help to minimise the problem.

Project design:

The project design has been refined over the past year. The project has been translated from concept to reality. Staff roles have been defined and staff appointed. Terms of reference between the Belize country coordinator at Wildtracks and the Belize Audubon Society have been defined. Methodologies for collation and collection of data have been established, this is an ongoing iterative process and refinements are still required following additional training, workshops and project meetings.

Workplan:

Apr 2006- Apr 2007	Continue to collate existing data, create inventory of all data sources as project resource. Continue to liaise with external organisations to collect relevant data and to contribute to other data collections.
Apr 2006- Apr 2007	Populate database with data available from partner institutions,
Apr 2006	Review and planning workshop.
Apr 2006-Apr 2007	Training in fieldwork techniques through field days and workshops as well as on the job training.
May 2006	Training in fieldwork techniques provided by CEH
Apr 2006- May 2007	Field collection of data, transects and plots established in natural and human regenerated areas; collection of land-use and historical information
June 2006	Project visit from project partner from Natural History Museum
Oct/Nov 2006	Project visit from CEH

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

Not applicable

6. Partnerships

Collaboration between the UK and host country partners has been good. The host country personnel have been working hard to ensure the success of the project. There have been two project visits within the year which have been beneficial for Belizean and UK partners. The only difficulties are with communication, keeping the UK project coordinator informed of developments and refining UK contribution. This is due in part to the restriction of the UK project leader due to ill health. Advantages are that UK participants have gained significantly from the experience, skills and knowledge transfer has been two way.

There have been significant collaborations with other projects (see above) and it has been beneficial to biodiversity action and coordination in Belize, and is seen as one of the particular strengths of the first year's outputs. Networking and collaboration amongst biodiversity research / management stakeholders in Belize is being visibly increased and additional international partnerships (eg. with the University of Edinburgh) being developed.

7. Impact and Sustainability

Amongst biodiversity research / manager stakeholders and authorities the project is already well known. The profile will be enhanced during the second year as the project moves from baseline data collection to field surveys and ongoing training. Bringing additional University of Belize students and those of the Corozal Junior College into the field assessments will further extend awareness and understanding of the project objectives. To date, the Belize Audubon Society has been the primary recipient of technical capacity building, though this will extend to the other in_country partners as technical training in additional areas (primarily botany and GIS) is provided in the second year. Visible evidence of increased capacity in BAS includes current in-house GIS mapping outputs, greater participation in regional biodiversity conservation initiatives (eg TNC workshop scheduled for Guatemala in June), and more prominent involvement in BAS decision-making regarding park management strategies. Rate of use of acquired technical and networking capacity to date indicates that the exit strategy of initial skills transference, along with the promotion of national and international collaboration with counterparts, is appropriate and functioning. It is planned that the post of Belize research coordinator appointed for this project will become the Belize Audubon society research coordinator at the end of the project so skills and experience gained will not be lost.

8. Outputs, Outcomes and Dissemination

There were no differences between proposed project outputs and those achieved. The project is on schedule with outputs and milestones. This was the initiation year which involved project development, infrastructure implementation and training. The next year will be critical for data collection. Additional outputs are those associated with networking and initiating collaboration.

There have been various activities associated with disseminating the aims and objectives of the project, obviously it is too early to disseminate findings. There has been attendance at conferences where the project aims and objectives have been presented both in Belize and the UK, involvement in workshops concerning biodiversity planning, meetings with stakeholders e.g. the Forest Department. Communication goes beyond dissemination; it has successfully established ongoing collaborative information and technical advice flow amongst the partner organizations and their counterparts. Discussion of field sampling protocol issues, potential solutions, etc., is both beneficial to the project and to the biodiversity research / manager stakeholder community in Belize – engendering far greater collaboration amongst agencies than has been the traditional norm. Recognition of this value by the partner organizations is such that it is now becoming embedded within day-to-day management ethos – which in turn will help ensure its continued implementation beyond the project cycle. Workshops presenting the findings of the project are planned for late in the final year.

Table 1. Project Outputs (According to Standard Output Measures)

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	TOTAL
6A	10 people (8 native to Belize, 2 resident for 18 years) received training course in GIS and database management	10				
6B	1 week	1 week				
8	Number of weeks spent by UK staff	5				
14B	Attendance at GIS conference	1 day				
17A	Dissemination network established					
20	Vehicle, GIS computer,	11 179				
23	Other funding	15 929				

Table 2: Publications

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

9. Project Expenditure

The following table details the project expenditure for the Darwin component. Funding from other sources has also contributed to the project.

Table 3: Project expenditure <u>during the reporting period</u> (Defra Financial Year 01 April to 31 March)

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

10. Monitoring, Evaluation and Lessons

This was the first year of the project so the goals, outputs and outcomes were of a slightly different nature than the subsequent years will be. A series of outputs were outlined in the proposal but to achieve these it was also necessary to include those pertaining to the establishment of the infrastructure i.e. recruitment and establishment of research coordinator's post, agreement of terms of reference for post, purchase of capital equipment, vehicle and computer, enhancement of links between organisations within country. Requirements for the above and project goals were discussed during the initial project meeting. Monitoring of infrastructure establishment includes budgetary monitoring which has been by invoices, receipts from the purchasers, quarterly reviews and subsequent project visits. There has been regular communication between the UK project coordinator and the Belize country coordinator by email and phone calls. There is also contact with the research coordinator and she sends monthly reports (see Appendix 2). The indicators of achievement are that the infrastructure required to run the project is in place, that the budget balances, that there has been discussion and dissemination of project goals and ideas between in country organisations, that data collection has begun and that planning is well advanced for the next phase of data collection.

Communication is key to running a successful project, with the distance involved and infrequent visits if project partners were not in agreement concerning project aims there could be considerable divergence in outcomes. It is also extremely important to listen to the host country partners about what they require and need rather than imposing UK methodologies and beliefs.

11. OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum)

Beyond the successful implementation of the scheduled project goals and actions, the project has been notably successful in helping the project partners develop meaningful and productive collaboration with both national and international counterparts. The short- and long-term benefits of this networking are fully recognized by the project partners, who express considerable optimism that it will have a significant impact on biodiversity management, research and conservation in Belize: helping replace the traditional turf-protection ethos with one of synergistic partnerships, sharing and transference of information and skills – and enhanced biodiversity conservation.

Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2005/2006

Project summary	Measurable Indicators	Progress and Achievements April 2005-Mar 2006	Actions required/planned for next period
Goal*:* To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but 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 *(insert original project purpose statement)* To provide the tools for enhanced biodiversity assessment and gap analysis for more effective conservation planning at the local and ecoregional scale.	*(insert original purpose level indicators)* Establishment of database of species and habitat information. Collection of additional data from secondary forest regenerating from two different landuse scenarios. Increased understanding of relationship between landuse and biodiversity shown by results of analyses. Development of indicators of habitat quality and biodiversity conservation value.	*(report impacts and achievements resulting from the project against purpose indicators – if any)* Establishment of project infrastructure, personnel, equipment, training for staff in GIS and data management Project still in data collection phase	*(report any lessons learned resulting from the project & highlight key actions planning for next period)* Continue with database construction, collation of existing data Complete protocols for data collection, this includes methodology for monitoring species; botanical identification and collection, bat, bird and herp surveys and also sampling design to answer questions on the impact of different landuses.
Outputs			

(insert original outputs – one per line) Technical workshop Workshops and seminars on integrated assessment and biodiversity Database of biotic and abiotic data Recommendations for management Increased understanding of value of secondary forest and its role within the national protected areas system Reports Scientific papers	*(insert original output level indicators)* Host country personnel trained in database and GIS techniques At least 10 students from University College Belize and 15 'A' level students from Corozal to be involved in the project over the three years. Communication of project objectives and results to stakeholders Increased knowledge of distribution and habitat use of various species in Belize	*(report completed activities and outcomes that contribute toward outputs and indicators)* Training course in GIS and data management techniques provided to ten participants from Belize Audubon society, Wildtracks, University college Belize and the Forest Department in November 05 Collation of data, creation of GIS for project. Collection of data on landuse at sites. Proposals for dissertations from two (third in planning) graduate students from University college Belize. Numerous contacts with stakeholders, other organisations and projects within Belize Planning of protocols for data collection	*(report any lessons learned resulting from the project & highlight key actions planning for next period)* Preparatory exploration and planning for contingencies of all aspects of technical kit is invaluable in running a technical training course. Support post-training is required, perhaps insufficient last year but planning for this year incorporates this requirement. Collection of landuse data continues in conjunction with other data collection. This is a key baseline to the project. The inclusion of undergraduate students in the project and collaboration with other researchers (at U CB and elsewhere) will continue to expand this year. Contacts with other organisations within Belize has been very successful thanks to the Belize project partners and will continue this year. Protocols for data collection and the data collection itself are a key requirement for this coming year.
Activities Workshops and seminars	Yr 1: Project planning workshop with project team to establish priorities, methodologies and procedures (5 days); Project and biodiversity information seminar for local communities (1 day at 3 different locations); Technical workshop on databases and GIS (5 days).Yr 2, Yr 3: Research result workshops; Yr 3; Final	Project planning workshop June 06 Meetings with biodiversity research and management stakeholders around the Country.	Yr 2; Continuation of collaborations with other organisations, dissemination of project objectives to wider community UK and Belize. Workshop on field techniques May 06.

Establishment of database	workshop (5 days); Final project information seminar for local communities (3 days as above); Yr 1: Establishment of infrastructure for database and GIS. Staff in Belize trained to input data and carry out analyses. Identification of data gaps. Yr 2: Additional data added to database, Yr 3: Database maintained, staff identified to continue to maintain and develop after project lifetime.	Technical workshop on databases and GIS in November. Identification of data gaps. Collation of data. Establishment of GIS.	Yr2: Database structure finalised, data collated, data collection phase feeds into database.
Research programme	Yr 1: Gaps identified in data available for integrated assessment, collation of biotic and abiotic data from external sources where possible Yrs 2 and 3: Field collection of data, transects and plots established in natural and human regenerated areas; collection of land-use and historical information Yr 3: Integrated assessment of relationship between landuse and biodiversity. Identification of indicators of habitat quality.	Training in personnel to enable field data collection. Collation of biodiversity data begun. Development of protocols for collecting data.	Yr 2: Field collection of data, transects and plots established in natural and human regenerated areas; collection of land-use and historical information
Reports and Management recommendations	Yr 1: reports of workshops and seminars, summary of achievements in 01 identifying data gaps. Yr 3: Final report including data analyses and management recommendations.	Report of November workshop, 6 month and annual reports, monthly progress reports.	Yr 2: progress reports

Note: Please do NOT expand rows to include activities since their completion and outcomes should be reported under the column on progress and achievements at output and purpose levels.