

# Darwin Initiative for the Survival of Species

## Half Year Report (due 31 October each year)

<b>Project Ref. No.</b>	14-025
<b>Project Title</b>	Developing integrated assessment of biodiversity in secondary forest in Belize
<b>Country(ies)</b>	Belize
<b>UK Organisation</b>	Centre for Ecology and Hydrology
<b>Collaborator(s)</b>	Natural History Museum UK, Belize Audubon Society, Wildtracks
<b>Report date</b>	October 31 <sup>st</sup> 2006
<b>Report No. (HYR 1/2/3/4)</b>	<i>Hyr2</i>
<b>Project website</b>	<a href="http://www.ceh.ac.uk/sections/eaf/EAFBiodiversityassessmentinBelize.html">http://www.ceh.ac.uk/sections/eaf/EAFBiodiversityassessmentinBelize.html</a>

### **1. Outline progress over the last 6 months (April – September) against the agreed baseline timetable for the project (if your project has started less than 6 months ago, please report on the period since start up).**

#### **Review and Planning workshop**

This took place the first week in May. A team from the Centre for Ecology and Hydrology visited Belize to review progress and to plan the next stages of the project. Extensive discussion was had regarding sampling design and setup. This led to more detailed field testing to develop protocols for the data collection phase of the project. The field collection for the project will consist of sampling patches of vegetation subjected to different landuses. Due to the variation in patch shape and size it was decided to use a transect approach incorporating a series of plots. Field testing focused on determining the size of individual sub-plots relative to the species accumulation curves for forest patches and outlining which other attributes aside from plant species would be recorded.

As well as method development this exercise also highlighted a number of issues to be dealt with. Additional methodology planning was conducted in Belize with input from Dr. Sam Bridgewater (Natural History Museum) and from Prof Steven Brewer (University of North Carolina Wilmington), drawing on their experiences characterizing forests in the Maya Mountains of Belize, focussing on the maximisation of sampling efficiency.

#### **Field collection of data**

Protocols were established after the field visit in May. This also involved identifying necessary equipment and this has all been bought and collected. Staff have been trained in fieldwork techniques and the intensive field data collection phase has begun (there has previously been field visits to collect landuse information), experts have been brought in to assist where possible. Getting to the stage where data collection can start was an achievement.

Data collection is now well underway, with the first series of quadrats having been completed in the Fireburn Reserve, and with a reference collection of tree samples having been collected. The second series of quadrats is currently underway at the Cockscomb Basin Wildlife Sanctuary, with the third series at Crooked Tree being scheduled for late November. The tree sample reference collections for the three study sites will then be identified as far as possible at the Forest Department Herbarium in Belize, prior to unidentified specimens being shipped to the UK for further identification. Duplicate collections will be maintained in the Belize Herbarium and at Wildtracks, with digital photo-sheet guides being developed to assist the extensive field surveys scheduled for January – July 2007

Prior to the initial analysis of data from the October quadrat surveys, trends in species richness, dominance and forest structure are already becoming clear. The team is very confident of successful

completion of the integrated assessment of the forest patches, and is already focussing some attention on the identification of potential indicators of overall forest condition.

#### **Database**

A database structure has been established and as data is collected it can be input according to standardised recording forms. Data entry, from the completed field data-sheets will begin in November, with a preliminary analysis planned for December 2006, to allow any fine-tuning of methodology that might be necessary prior to the intensive 2007 dry-season survey period, and to identify areas where additional attention might be required.

#### **Training**

At the same time as reviewing the project and developing field protocols, participants were trained in experimental design and fieldwork techniques.

The Darwin project team in Belize were trained in the use of the Anabat acoustic System equipment for monitoring bats as part of National Monitoring Pilot Project: Using Bats As Indicators.

Members of the Belize team have been trained in amphibian survey techniques, and in amphibian identification.

With valued input from Dr. Sam Bridgewater, plant collection, drying, storage and field identification techniques have been passed on to the team, along with an overview of additional methods of sampling large canopy trees. Dr. Elma Kay's involvement (University of Belize) has significantly enhanced the legacy of the project, with the project being the focus of a workshop and training session for 28 UB students scheduled for mid-November at Fireburn.

#### **Networking/links to other projects/activities.**

Networking remains one of the most productive aspects of the project. The Belize Project Coordinator has been active in securing invaluable input from Dr. Bridgewater, and more recently from Prof. Brewer, to help fill the technical capacity gaps in botany in Belize. With Dr. Kay (University of Belize) now involved in the project, this transfer of technical capacity is extending beyond the core team, to include a significant number of University of Belize undergraduates. Ivis Chan, the Project Researcher has further developed this networking ethos – to assist Belize Audubon in securing the input of Dr. Bridgewater to help develop the first broadscale tree species list for Cockscomb (January 2007). Both Sam Bridgewater and Steven Brewer have volunteered to integrate their upcoming research with that of the Darwin Initiative Project, to maximise data acquisition and value. The scope and scale of long-term conservation research benefits likely to result from partnerships between Lindsay Maskell of CEH, Sam Bridgewater (Natural History Museum) and Steven Brewer (University of North Carolina), and with the team of technical expertise now being developed in Belize is encouraging.

## **2. Give details of any notable problems or unexpected developments that the project has encountered over the last 6 months. Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities.**

The field method development in May demonstrated that there was a need for expert assistance in botanical identification. Field trials showed that it was possible to identify only 50% of species with ease on sight, although collection of voucher specimens will take place, this will significantly increase the amount of time needed to sample plots. This percentage rose if only canopy trees were chosen. Firstly it was decided that only canopy trees would be sampled in the first instance although the aim of the project is to establish permanent plots which can be returned to so additional sampling of shrubs and herbaceous flora may be possible in the future. In addition, resulting from discussions/collaborations with other UK researchers in Belize a newly graduated MSc student in taxonomy from the Royal Botanical Gardens is helping with botanical collection in Belize and subsequent plant identification. Her costs have been covered by the project from unspent money assigned to the sub-contractor. These are very small and her assistance invaluable.

With the plant reference collections now being made, and with the additional training input from research collaborators, the Belize team is now considerably better placed, and more confident, to acquire

