

REPORT ON FUNDING PROVIDED FOR THE RUFFORD FOUNDATION SMALL GRANTS FOR NATURE CONSERVATION

Project title: *The floristics and structure of two forests over limestone in Jamaica*

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EXECUTIVE SUMMARY

This proposal sought funding to set up a network of plots across two limestone forests in Jamaica, and the overall effort resulted in significant progress on two primary objectives: (1) the setting up of a network of plots in one (of two) of the target sites (2) a survey of the seedling populations within these plots. Accordingly this Rufford funded work will help to generate information on the status, structure and floristics and to initiate important studies on long-term dynamics of the limestone forests of Jamaica. The other objectives were not achieved because the progress of the project was severely hampered by the passage of a rare category 5 hurricane, Hurricane Ivan, that hit the island in September 2004. As such, we could not gain access to the sites for three months and sustained damages to a number of our plots. Work resumed on the project in January 2005, and it is hoped that all our project activities will be completed by September 2005.

GENERAL BACKGROUND

My primary aim was to improve the present knowledge of the floristics and structure of two forests over limestone (Cockpit Country and the John Crow Mountains). My secondary aim was to establish a baseline for future monitoring of dynamics. Unfortunately we were unable to fully complete the first objective primarily because of the effects of Hurricane Ivan in September 2004. The hurricane caused significant damage and destruction to the country's infrastructure, and affected the livelihood of many Jamaicans. Whole communities were cut off, roads were impassable and a full recovery from the hurricane was not achieved until Jan. 2005. As such we could not gain access to our field sites. Fieldwork did not resume until Jan. 2005 and as a result this project was delayed significantly and therefore the time projected for project completion was extended. I am now in the process of applying for additional funds to ensure that our research objectives can be fully met.

COMPLETED ACTIVITIES

To date a total of 45 plots slated for the wet forest of the John Crow Mountains (JCM), Portland have been set up and all plots will be set up in the other target site by June 2005. Plots have been placed along three different ridges at similar altitudes on the southern (Millbank) and northern (Ecclesdown) facing slopes of the JCM (see fig. Appendix 1 for reference). Along each ridge, three plots (25 m X 25 m) were set up > 25 m but < 45 m apart between 700-800 meters. A second series of plots were set up between 600-700 meters while on the northern facing slopes an additional set of three plots were set up between 400 – 500 meters. No plots were set up at the lowest elevation on the southern slope of the JCM because of a general absence of undisturbed forests below 500 meters. Seedling assessments within 5, 5 m x 5 m

subplots within two of the three plots at each altitude and on each side of JCM commenced in Jan. 2005 and was completed in May 2005. So far preliminary data suggests that over 15,000 seedlings comprising approximately 42 species were recorded. Voucher specimens of all seedlings (both identified and unidentified) were collected.

Within in the Cockpit Country (see Appendix 1 for reference) so far three blocks containing 3 plots each were set up along the Troy-Windsor trail. It is hoped that 36 plots will be set up in CC by June 2005. Seedling surveys for the CC will begin in June 2005 and it is hoped that will be completed by August 2005.

ONGOING PROJECT ACTIVITIES

I hope to initiate the survey of all adult trees ($\geq 2\text{cm DBH}$) in June 2005. To conduct this survey I will need to employ the services of a team comprising 4 field technicians and a field guide. However sufficient funding is not available to cover the employment of all of the individuals within the team as such funding is being sort to offset additional costs. It is hoped that this survey will be completed for both sites by September 2005. Data on light climate will also be collected using hemispheric photographs that can be used to deduce understorey light conditions and determine gap size.

PROJECT COMPLETION

As mentioned before the projected month for the completion of the fieldwork component of this project will be September 2005. It is also hoped that the data will be analyzed and the results will be submitted to peer reviewed journals by June 2006. The data and results will be housed in a forestry department database and will be available to the public domain. This will provide an important thrust for our planned project follow-up and conservation efforts.

PLANNED PROJECT EXPANSION/FOLLOW UP

This project was well received by the relevant NGOs, the forestry Department and by my current employers, the Department of Life Sciences, University of the West Indies, Mona and they expressed the need for such a vital project to be expanded to include other forests over limestone and other biodiversity components. As such a herpetofaunal component (frogs) will be incorporated in September 2005, and Dr Byron Wilson, a herpetologist will be responsible for this new component of the project. The project will now include an additional forest, that is, the limestone forests of the Dolphin Head Mountains (moist forest over limestone) and seedling dynamics will be assessed in the three forests over a 3-year period. We are now seeking funding to cover these activities.

This project now has a revised objective. We will address the global amphibian crisis by examining Jamaica's unique but threatened frog fauna. The last 20 years have witnessed an alarming number of frog extinctions across the world, and the status of Jamaica's critically endangered frog fauna is presently of both national and international concern. The primary source of amphibian endangerment in the West Indies appears to be habitat loss through of forest deterioration. Accordingly, a major thrust of this research will be to correlate endemic frog diversity with quantitative assessments of forest structure.

A central objective is to establish permanent monitoring plots to track future trends in the structure of these forests and in the biodiversity contained within them. Because frog inventories will be conducted in the same plots used to examine forest structure and

regeneration ecology, we will be able to correlate the occurrence of frog species with quantitatively derived measures of forest quality (structure). This effort should help clarify the extent to which Jamaica's native frog species are dependent on high quality, undisturbed forest. By considering both forest structure and a faunal group sensitive to habitat perturbation, our permanent monitoring plots will provide a solid foundation for tracking long-term trends in environmental quality.

SYNOPSIS OF DISBURSED FUNDS

In total, £5000 was provided by the Rufford foundation. The Bursary, the University of the West Indies who purchased the equipment, seedlings and tree tags and paid the field technician on our behalf, administered the funds. The balance was transferred to my department and a detailed list of the expenditure is given below (Table 2). Where savings were made on a line item, it was used to purchase or pay for other goods and services. Items/services that were not budgeted for includes department overhead, field gear, digitized maps of the field sites, the use of a courier service and plastic pipes for plot demarcation. Department overhead included costs incurred from paying a driver (sometimes) when we needed to go into the field, custom broker fees when clearing equipment and field gear and general use of the department facilities (herbarium, photocopying etc). Digitized maps were purchased in order to map the position of the plots (this has yet to be completed), The courier service was used to deliver purchase orders to the United States that were used as a method of payment for the equipment and field gear. Plastic pipes were used to mark the corner of the plots to aid with re-location (because some of the ropes used for plot demarcation were stolen). Field gear was purchased to help access the sites (hiking boots, flagging tape, DBH tape, tents etc) and to increase the overall efficiency of our work. A surplus of £38.58 was also spent.

Table 1: Proposed Budget

<u>EQUIPMENT</u>	UNIT COST	TOTAL
Haglof Vertex III Hypsometer	1100	
Haglof DME 201 Cruiser	500	
<i>Subtotal</i>		1600
<u>EXPENDABLE SUPPLIES</u>		
Seedling and tree tags	500	
Ropes	300	
<i>Subtotal</i>		800
<u>LOCAL TRAVEL</u>		
Accommodation	500	
Petrol	500	
<i>Subtotal</i>		1000
<u>EXTRA MANPOWER</u>		
Research Technician	1000	
Field Guides	600	
<i>Subtotal</i>		1600
TOTAL		5000

Table 2: Actual Budget

<u>EQUIPMENT</u>	UNIT COST	BUDGETED
Hysometer, Cruiser and seedling & tree tags	1792.01	
Other equipment (raincoat & an inverter)	60.20	
Field Gear (includes tent, flagging tape etc)	1026.31	
<i>Subtotal</i>	2878.52	1600
<u>EXPENDABLE SUPPLIES</u>		
Plastic Pipes (for plot demarcation)	211.62	
Ropes	88.43	
<i>Subtotal</i>	300.05	800
<u>LOCAL TRAVEL</u>		
Accommodation	67.27	
Petrol	265.50	
<i>Subtotal</i>	332.77	1000
<u>EXTRA MANPOWER</u>		
Research Technicians	700.00	
Field Guides	405.45	
<i>Subtotal</i>	1105.45	1600
<u>MISCELLANEOUS</u>		
Courier service	64.97	
Department overhead	250.00	
Digital maps of target sites	106.82	
<i>Subtotal</i>	421.79	
TOTAL	5038.58	5000



Plate 1: The Ecclesdown side or the north-facing slope of the John Crow Mountains, Portland, Jamaica.



Plate 2: The Millbank side or the south-facing slope of the John Crow Mountains, Portland, Jamaica



Plate 3: Picture of the karst topography of the Cockpit Country, Trelawny, Jamaica. (Please ignore the date on the picture, this was taken in June 2004, the date on the camera was not set).