

EARTHWATCH INSTITUTE FIELD REPORT

Earthwatch Institute Mission: *Earthwatch engages people worldwide in scientific field research and education to promote the understanding and action necessary for a sustainable environment.*

Earthwatch Institute uses the UNESCO Definition of a Sustainable Environment: *A sustainable environment is one in which the natural environment, economic development and social life are seen as mutually dependent - and the interaction between them contributes to the sustainability and enhancement of the quality of people's lives and the natural environment.*

SECTION I: UNEP- WCMC WEBLINK INFORMATION

Section I of the field report will be publicized on our weblink with the United Nations Environment Program (UNEP) World Conservation Monitoring Centre (WCMC) at www.unep-wcmc.org. This website is available to the general public.

Project Title: Puerto Rico's Rain Forests

Principal Investigator (s): Sally Silverstone, Director Tropic Ventures Education and Research Foundation, Dr. Mark Nelson, Institute of Ecotechnics, Dr. Patricia Burrowes and Dr. Rafael Joglar University of Puerto Rico Coqui Project

Research Site(s): Las Casas de La Selva Patillas Puerto Rico, adjacent to Carite National Forest.

Local Management Status of the Research Site(s): Auxiliary Forest

Scientific names of primary species being studied (if appropriate):

Key Research Objectives:

- **Research into economic and ecological use of rainforest lands.**
- **Examining effectiveness of line planting techniques for tropical hardwoods.**
- **Looking at effect of line planting techniques on overall biodiversity of forest.**
- **Studying local Coqui populations and possible effects of line planting on Coqui populations.**

Data Collection and Results

- a) Give a concise account of the data you have collected during the past field season.
- 1) Complete re-measuring of tree seedling plots established in 2003.
 - 2) Re-measuring of five selected tree plots that were established in 2001 to get accurate data on 3 years worth of growth.
 - 3) Detailed study of four mahogany plots to see if steepness of slope is related to successful growth (previous study had only taken general slope and aspect – this time it was taken for each tree.
 - 4) Four Coqui study plots were established and each one visited eight times (twice per team). Over 3,000 sightings have been recorded.
 - 5) Established a new study plot of 30 Moralon trees (*Coclea pubescens*) to be studied as a possible line planting species for steep shaded areas.
 - 6) Commenced study of the populations of native hardwoods within the Mahogany study plots so that we can later study and compare the value of these woods.

- b) What progress have you made towards achieving your original objectives?

The work of Earthwatch this year has enabled us to go back to our study plots and take a more detailed look at some aspects of the Mahogany plantations, the slope and aspect of the trees to see if this is a major factor in plant growth. This data will be included in the final write-up on the Mahogany and Maho data collected over the last 4 years.

The setting up of the Coqui study transects has enabled us to branch out into the animal world and see if the Coqui species are affected by the disturbance of line planting.

- c) Please provide a summary of your results (even if they are preliminary).

Mark and Sally have decided to write up the tree data to date in two papers, one dealing with the biodiversity study and one dealing with the tree growth data. A draft of the biodiversity paper is now complete and attached. The most interesting overall finding is that there seems to be a slight increase in biodiversity in the disturbed areas. Our current findings are being circulated amongst local experts and advisors to get their comments on the differences in species type and numbers in the line planted versus control areas and their significance. The tree growth data should be available by the end of this summer.

Initially at least there does not seem to be any difference in Coqui numbers between the line planted and undisturbed areas. We have found a surprisingly large population of *E. wightmani*, the “melodious” coqui in both areas. Little is known about the behaviour patterns of this coqui and the staff of UPR hope to make the Las Casas site a long term study area to gain new information about this species.

Significance/Benefits of Research

a) What is/are the significance/benefits of your research at the following levels?

- local (in the area of the research site)
- national
- international

(For example, do your findings, or do you expect your findings will contribute to management strategies or biodiversity conservation action plans at any of these levels?)

We expect our findings to contribute locally and internationally to the management of rainforest lands. Although line planting of tropical hardwoods is a long term project once established, a sustainable cycle of planting and harvesting can be maintained, producing a crop and income for the local community without devastating the rainforest biome. Our research into the results of line planting of various tropical hardwood species, both successes and failures, will shed light on the best techniques to use and the best species to use in various areas, thus enabling others to establish successful plantations.

b) How do your findings contribute to issues of sustainability?

Sustainable use of rainforest land is an overall goal of the project: Utilizing forest resources that can be extracted from the forest without reducing biodiversity and without disturbing the delicate rainforest structure including canopy and topsoil.

Dissemination of Results

a) Have you provided details of results from your research to or within:

- Scientific papers (indicate status; e.g., peer reviewed or in progress/press)
 - Please provide full references

Currently working on two papers to be submitted to journals – draft of first one attached.

- Management plans and reports (in progress or completed)
 - By who, for whom, and used by which agencies
 -

Data gathered will be used to plan long-term future experiments at the project. For example, we are already looking for suitable hardwoods that may grow more rapidly than Mahogany and Earthwatch has helped to establish some test plots of new seedling types, which will be studied over time.