

Annual Report by the US for Belize Foundation for Research and Environmental Education (BFREE) on the Belize Cacao-based Agroforestry Restoration Program (BCARP) February 22, 2017

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Project Description:

BCARP is a six-year project spear-headed by the U.S. non-profit, US for Belize Foundation for Research and Environmental Education (BFREE), to convert degraded land to cacao-based agroforestry for the purpose of expanding migratory bird habitat in the Trio Agricultural Community and other communities throughout the Toledo District of southern Belize, Central America. This program was initiated in October 2012 with funding from the U.S. Department of the Interior, Fish and Wildlife Service, on behalf of the Nyanza Natural Resource Damage Trustee Council – comprised of the Service, Commonwealth of Massachusetts and National Oceanic and Atmospheric Administration.

Toledo District is the poorest and least developed district in Belize; 82% of the population is rural. Ten percent of the population and a variety of cultures call Toledo home: Maya, including Mopan and Kekchi Maya, Mennonites, Mestizos, Creole, Garifuna, East Indians, and immigrants from elsewhere in Central America. In Toledo, 10.7% of people are poor and an additional 49.7% is indigent. Most of the impoverished are farmers, who either farm their own land or work for wages on large plantations. More than half of Belize's poor are subsistence farmers.

Project Activities:

Monitoring

Annual monitoring activities took place on two farm plots and three comparison plots in November 2016. Point counts and mist-netting/mark-recapture were implemented on each site to determine resident and migratory species utilizing the plots. The comparison plots included a citrus farm, a pineapple farm and a cattle farm.

Dr. James Rotenberg of UNC Wilmington has begun to analyze data and put together two resulting associated graphics to compare the neotropical migratory bird activity in each of the plots. Additional graphics will be made available later this spring.

Farm Visits

In early 2016, Eladio Rash, a representative of the Toledo Cacao Grower's Association, visited farms to help trouble shoot issues with stemborers and make recommendations for better farm practices. BFREE Cacao Farm Manager, Elmer Tzalam, and BFREE Executive Director, Jacob Marlin, were also present to receive feedback and understand next steps. Recommendations included: better management of shade, regular extension services, establishment of a buffer zone between types of agriculture to minimize movement of pests, use of organic amendments to strengthen the soil.

Mountain View Nursery

During the final two years of the program, our focus will be to encourage more farmers to give shade-grown agroforestry a try and to provide tools that empower them to do so. To that end, 2016 was spent creating resources. One exciting development has been the planning and construction of Mountain View Nursery, a 50" x 50" foot permanent nursery which will make available a variety of timber, cacao and other fruit trees to farmers interested in growing their own tiered agroforests. This collaborative project between BFREE and the Gomez family is located at the Gomez and Sons Sawmill on the eastern side of the Southern Highway across from the entrance road to BFREE, and is slated to open in the summer of 2017.

Belize Cacao Agroforestry Handbook

Another valuable tool that will be made available to farmers in 2017 is *The Belize Cacao Agroforestry Handbook*, a joint effort between BFREE and UNC Wilmington's Department of Environmental Studies with significant input from experts at the Cocoa Research Centre, University of the West Indies. This 70-page manual is filled with illustrations and simple descriptions intended to guide farmers through the basics of land preparation, nursery management, planting, maintenance, harvest and post-harvest. The 'Resource,' section of the Handbook includes checklists, management schedules, and cultivation records, to help farmers track their farm activity and keep on schedule throughout the year.

Five hundred handbooks were produced during the initial printing and were shipped to Belize in December 2016. These will be made available to farmers in the Toledo District and beyond through farmer cooperatives, during meetings and workshops, at Mountain View Nursery, in Farm Supply stores in Punta Gorda, and at the BFREE field station.

Understanding the Belizean Cacao Market

After a survey of the chocolate markets throughout Belize and specifically in the Toledo District, BFREE identified at least five different markets for cacao growers to sell beans within the country.

Birds, Chocolate, Forests

BFREE developed language and materials to promote the conservation of rainforests and its wildlife using cacao-based agroforestry systems. BFREE staff presented lectures and materials at conferences, meetings and other events throughout the year in Gainesville, FL, Chicago, IL, and Madison, WI to announce this work, promote the message, and search for partnership opportunities.

Genetic Testing

As part of BFREE's initiative to promote organic shade grown cacao as a means of conserving and restoring tropical forests, BFREE began investigating the varieties of cacao trees growing in the BFREE Cacao farm and property to ensure the highest quality of beans are grown and best farming practices are conducted.

In early September, Heather Barrett and Jacob Marlin traveled to the Cacao Research Centre at the University of the West Indies in Trinidad. The University has propagated a living gene bank of over 2200 varieties of cacao, and is one of the worlds' leading research institutes focused on the genetics of cacao, post-harvest processing, and the production of fine flavor chocolate. Dr. Pathmanathan Umaharan, Director of the Centre, as well as other staff and students spent the day sharing information, discussing strategies for the BFREE initiative, and providing a tour of

facilities and the living gene bank. A kit for sampling the genetics of the BFREE cacao farm was provided, and within a month, samples from 80 Cacao trees from BFREE were sent to the University for Genetic testing.

In addition, Mr. Brian Horsley, co-owner of Maranon Cacao in Peru, South America, visited BFREE from September 30th to October 5th to collect similar genetic material (leaf samples.) These were then sent to the US Department of Agriculture's genetics lab in Virginia as part of an initiative sponsored by the Heirloom Cacao Preservation program in collaboration with the Fine Chocolate Industry Association. The results from both collections will help guide management decisions and best practices for cacao based agroforestry both at BFREE and the surrounding areas that we work.