

Darwin Initiative: Half Year Report

(due 31 October 2013)

Project Ref No	18-010
Project Title	Tools for the sustainable harvesting of Maya Nut (Mesoamerica)
Country(ies)	Mexico, Guatemala, El Salvador, Nicaragua, Honduras, Panama, Costa Rica
Lead Organisation	Maya Nut Institute (DBA The Equilibrium Fund)
Collaborator(s)	Natural History Museum
Project Leader	<i>Alex Monro</i>
Report date and number (eg HYR3)	<i>April 2013 to September 2013</i>
Project website	http://mayanutinstitute.org/page.cfm?pageid=28054

1. PROGRESS TOWARDS ACTIVITIES

In April Oscar Espinoza Zapata (Forester, Nicaragua) worked to analyze the data collected in Maya Nut forest plots in San Pedro del Norte, Chinandega in March. His analysis is of particular interest because this is the first site where we were able to inventory all of the Maya Nut trees, recording georeference, diameter at breast height and sex. This is based on a methodology developed for agroforests in Nicaragua by INAFOR (National Institute of Forestry). For our purposes of ensuring harvester participation and good understanding of the methodology and results, total census is better compared to a transect methodology whose application is confusing for local communities. Oscar's work furthered our progress in Activities 1.8, 1.9 and 2.1. (1.8: Inventory data related to forest conservation status measured, data fed into the guidance document on sustainable harvesting of Maya Nut, 1.9: Field data compiled in each country and analyzed for calculation of sustainable Mayanut seed harvest levels by partners and 2.1: Draft position agreements for 6 local forest areas revised by year 3)

In July Christine Woda (Coordinator PRORENA program, GIZ/Honduras), Oscar Espinoza Zapata (Forester, Nicaragua), Zorayda Leiva (Maya Nut Institute program coordinator, Nicaragua), Alba Ocampo (Forester with COHDEFOR, Honduras) and Nidia Lara (Fundacion AGAPE, El Salvador) conducted trainings for community members, forest service personnel, university students and park guards from Honduras, Nicaragua and El Salvador. In total, 30 people from El Salvador and 3 from Honduras (a total of 33 people) were trained in a 5-day course in El Salvador. This course furthered our progress in activities 1.4 and 1.5: (1.4: 120 Mesoamericans from 20 village forest committees trained in field data gathering for calculation of sustainable Mayanut seed harvest levels and the biodiversity associated with Mayanut forests, 1.5: 30 Mesoamericans from 10 village forest committees trained in technical aspects of forest management: logical basis and basic interpretation of the gathered data as tools for sustainable Mayanut seed harvest levels)

In September Alejandra Osorto (Nuez Maya, S.A., Honduras) obtained funding for Participatory Management Plans for Maya Nut forests in the state of Choluteca, Honduras. Data collection is slated to start in October with the help of Christine Woda (Coordinator PRORENA program, GIZ/Honduras), Alba Ocampo (Forester with COHDEFOR, Honduras) and Darcy Sanchez (Maya Nut harvester, Choluteca).

Tonya Lander has completed the collection and analysis of the molecular data aimed at informing a reforestation using Maya Nut. She is currently on maternity leave and will return to complete this work in January. Initial findings indicate a north-south and Pacific Atlantic partitioning of genetic diversity within the species in Central America and places this

within a context of the species' entire range. Notable is the genetic distinctness of Cuban material which may provide some evidence as to the species original distribution in the Caribbean. Of interest given the use of Maya Nut in Haiti a country from where no native populations are known. Preliminary results were disseminated in a blog post in April 2013: <http://www.nhm.ac.uk/natureplus/blogs/tropicalbotanyresearcher/2013/04/12/first-results-of-our-analysis-of-maya-nut-tree-populations-in-central-america>

Anaíte López from the University of El Valle in Guatemala together with Tim Marks, Wolfgang Stuppy and Hugh Pritchard of the Millennium Seed Bank have made good progress towards developing a storage protocol for Maya Nut. We have discovered that Maya Nut exhibits unexpected behaviour in relation to it's morphology. That is, for a seed which has a very thin outer layer it is remarkably good at reducing water loss and can be stored, at the correct ambient humidity and temperature for several months, maybe even a year. As is the case for many if not most tropical forest trees longer term storage than this is unlikely to be attainable as the seed's composition prevents it from being stored at ultra low temperatures. A draft manuscript is in progress and an update on our findings was posted on our blog in May 2013: <http://www.nhm.ac.uk/natureplus/blogs/tropicalbotanyresearcher/2013/05/06/storing-brosimum-alicastrum-maya-nut-seed-a-very-surprising-result>

Overall we are pleased with our progress to date and hope to have achieved our goals by the end of October.

2a. 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.

Our progress toward our final goals outlined in activities 2.1, 2.2 and 2.3 is hindered by the difficulties we have encountered with determining average seed production per tree per year. This datum is not, as we expected, correlated with DBH or canopy size. It appears to be correlated with rainfall and with seed production in previous years. Maya Nut seed production appears to vary enormously from year to year. Some populations experience up to 3 consecutive years with no seed production at all. Adding to the difficulty is the challenge to find isolated trees with no canopy overlap with other conspecifics. Because Maya Nut tends to grow in clumps, it is rare to find an isolated tree. The isolated trees that we have found may experience increased predation by bats. This reduces the number of seeds under the parent tree, as they are dispersed far away. These isolated trees may also be more productive because of reduced conspecific competition. This requires further research.

Meanwhile for the purposes of establishing harvest quotas for Maya Nut we are establishing a sustainable density of seedlings that reflects the observed density in 'healthy' exploited forests. We are also considering using the quota-based approach applied in Guatemala by CONAP (National Council of Protected Areas), the only government or other entity to currently implement Management Plans for Maya Nut. This consists of 21 kg of fresh seed per tree greater than 20cm DBH (Luis Miguel Ormeño, 2005). Another data set from Mexico showed an average seed production per tree (taken from two distinct data sets from two years) of 12lb dry seed/tree/year. The data set from Honduras (Rio Platano Biosphere Reserve) was for two years, one "good year" in 2011 and and one "poor year" in 2012. The good year showed an average of 146 kg fresh seed/tree/year and the poor year showed 300 kg fresh seed/tree/year.

An unexpected development which has required some aspects of the project to be rescheduled was the happy news that Tonya Lander required maternity leave. This required the project end-date to be extended and details of her employment to be altered. Both were done with consultation and the approval of LTS.

2b. Have any of these issues been discussed with LTS International and if so, have changes been made to the original agreement?

Discussed with LTS: Tonya Lander's maternity leave and project end-date discussed with LTS	
Formal change request submitted:	Yes
Received confirmation of change acceptance	Yes

<p>3a. Do you expect to have any significant (eg more than £5,000) underspend in your budget for this year?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
<p>3b. If yes, and you wish to request a carryforward of funds, this should be done as soon as possible through the formal Change Request process. However, it would help Defra manage Darwin funds more efficiently if you could give an indication now of how much you expect this request might be for.</p> <p>Estimated carryforward request: £</p>

<p>4. Are there any other issues you wish to raise relating to the project or to Darwin's management, monitoring, or financial procedures?</p>
<p>no</p>

If you were asked to provide a response to this year's annual report review with your next half year report, please attach your response to this document.

Please note: Any planned modifications to your project schedule/workplan or budget should not be discussed in this report but raised with LTS International through a Change Request.

Please send your **completed report by email** to Eilidh Young at Darwin-Projects@ltsi.co.uk . The report should be between 1-2 pages maximum. **Please state your project reference number in the header of your email message eg Subject: 17-075 Darwin Half Year Report**