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Eleanor Harrison-Buck Associate Professor of Archaeology travels to Belize

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Eleanor Harrison-Buck

Associate Professor of Archaeology - Belize

Since 2011, I have directed the Belize River East Archaeology (BREA) project, which is a 6000 km² study area in the eastern half of the Belize watershed in Belize, Central America. According to sixteenth century Spanish ethnohistoric accounts, settlements in the BREA study area produced large quantities of cacao--the coveted chocolate bean--in all of the Maya Lowlands (Jones 1989). Currently, we know more about cacao consumption than its production of this orchard crop in the Maya area. We know from their art that cacao was a staple in ancient Maya feasts. However, it is elusive in the archaeological record as the pollen, phytoliths, and macrobotanical remains do not preserve well.

Working with a soils scientist, Dr. Serita Frey, in the Department of Natural Resources and Environment at UNH, our goal has been to determine whether we could detect a biomarker of cacao in soils to identify where cacao was grown and to better understand cacao production (as well as consumption) in ancient times. Analyzing soil samples we collected from a modern-day cacao orchard in Belize as a baseline proxy, we have been able to determine that cacao does leave a distinctive signature or biomarker in the soils. We also tested soils from a low-lying floodplain adjacent to an ancient Maya site in the BREA study area and found a slightly elevated signature that may signal ancient cacao cultivation.



Map of Belize River East Archaeology (BREA) project (map by M. Brouwer Burg)



Cacao tree



Cacao bean



A Maya woman in San Antonio village of Belize grinds roasted cacao with a traditional mano and metate, ground stone tools that the Maya have used for thousands of years

Above three photos by D. Buck

With the support of a CIE Development Grant, we were able to carry out additional soil testing in January 2014 of other known locations where cacao is currently being cultivated and also where we know cacao was grown in the recent past to further cross-examine our preliminary results. In January, we also collected additional soil samples from some relic stands of cacao growing wild in the jungle, which likely are vestiges of colonial period orchards, as well as additional samples from other low-lying floodplains adjacent to ancient Maya sites. According to previous soil studies along the upper Belize River valley (Muhs et al. 1985), the floodplain Argiudolls and Hapludolls are the most ideal locations for growing cacao and also match the Spanish descriptions of cacao being grown by the Maya right along the banks of the Belize River.



Dr. Eleanor Harrison-Buck, Assistant Professor of Archaeology, in collaboration with Dr. Serita Frey of the Dept. of Natural Resources



BREA project members carry out the soil sampling at one of the sampling sites in Belize. Photo by S. Frey.

and Environment at UNH, directed the soil sampling in the BREA study area during her UNH January Term field school. Photo by S. Frey.

Funds were used to access, collect, and process minimally 20 different soil samples in the field and export these materials to Frey's lab at UNH. Frey is currently testing these soils to refine our methods and to cross-examine the effectiveness of this technique for identifying a cacao biomarker. If proven successful, this technique involving soil testing would offer the first viable method for identifying historic and possibly prehistoric cacao orchards in the archaeological record. We are grateful for the support of CIE in helping us expand on this exciting study of ancient Maya cacao cultivation.

References Cited

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