

TITLE: Everyday Use of Plants in Prehispanic Costa Rica

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Past archaeological excavations in Central America have primarily focused on the recovery of mortuary remains. Because of this, our knowledge of these people in the past is heavily biased towards a discussion of their spiritual beliefs, ceremonial, and ritual practices. What about how these people lived day-to-day? In order to truly understand a group of people in the past, archaeologists should also aim to gain a sense of their daily life style, not just how individuals were treated after death. One great avenue towards this goal is to conduct archaeological excavations and research at the scale of the household. Studying domestic structures from the ancient past is crucial towards understanding the everyday lives that people led hundreds or thousands of years ago. With a focus on the everyday practices of people in the past, I plan to illuminate what it was like to actually live in prehispanic Central America using the recovery of ancient plant remains. This July I had an amazing opportunity to help excavate a house structure in Costa Rica that has been preserved by the eruption of Arenal Volcano around 3,000 years ago. This archaeological site, La Chiripa, could possibly be the oldest known house found thus far in all of Central America.

This tropical region of the world experiences its fair share of environmental catastrophes. From hurricanes, earthquakes, to volcanic eruptions, people have successfully and continually occupied this tumultuous landscape for thousands of years. By analyzing the experiences Central American populations had when faced with environmental disasters, archaeology can assist in planning for and coping with similar threats we face on a worldwide scale today. As a trained paleoethnobotanist, the data I will collect from domestic structures in this region can demonstrate plant-human interactions in this under-studied landscape that were not only vital towards survival, but also how these ancient inhabitants maintained resilience in their environmental setting through at times extreme conditions. This is information that simply cannot be addressed by previous studies of burial remains.

There have been multiple occupations of La Chiripa, spanning approximately 2,500 years (c. 1100 BCE to 1530 CE). The recovery of ancient botanical remains here is an excellent opportunity to address questions regarding the daily lives and resilience of ancient people in this region of the world. The area is subject to frequent volcanic activity, resulting in clear ash

deposit layer distinctions between periods of human occupation, with abandonments, ecological recovery, and reoccupations after each eruption. The research will provide invaluable information regarding ancient household practices, long-term residence stability, and environmental resilience in Pre-Columbian Central America.

My role as a paleoethnobotanist was to collect soil samples from the floor surface of the house structure and also from each cultural strata covering this remarkable find. Extra samples were taken from any cultural features we encountered during excavations as well, such as post-holes from where the house was once anchored and also from darkened organic features that could potentially be a hearth or cooking pit. Once processed and analyzed, these soil samples will help researchers know the assemblage of food the ancient inhabitants of the house were consuming and also details about the environment that surrounded their home. My research will provide botanical data that is a critical component towards understanding the basic lives of people in the past, as their main material engagement was likely with plants. Soil samples designated for water flotation were taken to recover the larger macrobotanical remains such as seeds and wood charcoal that can later be identified based on their morphological and anatomical characteristics. Separate samples were also taken that are designated for phytolith and pollen analysis, to provide a more microbotanical view of the ancient flora. Processing archaeological samples using water flotation is not yet widely practiced in this area of the world, so there is still much to learn about past foodways of Central America. Paleoethnobotanical recovery can speak to various aspects of daily household practices, so it is an ideal mode of analysis for this excavation. This analysis can reveal information regarding how plants in the past were utilized as food, medicine, fuel, tools, clothing, construction material, and even art.

The archaeobotanical techniques I employed during excavations this summer are still extremely underutilized in Central America. I utilized a variety of collection strategies that will ensure maximal recovery of plant remains that can speak to my research questions of everyday life and environmental resilience in the past. I collected both macrobotanical (seeds, nuts, berries, and wood) and microbotanical (pollen, phytolith, and starch grain) samples through the implementation of a systematic sampling methodology. To collect and process the macrobotanical samples, I constructed a modified SMAP-style water flotation tank that allows for a detailed recovery of any organic materials preserved below the surface. This flotation device eases the separation of plant materials from soil in the excavations as organic remains will

float to the top when the water is agitated. I also used a set of size-graded geological sieves to ease the separation of plant remains from the soil matrix. All samples will be exported back to the UC Berkeley McCown Archaeobotany Laboratory for analysis. Employing a variety of collection techniques will help my project determine which methodology is more productive in future excavations while also maximizing what was collected in 2018. Operation of the flotation device and collection of materials is labor intensive and requires assistance, so it was an excellent opportunity to train a local archaeologist who now can aid in the recovery and processing of the botanical data elsewhere on other archaeological projects in the country.

Analysis of the paleoethnobotanical samples is a long process that I will undertake here at Berkeley for the next several years since it involves hours of microscope work and identification of plant material. The experience of collecting these botanical samples showed me just how much there is to learn archaeologically in this region. So few researchers have collected these types of samples, often claiming that there just isn't enough preservation of organic remains to make the recovery efforts worthwhile. While this particular site does have exceptional preservation due to nearby volcanic activity, the project does suggest that other efforts elsewhere in the region to recover macrobotanical remains could be productive as well. I hope that my interactions with other scholars during my time in Costa Rica convinced them that this field of study could yield fantastic results; it is just a matter of taking the time and energy to collect the samples! Initial results of the floated samples were showing abundant carbonized organic matter was collected. Now we need to figure what plant remains preserved thousands of years to tell us a story about the past!