

From the Deep, New Light on Ancient Lives

BY ROBERT GOODIER

Tico Times Staff

GEOGRAPHERS have found a rudimentary history of pre-Columbian societies written in the sediment on the bottoms of Costa Rican lakes. The research may have debunked a popular conception about prehistoric people and the myth of pristine forests unadulterated by human meddling.

Sally Horn, a U.S. geographer with the University of Tennessee, has worked with U.S. colleagues, students and a network of Costa Rican scientists to understand the historical record preserved in the sediments of lakebeds and swamps at sites in the southern Caribbean and Pacific regions, and around Chirripó, Costa Rica's highest peak, for more than a decade.

She takes core samples of up to nearly six meters, pounding aluminum coring tubes into the lakebeds from anchored platforms set up in each lake.

Pollen from crops of maize (corn), a staple cereal favored by prehistoric farmers, and charcoal, which is evidence of fires, are trapped in the sediment at various depths, providing a record of human activity.

THIS year, Horn took samples at sites in the Caribbean lowlands and highlands, and returned to the highlands in May to investigate a possible site on Turrialba Volcano.

"By studying pollen grains at different depths in the sediment, we can reconstruct how vegetation may have changed over time in the lake watershed," Horn told *The Tico Times*. "If indigenous people cut down the forest to grow corn and other crops, we'll see evidence of that in the types of pollen that are deposited."

Because of the way sediment settles and layers on lakebeds as opposed to dry land, it preserves good historical records, Horn said.

The research, which has yielded evidence that prehistoric farmers burned forests and fields, challenges the idea of "noble savages," prehistoric indigenous people who lived in harmony with their natural surroundings.

"The standard idea is that agriculture was slash and burn," Horn said. "We know that fire was associated with agricultural activity during many time periods."

The researchers also found evidence of maize crops with little evidence of burning, leading them to believe that while slash and burn methods may have been used to clear a forest initially, farmers only occasionally burned their fields to prepare them for the next planting.

"At some sites, perhaps cropping was more continuous – or if new sites were cleared periodically, they were not necessarily burned. It's something we would like to understand better," Horn said.

THE evidence also contradicts the concept of a pristine, wild forest unaltered by human activity. In an article published in a 2001 edition of *Biotropica*, the quarterly journal of the Association for Tropical Biology and Conservation, Horn wrote that prehistoric human disturbance "undoubtedly" affected forests of the past.

"From sea-level to mountain peaks, 'pristine' forests have been cut and burned," she wrote.

Forests in the region were also at the mercy of climate changes, according to Horn.

"Our work helps to inform archaeological research, and in some cases points to possible changes in climate," she told *The Tico Times*. "Understanding past human



Photo courtesy of Ken Orvis

WHAT lies beneath: These lakes – in the Valle de las Morenas glacial trough on the north face of Chirripó, Costa Rica's highest peak – served as coring sites for University of Tennessee geographers hunting down traces of prehistoric people.

activities and climate can help with efforts to model and predict future climates and environments."

HORN'S research at La Selva Biological Station in the Caribbean lowlands belied the idea of untouched, primary forest in the region, proving that it had been burned and cultivated by prehistoric people who had settled there earlier than previous studies suggested. Carbon dating of charcoal fragments suggests that human activity in the area began over 3,000 years ago, whereas another archaeological study that dated ceramic fragments found there traced human activity to more than 2,000 years ago.

There is debate over the number of people who inhabited the country before the Spanish conquest in the 16th century. Throughout the 1960s, archaeologists held that approximately 50,000 people lived in Costa Rica at the height of human development before the Spaniards' arrival. In 1980, historians suggested the number was closer to 400,000. Maureen Sánchez, an archaeologist at the University of Costa Rica (UCR) who has worked with Horn, is skeptical of that number.

"We would have to do a study on how many people a place would support using indigenous agricultural techniques," Sánchez said. "Historians gave the answer (in 1980), not archaeologists."

She and Horn plan to embark on other research projects together.

"We want to better understand how changes in climate during the Holocene (the period between now and the end of the last ice age, about 10,000 years ago) may have affected prehistoric societies," Horn said.

She and Ken Orvis, another geographer from the University of Tennessee, are researching the climate history in Costa Rican highlands, aiming to link a long-term history of the environment with the archaeological record.

"By comparing findings with our own work and that of others elsewhere in the Caribbean, we are trying to figure out how the climate system has changed over time and what that portends for future climate change," Sánchez said.

Her work is funded by the A.W. Mellon Foundation, the National Geographic Society and the National Science Foundation.



Photo courtesy of Sally Horn

PLUMBING the depths: Rachel Kurtz (left) and Lisa Kennedy, graduate students in geography at the University of Tennessee, hammer coring tubes into a muddy lakebed in southern Costa Rica, searching for maize pollen grains and charcoal fragments.

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