Maya Mountain Towns Found in Belize

Inhospitable, rain-drenched mountain jungles on the Yucatán Peninsula in Central America have yielded the remains of four Maya settlements where residents apparently exploited local minerals to support a small-scale trading network more than 1,000 years ago.

Although excavation has not yet started, the sites offer evidence that the ancient Maya employed regional trade networks, not just the long-distance exchange routes usually considered characteristic of their culture, asserts Peter S. Dunham, an archaeologist at Cleveland State University.

Dunham, who directed the team that discovered the remains of the four abandoned towns in Belize between April and June, announced the finds last week.

"We formerly thought this terrain was too rugged and remote to sustain a large population," Dunham remarks. "But my best guess is that about 7,000 people lived at these four sites."

The sites — of which two remain unlooted — display the remnants of large buildings, plazas, pyramids, raised causeways, and reservoirs still containing water. Each center covered 3 to 4 acres, not including surrounding residential areas. Architectural styles and pottery found so far indicate that the Maya inhabited the towns between A.D. 700 and A.D. 900, according to Dunham.

The Classic era of Maya civilization, marked by the appearance of large cities and sophisticated astronomy, mathematics, and writing, extended from A.D. 250 to A.D. 900. It ended for reasons that remain unclear (SN: 1/18/92, p.40).

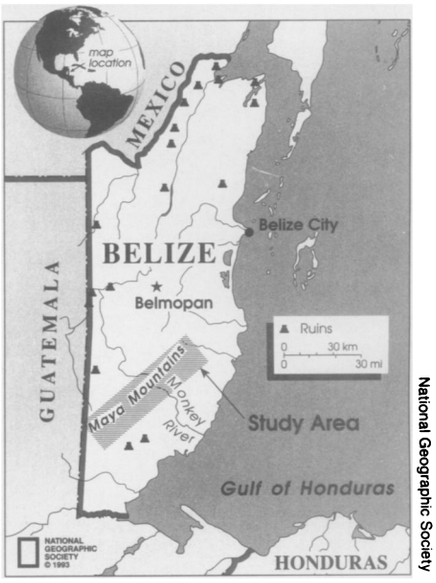
Dunham's team found the new sites in small valleys formed by the Maya Mountains in southern Belize. These breaks in the rocky landscape, located along the Monkey River, contain enough rich soil, flat land, water, and minerals to support a population, Dunham holds.

Various minerals occur abundantly in and around the towns, he says. These include ocher, which the Maya ground into red pigment; pyrite, which serves as a mirror after polishing; and granite, which was fashioned into grinding stones to prepare corn and other food.

"These sites were staging grounds for exploiting local resources in the short-range exchange of goods," Dunham contends.

The settlements lie between two major population centers of the Classic Maya world, points out Norman Hammond, an archaeologist at Boston University. Mountain residents may have traded goods with cities such as Tikal, a metropolis of about 70,000 people some 60 miles northwest of the new finds, Hammond says.

Map shows Maya ruins previously discovered in Belize and the Maya Mountains, where new sites were found.



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The largest of the newly discovered sites lies on an island in the Monkey River. It contains a C-shaped plaza surrounding a pyramid-shaped structure that Dunham suspects contained residential and ceremonial facilities for the outpost's ruling family.

About 10 miles away, a sunken road connects two plazas. The remains of five stone monuments, typically erected in honor of rulers, lie within the plazas.

A third site displays a similar layout and includes four monuments, a raised causeway, and two reservoirs. A fourth town also includes a court used for a ritual ball game. A monument at this settlement contains the only readable inscription found by Dunham's group: a sign for the number 12.

Looters apparently heard about the scientific expedition and partially destroyed a structure at the fourth site just days before Dunham's team arrived.

The same investigators found three ancient Maya towns in an eastern part of the Maya Mountains last year. They plan to explore the mountain range further next spring. *— B. Bower*

Berry scent defends fruit from fungus

"I got sick of going to the supermarket and buying moldy raspberries," says Steven F. Vaughn. So the plant physiologist decided to see if he couldn't sniff out — literally — a means of extending the shelf life of this very perishable product. The fruits of his labors now include five odor compounds emitted by ripening strawberries and raspberries.

Bringing soft fruit to market decay-free remains a challenge. Raspberries, harvested ripe, can sport heavy growths of mold within three to five days. To limit the problem in strawberries, growers often harvest the fruit green — a technique that can compromise flavor. And while the industry can irradiate citrus and other thick-skinned crops to kill or sterilize pests, radiation sufficient to kill fungi would destroy the structure of soft berries, Vaughn notes.

All of which explains his excitement over the berry scents. When slowly released into closed containers of strawberries or raspberries, the least toxic of these volatile compounds totally suppressed fungal decay for at least seven days.

"We weren't expecting miracles," acknowledges Vaughn, at the Agriculture Department's Bioactive Constituents Research lab in Peoria, Ill. But his data on one of the odorants — a straight-chained hydrocarbon known as 2-nonanone — have already sparked commercial interest. The USDA has taken steps to patent nonanone as a fungicide for soft fruit.

Vaughn happened onto the idea for fumigating berries with a slowly released derivative of their own fragrance while scanning published lists of compounds that contribute to a ripe berry's characteristic smell. Though many of the chemicals were known antifungal agents, he observed that "they aren't normally present in fruit at high enough levels to do anything but smell."

In a series of tests, he investigated the concentrations at which 15 of these compounds inhibited cultures of the fungi primarily responsible for berry decay. Then he tested the five best inhibitors on the fruit.

Though nonanone was not the most inhibitory of the chemicals, it won out on the basis of its overall attributes, which include low toxicity, low potential for damaging the fruit, low cost, stability, a scent that blends well with that of the treated fruit, and its status as a federally approved flavoring. A report of the findings will appear this fall in the JOURNAL OF FOOD SCIENCE.

Vaughn suspects growers may ultimately want to incorporate some slow-release form of nonanone into the packaging of field-boxed berries. *— J. Raloff*