

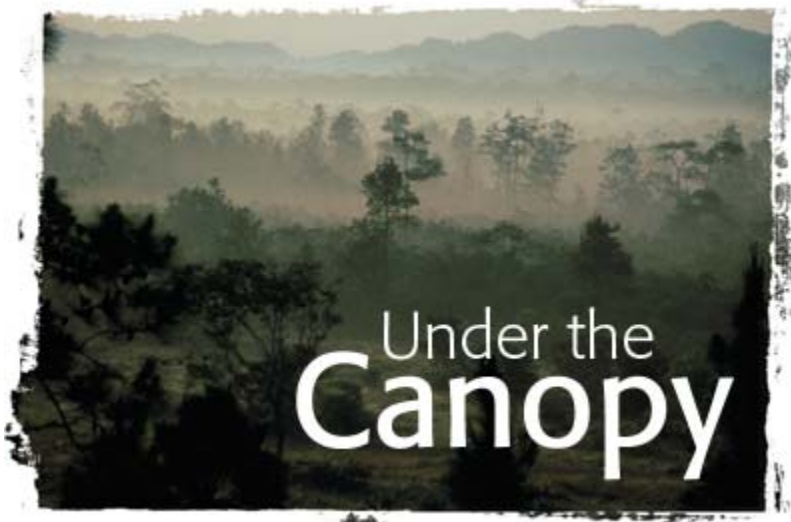


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Under the Canopy

by Patricia A. McAnany



Surveyors and archaeologists team up to map the Sibun Valley in Belize.

Don Ramon was in the lead, brandishing his machete on an overgrown trail in the rain forest. A tree limb snapped, and we turned to see a giant tapir bound into a jungle pond and swim away from our reconnaissance group. The tapir, with the body of a large pig and the head of a horse, is called a “mountain cow” by the local people of our host country, Belize (formerly British Honduras). This shy, magnificent animal is a threatened species that is rarely seen. Our adrenaline rush soon gave way to the sober reality of our undertaking. We were attempting to survey and map archaeological sites in tropical forest so dense that it easily concealed a giant tapir.

We also planned to explore and map the Sibun (pronounced “She-boon”)-Manatee karst (an area of irregular limestone topography with underground caverns) located to the south of the river. Noted for its rugged, impenetrable terrain, this karstic landscape of natural towers and cockpits contained many caves that had once been visited by the ancient Maya. The landscape posed a formidable challenge for the survey team. We had our work cut out for us!

Archaeologists have long been attracted to the small Caribbean country of Belize because it was a favored settlement area for the ancient Maya starting around 1000 B.C. There are countless Maya sites visited only by tropical wildlife and predatory treasure hunters. Such was the case for the Maya sites of the Sibun

River Valley when, in 1997, I applied to the Belizean Department of Archaeology for permission to survey and excavate archaeological sites in the valley and adjacent karst. Once permission was granted, I began to assemble a research staff composed of professional colleagues, Boston University graduate students and a dozen undergraduates.

The latter were eager to learn archaeological tools of the trade and had been accepted into a semester-long study abroad program administered by the Division of International Programs at Boston University. Although warned that the archaeological field research would be physically demanding, most students acknowledged afterward that they had no idea just how challenging it could be. A typical day started by loading everyone into the field vehicles by 6 a.m. in order to beat the tropical heat. After a rough ride over a bumpy dirt road, we trudged along muddy trails with mosquitoes in hot pursuit or climbed into canoes for a river crossing that could result in a spill. The students were highly enthusiastic although few had land surveying experience. For archaeologists, the first order of business is to create an accurate map of natural and cultural features within the area under study, and the lack of expertise on my team concerned me.

Mapping the archaeology of the Sibun River Valley posed many difficulties, even for a professional surveyor. Much of the land was densely forested, which necessitated clearing lines of sight for every traverse and topography shot. Governmental survey control markers were few and far between, which necessitated very long traverses combined with GPS measuring techniques. Most archaeological projects focus on a single site that is surveyed and mapped in a radial fashion outward from the central pyramid. This project was different. In order to understand ancient Maya use of the Sibun River Valley, we needed to survey the length of the more than 100 km river course in order to find the archaeological sites and then map them in accurate spatial and vertical relation to each other. Existing government maps were printed at a scale of 1:50,000 with 20 m contour intervals. At that scale, an ancient Maya site featuring a towering pyramid surrounded by 100 house platforms would fit on a postage stamp. Government maps, moreover, had been produced in Britain with a heavy reliance on air-photo interpretation and limited ground-truthing.

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Understanding that the surveying team would be a critical part of my archaeological research effort, I contacted an experienced surveyor familiar with tropical environments—Brian Norris, vice president of surveying and GPS at James W. Sewall Co., Old Town, Maine. Norris expressed interest in applying professional land surveying techniques to archaeological field research, and James W. Sewall Co. generously agreed to support the survey of the Sibun Valley



Detailed topographic map of Pechtun Ha showing locations of excavations

archaeological sites. Norris spent several weeks in the field designing and implementing a survey strategy during the 1997 and 1999 field seasons. Project maps were produced at the Sewall Co. headquarters. I was fortunate to enjoy the additional field expertise of Lewis Bowker III, an environmental engineer with

survey experience. Norris and Bowker (assisted by graduate students Steve Morandi, Tamarra Martz and Joe Nigro) worked together to produce accurate survey maps while at the same time training students in land surveying techniques. We used a Sokkia Set 3B Total Station and SDR 31 Data Collector (Sokkia Corp., Overland Park, Kan.). In 1999, we added a Sokkia GIR 1000 GPS system to our bag of survey tools in an effort to extend control deeper into the karst and to minimize labor-consuming survey traverses to isolated sites. We also made extensive use of measuring tapes, compasses, and a clinometer for mapping cave passages and laying out archaeological excavation units. In short, we utilized a comprehensive artillery of surveying and mapping techniques.

As Norris and I began to collaborate on this project, we were amazed by the professional overlap between land surveyors and archaeologists. We both spend much of our time “reading” and traversing landscapes and compiling data for maps. Brian was astounded that the two separate worlds of the surveyor and the archaeologist didn’t converge more often. I am convinced that the budgetary constraints of archaeological fieldwork do much to keep the professions apart.

Surveying the Sibun River Valley

Old maps of Belize, especially those from the early Colonial period (1600 to 1800), often spell “Sibun” as “Xibun.” We christened this undertaking the Xibun Archaeological Research Project (XARP). During our first two field seasons, we focused on surveying, mapping and excavating the middle and lower sections of the valley and the Sibun-Manatee karst. We consulted with local residents and retired land surveyors who shared much valuable information regarding the location of archaeological sites, and the history of Colonial and recent land use in the valley. We studied old government maps that indicated the course of the river had changed dramatically within the past 50 years (and may have destroyed some ancient Maya settlements). We visited the government land survey department in Belmopan, the capital of Belize, to acquire data on survey markers along the Western Highway. One of only three fully paved roads in Belize, the Western Highway and its survey markers proved indispensable to our survey since one of our goals was to tie project control into government-published horizontal and vertical datums.

In the course of two field seasons, over 35 km of traditional traverse were staked and measured. During our initial season, we pinpointed the location of three ancient Maya settlement sites: Pechtun Ha, Yax P’otob and Pedro’s Mound. The site name Pechtun Ha translates from the Yucatec Mayan words for tick (pech), stone (tun) and water (ha). We chose this name because this site featured a prominent stone mound perched high on a terrace overlooking a lake, and early visits generally resulted in a rain of nearly microscopic ticks. Despite this hazard, surveyors and students calmly operated the equipment, while local men cut lines of sight using razor-sharp machetes. Without their tireless machete work, this survey would not have been possible.

During the 1999 season, we braved the ticks once more and returned to Pechtun Ha to collect data for a detailed topographic map and to continue excavations. To our dismay, the underbrush had completely reclaimed the site, necessitating yet another cleaning with sharp machetes. As the map of Pechtun Ha shows (top of page 20), Maya sites often appear as large mounds arranged around a central plaza. These mounds provided a sturdy platform base upon which perishable structures of pole and thatch were constructed.

During our second season, we also relocated (with the aid of our tie-sketches) a rebar-marked station on the southwestern corner of our earlier traverse. From this point, we extended our survey to the west in order to bring ground control into the newly discovered site of Pakal Na (“orchard house,” roughly translated from Mayan). Due to the collection of continuous elevation data, we are able to determine that sites in the flood-prone middle valley predictably occur at an elevation of 19 to 20 m above sea level. This concurs with the elevation of the highest terraces above the river.

Surveying the lower and middle sections of the valley has entailed long traverse loops that connect the highway to the river valley in order to

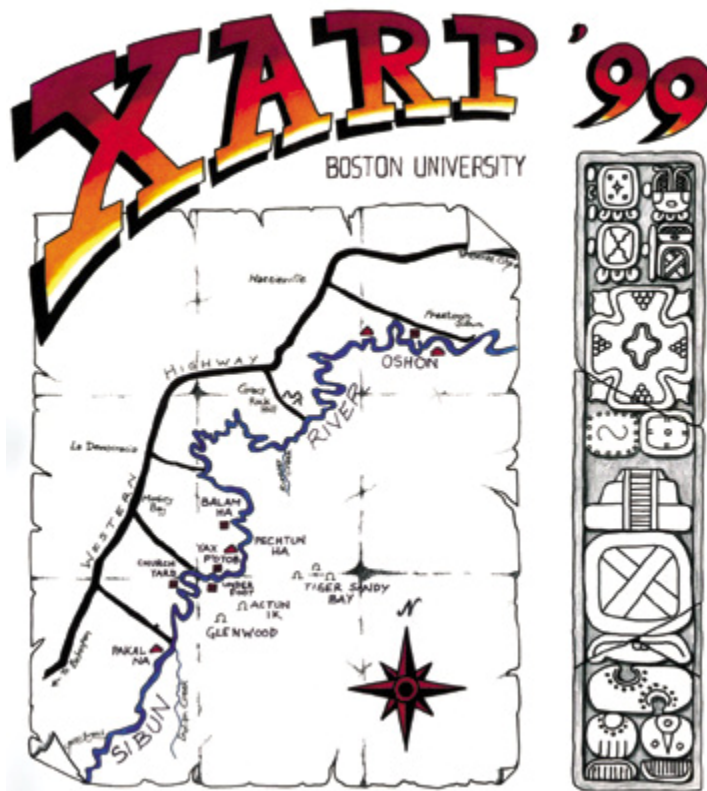
establish ground control for the ancient settlements.

The dispersed but nearly continuous strip of ancient settlement in the middle reaches of the Sibun River comprises but a sample of the total population that once lived in the valley. Archaeologists often lack the time and resources to map 100 percent of a study area. While much more work remains to be undertaken in the middle section of the valley, we wanted to survey a sample of the settlement in the lower and upper reaches as well. While the upper valley must wait until the 2001 field season, the lower part was accessible from our field camp at the Monkey Bay Wildlife Sanctuary on the Western Highway. In 1998, I had reconnoitered downriver and determined that a sizeable Maya site with two ceremonial plazas existed on the property of an elderly Creole man, Samuel Oshon, near the village of Freetown Sibun.

Surveying in the vicinity of Freetown Sibun revealed an impressive number of ancient residences at four sites: Oshon, Sak Tzimin (“white cow”), Obispo and Neal. The survey traverse that links these sites together, in turn, is tied to a set of government survey markers along the Western Highway, which are located about 4 km to the northwest. Thus, surveying the lower and middle sections of the valley has entailed long traverse loops that connect the highway to the river valley in order to establish ground control for the ancient settlements. So far, the dispersed settlement signature for the valley is consonant with the pattern expected if farming had been a mainstay in the lives of the ancient Xibun Maya.

Cave Exploration

The story of the Xibun Maya would be incomplete if we did not also study the remains of their pilgrimages to the caverns on the south side of the river. In traditional Maya beliefs, caves are openings to the underworld—a place called Xibalba where ancestors and deities dwell. In a landscape of underground rivers, caves also are sources of water essential for crop fertility. Artifacts, wall constructions and cave paintings created by Maya pilgrims give us some indication of the types of rituals undertaken in these chambers over 1,000 years ago. Getting to the caves, however, often requires an hour or two of walking through muddy terrain. Entering the dark caverns, particularly those already occupied by slumbering vampire bats, demands a strong spirit of adventure. Wiggling through tight passages while squinting through a clinometer as one’s clothes and hair get thoroughly dusted with bat guano requires a particularly inquisitive mind (as well as a flexible body). Nevertheless, we have explored and mapped three karst districts, all located southeast of the river and of our camp at Monkey Bay Wildlife Sanctuary: Tiger Cave, Actun Ik and Glenwood Cave districts.



Surveyed archaeological sites as shown on the 1999 project t-shirt designed by students.

The Tiger Cave district is often described as “Swiss cheese.” An extensive network of limestone pits with a number of “pass-through” cave chambers enabled us to extend total station ground control into this district by traversing into and passing through cave chambers to set primary control. In the deep recesses of the caves, secondary control was set with a tape, compass and clinometer. Polly Peterson (1999) and Ilean Isaza (1997) led teams of students into this netherworld to map artifact location and cave modification in specific detail. Sean Downey attempted to use GPS to collect satellite data from the mouths of the caves, but satellite availability was extremely limited due to the large stone mass of the karst hills and the high tree canopy. Undaunted, Downey hiked to the top of the karst to occupy a point vertically above the mouth of the cave for 15 to 30 minutes in order to collect sufficient satellite data to ensure accurate positioning.

Exploration led to the discovery of an altar shrine constructed by modifying a natural flowstone formation.

Offerings in chambers near Tiger Cave often consisted of pottery vessels hid away in high, inaccessible and often walled places. Ancient Maya use of caves is all the more impressive when one considers the fact that they scaled vertical walls and wiggled through tight passages with pine torches as their sole source of light.

Actun Ik (“windy cave”) is the focal point of the second cave district. Known locally as “The Thumb,” it is a prominent piece of tower karst that dwarves the surrounding hills. Acquiring GPS coordinates from the lofty top of The Thumb was no problem, although mapping teams inside the cave were plagued by an aggressive, biting insect called a blood-sucking cone-nose beetle. In the twilight zone of Actun Ik, students discovered that the cave walls had once been painted in red and black with abstract designs and handprints.



Sokkia GPS system operated by staff member, Sean Downey.

In the final cave district, Glenwood Cave, exploration led to the discovery of an altar shrine constructed by modifying a natural flowstone formation. The floor of the cave surrounding the shrine was littered with hundreds of pottery shards. Only intensive study of the cave maps and the location of artifacts will clarify the ritual uses of these netherworld chambers. Preliminary results point to a concern with agricultural fertility, but much more research remains to be done.

The Future of the Research Project

In 2001, the Boston University team returns to the Sibun Valley to continue archaeological survey and excavation of ancient Maya remains. Although encounters with the wildlife of the caves and the river valley often take our breath away, the sheer beauty of the landscape and the excitement of discovering new Maya sites compensates for the rugged fieldwork conditions. Thanks to the participation of the professional surveying community, our hard-won survey data from the Sibun Valley is resulting in some of the most accurate maps ever produced of Maya settlements. For archaeologists, such spatial representations serve as our point of beginning in an effort to understand the greatness that once was Maya civilization.

Acknowledgments

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Sidebar: Excavating the Surveyed Sites

Surveying and mapping are a prelude to an excavation stage that often clarifies the dating of a site or the function of a structure (for instance, a shrine or a residence). Archaeologists are particularly fond of excavating along the outside edge of platform-retaining walls since garbage tossed over the edge will generally accumulate there. Called middens, such deposits yield rich inventories of broken pottery, broken musical instruments, discarded stone tools and butchered animal bones. Although an archaeologist is often depicted as Indiana Jones—searching for lost tombs and museum-quality artifacts—in reality we are more attracted to the cast-off materials of everyday life that provide us with the raw data with which to create a narrative of the past.

Artifacts can evoke a personal connection with the past, especially when they seem to possess a personality of their own. Such is the case with a broken clay whistle excavated by Ben Thomas and Steve Morandi from a midden at the Oshon site. On the stem of the whistle, the figure of a Maya lord, complete with earspools, had been modeled in clay. At Pechtun Ha, excavation by Ellie Harrison of a small platform allowed us to determine that the structure had been a shrine. This conclusion was based on the fact that the entire surface of the platform had been capped with mineral deposits that had been transported from cave chambers across the river. Apparently, the caves were so powerfully evocative of water and fertility that the Xibun Maya constructed a water shrine out of cave formations right in their residential compound.

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