

Results of the 2013 Valley of Peace Archaeology Project: Underwater and Surface Explorations at Cara Blanca Pool 1

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Edited by
Lisa J. Lucero
University of Illinois at Urbana-Champaign

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**Department of Anthropology, University of Illinois at Urbana-
Champaign
Urbana, Illinois, USA**

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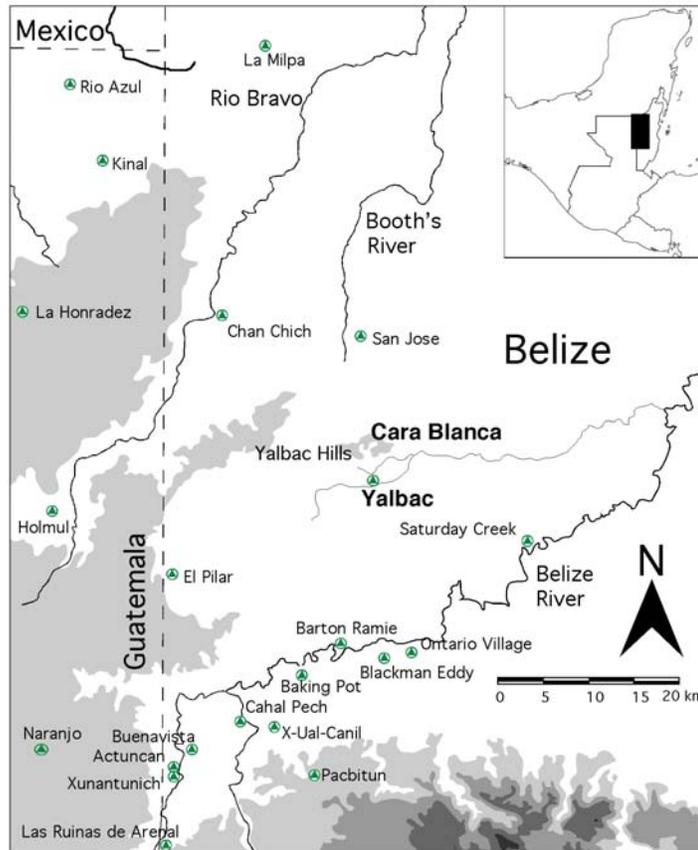
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Chapter 1

Cara Blanca Pool 1: 2013 Underwater and Surface Explorations

Lisa J. Lucero, P.I.
University of Illinois at Urbana-Champaign

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The long-term goals of the Valley of Peace Archaeology (VOPA) project are to examine how settlement articulates with sacred landscape features in addition to examining climate and landscape transformation at Cara Blanca, Belize, an area with 25 pools (lakes and *cenotes*). Underwater explorations and surface excavations have yielded intriguing information indicating that the Maya considered Cara Blanca a sacred place, likely for pilgrimage, especially when several long droughts stuck the Maya area between 800 and 900 C.E. (Medina et al. 2010) and they needed to appease ancestors and the gods.

For the 2013 season, we continued underwater excavations at Pool 1 and began excavations at Str. 1. A University of Illinois Research Board grant (\$21,930US) and a donation from Forestland Group (\$4000US) funded the 2013 field season. A total of \$24,450US was spent on travel, transportation, supplies, lodging and food for three staff and three divers, labor and social security, IOA fees, insurance, truck maintenance, and BAS conference costs. The landowners of Cara Blanca, Yalbac Ranch, provided logistical support in the form of maintaining Rock Cut road to Pool 1 and providing radios for emergencies.

Diving Program (May 4-6)

This year the diving team included four-year Cara Blanca veteran and videographer Marty O’Farrell, third year veteran exploration diver Chip Petersen of Belize Diving Services (www.belizedivingservices.net), and wildlife photographer Tony Rath (www.tonyrath.com). Marty and Chip also are founding members of the Belize Cave Diving Society. As always, able assistance was provided by Cleofo Choc, Ernesto Vasquez, Juan Antonio Lopes, Rutilio (Tilo) Luna, and Stanley Choc from the Valley of Peace (Figure 1.1).



Figure 1.1 2013 dive team; from left, Chip Petersen, Tony Rath, Cleofo Choc, Tilo Luna, Ernesto Vasquez, Lisa Lucero, Stanley Choc, Juan Antonio Lopés, and Marty O’Farrell

Since divers used an on-site compressor to fill tanks, it meant bringing fewer tanks to the site. Since divers only planned to excavate underwater near Str. 1, they used either oxygen or nitrox gases (also, helium was near impossible to find). Instead of buckets, they used mesh bags to collect artifacts. Chip was not too satisfied with the bags, so we fashioned two pigtail buckets with holes at the bottom so they would be easier to lift out of the water. Divers also, for the first time, used pick-a-hoes underwater, with great success.

In 2012, Marty noted that some of the highest density of fallen trees is found immediately below Str. 1, which would make sense given that nearly a fourth of the building, and likely a 2-meter wide platform, have collapsed into the cenote. This year he noted that another large tree had fallen, taking with it some of a fossil bed noted in earlier seasons, while at the same time exposing additional fossils—including the tail bones of a giant sloth (identified by senior curator of Natural History, U.S. Park Service, Greg McDonald, email correspondence, May 2013). While cleaning it for a better shot, the largest vertebra came loose, which Chip collected (1.2) (it is currently stored in Jeff Roberson’s office at Yalbac Sawmill).

McDonald also was able to identify other sloth bones (*Eremotherium*) based on photos including a claw, possible pelvis bones, and a left femur (Figure 1.3). We were also curious as to why we find

so many sloth bones in different parts of the pool (mostly the SW and S walls), and if we should find other megafauna species. McDonald stated: “I would expect remains of the *Gomphotheres cuvieronius* [see <http://en.wikipedia.org/wiki/Gomphotheres>] to show up, it is large and should be easy to see and is often found together with *Eremotherium*. I suspect other animals will show up once people find the first few specimens and get a “search image.” As to why so many *Eremotherium*, there are some other sites with multiple individuals suggesting perhaps some type of herd behavior, or at least an extended family group like modern elephants. I suspect we have a water hole situation which attracted animals during a glacial maximum when sea level was down and surface water is rare, so it may be a time averaged sample that accumulated over many years.”



1. 2 Giant sloth tail bone/vertebra. Top photo by Tony Rath



Figure 1.3 Top: possible pelvis bones; left: left femur; and right: claw. Photos by Tony Rath

Chip was able to get a shot of the pool bottom 62+ m deep, a task worth the challenge because it provides us with a view only a very few can see in person (Figure 1.4). The image also shows how difficult it would be to locate artifacts because of the amount of debris (trees, leaves) and silt.

One of the most challenging aspects of diving Pool 1 has been the continued impact of the October 24, 2010 hurricane (Hurricane Richard). The amount of decomposing vegetation has resulted in the formation of thick clouds of hydrogen sulfide. Between that and the silt stirred up by underwater excavations near the water temple (Str. 1), by the end of the third day visibility was practically nil. Mapping lines from 2010 are down or gone altogether. But underwater excavations immediately under Str. 1 yielded ceramic sherds, including more jars dating between 800 and 900 C.E. (e.g., a Cayo Unslipped jar rim), as well as some lithics (Figure 1.5). Most of the artifacts come from the collapsing water temple.



1.4 Pool 1 bottom at 60+ m. Photo by Chip Petersen



Figure 1.5 Sherds from underwater

Tony was able to get a great shot of Marty and Chip at the mouth of Actun Ek Nen, or Black Mirror Cave, a cave with an entrance that measures over 40 m wide and 30 m tall (Figure 1.6). The divers do not yet know how far it extends into the cliff face, though they have gone into its depths about 70+ m.

To get a poolside shot of Structure 1, Chip and Stanley, using machetes, cleared the collapsed portion of Str. 1 and what I am now referring to as the Poolside looters trench (PLT). It was worth the effort, as Tony was able to get some great shots of Str. 1, which only highlights how much damage has been done, especially by looters (Figure 1.7).

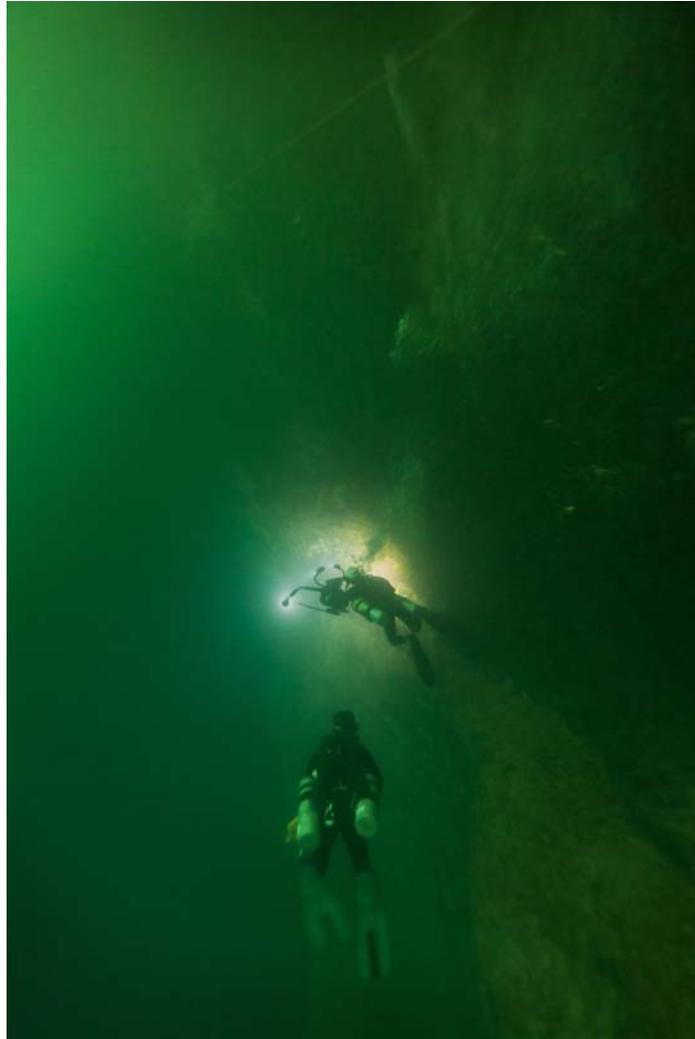


Figure 1.6 Marty (top) and Chip east of Actun Ek Nen entrance. Photo by Tony Rath



Figure 1.7 Str. 1 from Pool 1 looking east/southeast. Photo by Tony Rath

On the last day of diving, we had two guests, both of whom are certified scuba divers: Sylvia Batty, archaeologist and underwater archaeology representative from the Institute of Archaeology, National Institute of Culture and History; and Jané Salazar, Marine Field Technician, Environmental Research Institute, University of Belize. We expect a return visit in future seasons.

Of course on the last day Marty discovered another fossil bed just beyond the line of giant sloth vertebra (south/southeast end of pool), this one with what he thinks is nearly a complete skeleton of some extinct megafauna (mammoth? giant sloth?). Tony went back in to photograph it, but the visibility was too poor to get a clear shot. Chip marked the location of fossils with red flagging tape on the right upper west side, and yellow tent pegs below c. 3.4 m distant.

We must wait until next season to continue exploring the watery world of Pool 1. I asked divers about their interest in Pool 1 and their impressions, which Chip summed up nicely: “the *cenote* seems like a living creature; survey lines from previous seasons are mostly gone. Our impact from previous seasons is being erased annually, which presents new challenges each year.” Marty put together an excellent video of the 2013 dive: ‘Cara Blanca 2013 short film,’

<http://www.youtube.com/watch?v=Xw9Rus9EiO0>.

Excavation and Lab Program (May 13-June 15—cut short a week by Chaak)

The excavation team included University of Illinois at Urbana-Champaign PhD students Colleen Lindsay and Jessica Harrison, as well as field assistants Clefo Choc, Ernesto Vasquez, Juan Antonio Lopes, Rutilio Luna, Stanley Choc, and Jose Vasquez (Figure 1.8; not pictured, Jose Vasquez).

I had originally planned a six-week excavation program May 13 through June 21. A five-day tropical storm June 16-20 changed these plans when the heavy rains washed out the temporary earthen bridge (used while a new cement and wood bridge was being built) across Yalbac Creek at the South Gate of Yalbac Ranch. Field assistants, however, were able to get to the site June 19 by driving to the South Gate and walking across on a log walkway. Jeff Roberson was kind enough to pick them up on the other side and drop them at the entrance to Rock Cut to pick up small equipment (bags, Brunton tripod, tapes, trowels, small picks, etc.). They were also able to secure the site from further rain damage, even though we had left the site, as we do every day, covered in construction plastic and tarps. Once the temporary earthen bridge was rebuilt, field assistants were able to get back July 3-5 and backfill. They covered the entire structure with construction plastic (6 mm thick) and tarps and brought back shovels and screens.



Figure 1.8 Dig crew. Jose Vasquez not pictured

Due to the season being cut short, we were unable to finish mapping, profiling, and drawing certain features of Str. 1: the east wall profile, the northern 3.5 m of the west wall profile, Room 1 planview (Floor 102 edge), Room 2 planview (clusters 4 and 5), elevation shots for Room 1 floor 102, Room 2 clusters 4 and 5, and profiles of Rooms 1 and 2 sidewalls. We also need to tie in more points to the site datum (Figure 1.9). All recovered artifacts are listed in the Appendix; unless otherwise noted, all diagnostic ceramics are stored on the VOPA container at Yalbac Sawmill. Non-diagnostic artifacts including body sherds and chunks were placed in and around Str. 1 before backfilling.

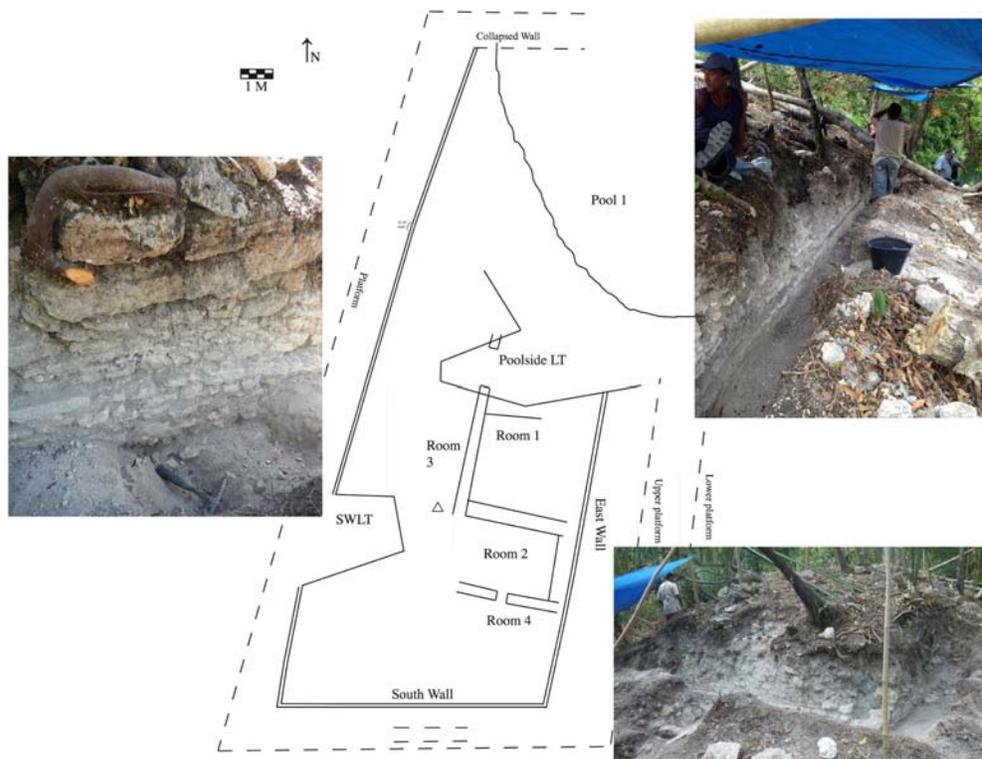


Figure 1.9 Str. 1 planview

Structure 1 is covered with fallen trees and subsequent secondary growth as a result of the hurricane. Between this and the extensive history of looting (Figure 1.10), it was decided to treat this excavation as a salvage archaeology project. Our first goal was to expose exterior walls. We started screening every fifth bucket of topsoil, but since we did not find anything in the screens—the field assistants are great at even finding small bones while excavating—we stopped screening. When we did come upon a concentration of bone or other artifacts, we used ¼” mesh to screen.

The west wall appears to be the backside since we did not find a doorway. This is not surprising given the layout of Structures 1, 2, and 3 around a plaza facing the pool (Figure 1.11).

Once the exterior walls were exposed, Colleen and Jessica, with assistance from either Tilo or Jose, re-mapped Str. 1 using a Brunton compass and tripod, a 30 m tape, a PECO hand level, and collapsible stadia rods. The datum we settled on is located on the summit and consists of a nail in a large root 39 cm above the surface. Str. 1 is a 20 x 7.5 m, 3.5 m tall range structure with 6-8 cm wide basal molding, originally with 6 to 8 rooms with remnant red paint in the interior rooms. It is oriented 10°, though the northern portion of the building angles more easterly, going from c. 10° to 18° beginning about 6 m south of its northern edge. Did the Maya build the temple to mirror the edge of the cenote? Unfortunately we will never know since the northeast portion of Str. 1 has collapsed into Pool 1. Walls are typically 0.85 m wide (some up to 0.90 m), faced on both exteriors with cut stone and filled with small boulders, cobbles, and mortar (see below for discussion of the type of wall fill). The wall exposed in the north and south sidewalls of the collapsed section of the PLT likely are the same (both walls are c. 85 m wide)—or perhaps there use to be an east-west internal wall (see Figure 1.9).



Figure 1.10 Str. 1 looting, looking NE; upper: before June 2010; lower: 2013

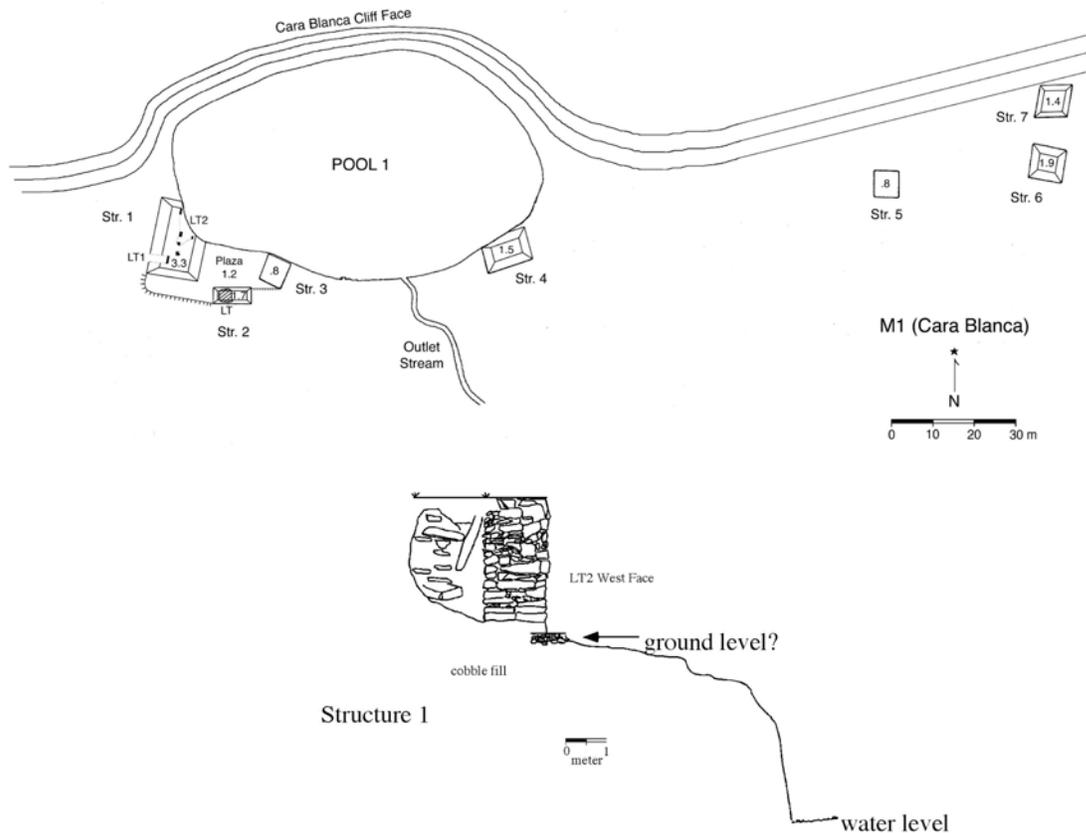


Figure 1.11 Pool 1 settlement

An exterior plastered c. 2-m wide platform surrounds the entire structure (floors on east are at 3.66 m BD and the west side at 3.68 m BD), and there may be an additional lower platform on the east side that may be a plaza floor connecting Str. 1 to Structures 2 and 3. The profile exposed by looting and collapse shows that the Maya built at least the north and eastern lower platform on a slope.

Stanley may have exposed a partial door jam on the east side; since we were unable to draw the profile, we are not sure how it would match up with Rooms 1 or 2. We exposed several artifact clusters along the exterior east wall immediately above the platform surface, three of ceramics and one with four mano fragments. One concentration was near the base of southeast corner and consists of a jar rim and body sherds from the same vessel (cat #1068) (Figure 1.12). About 80 cm north of the southeast corner we found stacked sherds c. 4 cm thick with c. 1 cm thick jar sherds with barely any dirt between them, including a large jar neck stacked on a volcanic ash paste red slipped bowl or dish sherd (cat #1062). The large jar neck has an oily stain on its exterior shoulder. At 2.30 m from the southeast corner and c. 30 cm from the wall we recovered two everted jar rims with fire clouding and three body sherds all from the same vessel (cat #1069). The four mano fragments are from 2 to 3 different manos without use wear 2.35 north of the southeast corner and 3 cm from the wall (Figure 1.13) (cat # 1083); one tip is pink granite, one partial tip is greyish green granite, and two medial fragments are greyish green granite.



Figure 1.12 Stacked sherds near SE corner, Str. 1. Note stain on sherd.



1.13 Mano cluster in situ along east all and close up

The Maya added a floor 47 cm south of the southern exterior wall indicated by its plastered edging (Figure 1.14). The two jar rims found within the one-course (6 cm high) wall fill above the floor (c. 10-15 cm) have been identified as Cayo Unslipped, thus dating the addition to the Terminal Classic (see also San Jose IV ceramics that date to 820-880/900 C.E. in Thompson 1939:126; cf. Harrison-Buck 2007:216).



Figure 1.14 South side, Str. 1. Jar rims in south platform double wall

The southern end of the summit has lots of large slabs or vault stones. Some of the stones are nearly a meter long (Figure 1.15). While the stones may appear purposefully positioned (some are close together, for example), it is more likely that they reflect a collapsed roof and walls. They still make for a dramatic effect.



Figure 1.15 Str. 1 summit stones; top photo taken from ladder looking south; bottom looking SW, west

Most of the collapse/fill consists, instead of surface limestone cobbles and boulders, of tufa—a calcium carbonate that forms under water into varied shapes because it precipitates around things that fall into the *cenote*, like tree branches or shell (Figure 1.16) (Stanley Ambrose, email to J. Harrison, 21 May, 2013). There is plenty of surface limestone about, so the Maya were clearly collecting fill from the water for their own reasons—likely because it came from the watery world. Previously divers had noted the presence of tufa in the sidewalls everywhere, at all levels. For example, in 2012, divers collected tufa from 4.8 m, 20+ m, and 54.3 m (Lucero 2012).



Figure 1.16 Tufa

Cleofa Choc, a Mopan Maya originally from the Toledo District, informed me that they call tufa, *sōs* (sp? I spelled it how he pronounced it); everyday he would walk over the same stream; a branch would fall in, and several years later it was covered with a thin layer of calcium carbonate. It would thicken over time, in geological terms, relatively quickly. This makes sense given that we found tufa encasing a freshwater *Pomacea* shell and perhaps even bone. Interestingly, Harrison-Buck (2012) describes a circular shrine in the Sibun area devoted to the wind god, Ehecatl Quetzalcoatl, where the Maya incorporated speleothems and marine shell into the architecture.

In general, most everything we recovered was broken and incomplete; and most everything substantial appears to have been purposefully placed. For example, as mentioned earlier, we recovered four mano fragments from at least two if not three different manos (and no metates), an indication of different pieces of different things coming in from different areas. Was everything dismantled and placed?

Once we exposed exterior walls, we turned our efforts to locating rooms, which we did by clearing the summit to look for walls. The first wall exposed was the east-west wall between Rooms 1 and 2. The crew started excavating Rooms 1 and 2 on May 30 by screening (1/2" mesh) every fifth bucket. On the second day of excavating, I told them to stop screening since they were not finding any artifacts in the screens. Crew recovered even small animal teeth/bones while digging.

Room 1

The crew started excavating Room 1 on May 30 and temporarily stopped operations on June 7 to focus on Room 2; we began excavations again June 10. To prevent further compromising the integrity of the structure, we kept a 50-70 cm bulk between excavations and the PLT. We were unable to

completely clean out the room of topsoil and vault stone collapse (Strat 101) due to rain. Similar to Room 2, the amount and size of tufa decreases the more we clean out Room 1, and slabs/vault stones are quite large; these dimensions represent a sample:

76 x 46 x 15 cm	65 x 50 x 12 cm	55 x 40 x 11 cm
75 x 36 x 9 cm	64 x 36 x 11 cm	50 x 38 x 9 cm
	59 x 40 x 8 cm	49 x 42 x 6 cm
		44 x 42 x 9 cm

Crew exposed a plaster floor (Floor 102) 1.32 m BD (c. .87-.88 m higher than that found in Room 2) that did not extend in the northern part of the room. Either the Maya broke through it or fallen vault stones did; if the former, the Maya may have placed something under the floor. In an excellent illustration of how archaeological record keeping serves its purpose, Ernesto and Stanley came upon some modern trash in the southwest corner of Room 1—which turned out to have come from Andrew Kinkella’s 1998 1 x 1 m test pit (Kinkella 2000:40-43)! Andrew had excavated 1.1-1.3 m deep until he came upon a plaster floor (i.e., Floor 102), which he lined with trash before backfilling.

Room 2

We did not excavate the entire room, but left about a 1 m bulk against its west wall, which also comprises the center spine wall. We thus do not know as of yet if this wall has a doorway. We exposed a doorway on the south side .65 m wide, indicating an internal doorway leading into another room (Room 4) rather than leading outside, which are usually .90-1.10 m wide (Astrid Runggaldier, pers. comm., June 2013). Its door jam is 76.16 m wide with remnant paint on its east side (Figure 1.17). The room is 1.95 to 2.05 m wide and 2.60 m in length (not including the unexcavated bulk). We were unable to completely expose its east wall (strat 103) due to rain; but it appears that some of the wall has collapsed or been removed.



Figure 1.17 Room 2 doorway, looking south

Even though we did not excavate the entire room, the amount of slabs/vault stones is impressive—over 50, of consistent groups of sizes. These dimensions represent a sample:

77 x 38 x 15 cm	55 x 42 x 10 cm	45 x 35 x 7 cm
70 x 46 x 11 cm	55 x 38 x 10 cm	34 x 34 x 22 cm
	54 x 40 x 10 cm	34 x 27 x 9 cm
	54 x 35 x 12 cm	
	54 x 33 x 9 cm	
	50 x 40 x 15 cm	

As we continued excavating, the vault stones increased in size, for example: 93 x 54 x 12 cm, 64 x 52 x 20 cm, 60 x 53 x 10 cm, etc.

The crew exposed two plaster floors: 104 (2.20 m BD, from .87 to .88 lower than floor 102 in Room 1), which lips over floor 105 on the east side of the room. Only one piece of stucco was found, and it had remnant red paint.

As mentioned, crew found fewer and smaller tufa stones as they excavated the room, but they did find increasing number of ceramics, including straight-sided orange slipped bowl rims and sherds with fading polychrome designs (see Chapter 2 for a discussion of ceramics). Near the center of the room, Jose recovered rimless red-slipped Belize Red plate sherds—neatly so, suggesting its rims were sheared off (Figure 1.18). Most of the clusters (Strat 102) were found on the surface of floor 104 up against the north wall (Figure 1.19) (Table 1.1).

Table 1.1 Room 2 Clusters (Strat 102)

Cluster 1 (Figure 1.20)	3 rims, 1 neck, 38 body	Inverted Cayo Unslipped jar, 18 cm diameter
	2 rims, 1 body	Dolphin Head Red, Silver Creek Impressed dish ¹ with stick impressed design on basal break, 40 cm diameter
	1 shell	Pomacea
Cluster 2 (Figure 1.21)	7 shell	Pomacea
	1 rim, 29 body	Vaca Falls Red, Vaca Falls var. (2 pieces refit) with medial flange, 45 cm diameter
	11 body	Volcanic ash paste slipped bowl, from same vessel
	14 body	Cayo Unslipped jar, same as Cluster 1 jar?
Cluster 3 (Figure 1.22)	1 rim, 13 body	Vaca Falls Red, Vaca Falls var. bowl, 2 sherds refit, 45 cm diameter
	3 rims, 5 body	Indian Creek polychrome bowl, jaguar design, 45 cm diameter
	178 shell	<i>Pomacea</i> found at north wall over Cluster 3
	Groundstone	Mano (c. 70% complete), green/gray granite near Cluster 3



Figure 1.18 Belize Red sherds from Room 2 center



Figure 1.19 Room 2 ceramic clusters 1-3. Arrow points to jaguar vessel



Figure 1.20 Room 2 Cluster 1 sherds



Figure 1.21 Room 2 Cluster 2 sherds



Figure 1.22 Room 2 Cluster 1 sherds, not including jaguar vessel

The Cluster 3 jaguar vessel, which is currently stored in office of Jeff Roberson at the Yalbac Sawmill, has 45 cm rim diameter. Interestingly, we found a rim and body sherd with basal break, likely from same vessel, from the exterior southwest corner of Str. 1 over 6 m away (cat #1059; see Appendix). This style originates in the northern lowlands; those recovered in the southern lowlands typically are found in northern and eastern Belize (not at, for example, Colha or Kichpanha) (Harrison-Buck 2007:241-244; see also San Jose III-IV in Thompson 1939:114, 124-125, Figures 59a, 65a, e, Plate 18b).

There were two more clusters, which we were not able to remove due to rain. Cluster 4 is in the northeast corner of the room abutting a cut stone armature c. 10 cm from the north wall (Figure 1.23). It includes what looks to be inverted dish sherds with a medial ridge. Before realizing it, we removed some of the armature before recording all the necessary information. Cluster 5 is about 50 cm from doorway against the south wall stacked c. 7 sherds thick and appears to consist of body sherds.



Figure 1.23 Room 2 Cluster 4 in NE corner; and Cluster 5 near SE corner

The Jaguar Vessel (Figures 1.24 and 1.25)

According to project epigrapher Joanne Baron (email, June 1, 3, 26), the design on the rim from the southwest corner may represent “a sky band possibly with an *ak’bal* (darkness) sign on the left and a *k’an* (yellow/precious) sign on the right, basically marking the rim of the vessel as celestial.” Regarding both the rim and body sherds, there may be “water iconography along the edge. A common water motif is band of wavy, parallel lines with a series of small dots or circles down the middle and spirals coming off. This represents flowing water with waves or spray. It can be found in depictions of watery places and may form the basis of the glyph for “ocean.”.... It looks like those bands all the way on the right of the big sherd might be more of the water band. And there is more sky band across the top.” Regarding the sherds from Cluster 3, “Around the rim is a badly eroded sky band. The jaguar with a huge eye stands facing to the right. He's got his mouth open and you can see his tongue and teeth. In front of him is probably a piece of water band and another water band can be seen on the edge of the unattached sherd. In all, I think it's a depiction of the Cara Blanca environs.”

The ancient Maya of the Classic period (ca. A.D. 200-900) represented the dual nature of the universe by combining the glyph for *k’in* (“sun, brightness, day”), and the glyph *akbal* (“darkness, night”) in a single collocation (Fig. 6.8a). This pair of glyphs encompasses a broad range of complementary or cyclic powers in the cosmos. It was a kind of iconic shorthand that included all of the essential elements necessary to life and success. A glyphic substitute for the *k’in/akbal* pairing is *hel* (“change,” or “succession”) (Fig. 6.8b). This change may be of any kind—day into night, the succession of one king following another, or the transition from life into death (Schele 1990, 142). The Maya viewed these changes not in the linear but in cyclic terms, endlessly flowing from one state into another in an eternal round. Opposition need not represent confrontation, however. One side could not exist without the other, any more than day could exist without night. It was a duality of interdependent, interrelated forces, each playing its role in concert with the other (Christenson 2001:155).

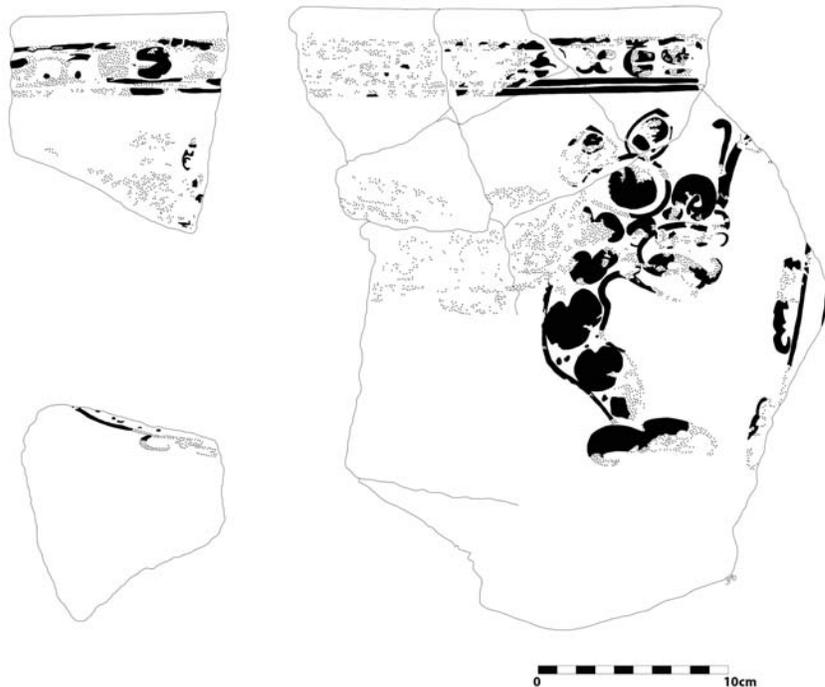


Figure 1.24 Jaguar vessel. Drawing by Joanne P. Baron

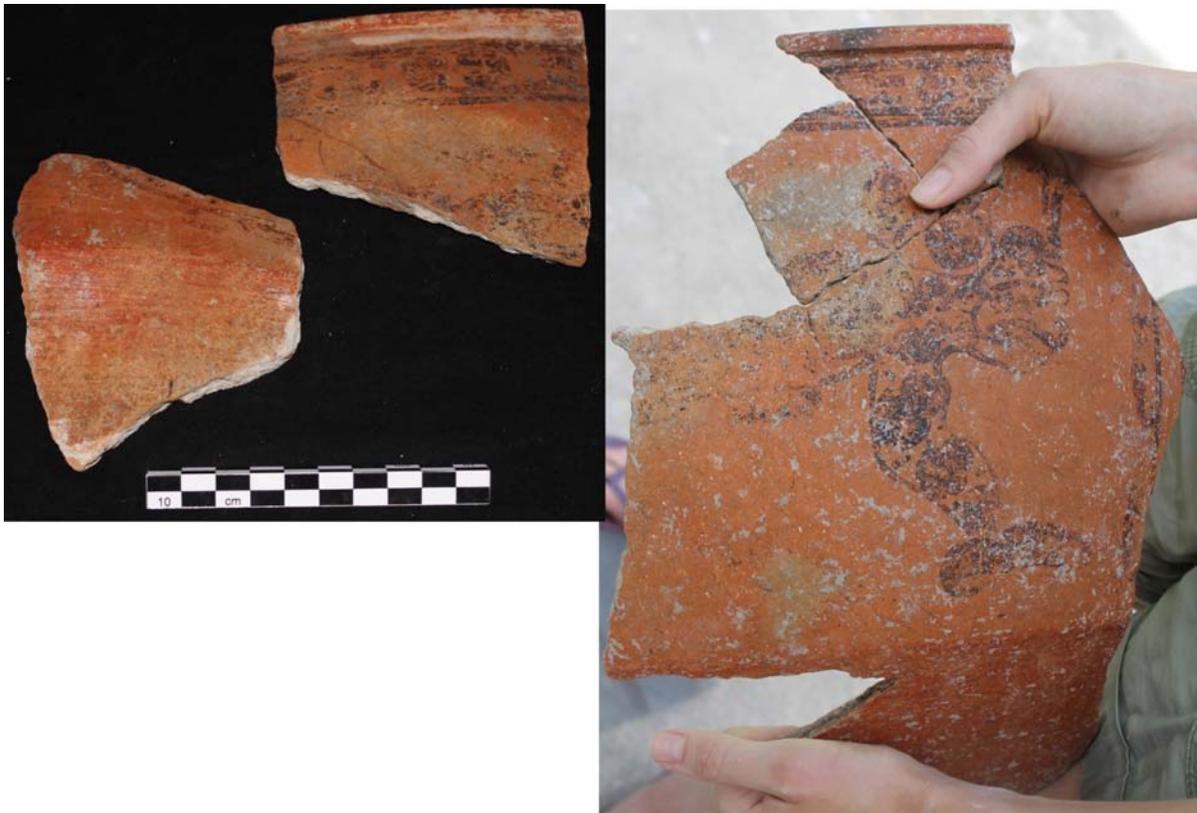


Figure 1.25 Jaguar vessel and sherds from SW corner of Str. 1

Interestingly, the jaguar “is particularly fond of resting on branches that extend out over water” (Miller and Taube 1993:102). We know that jaguar gods are associated with caves and other portals (p. 103). Water lilies line of pool edges; together, the vessel and flowers could signify the Water Lily Jaguar, an “Underworld denizen” (p. 184).

Structure 1 as Water Temple

At this point, it is not yet possible to discuss construction chronology since times constraints did not allow us to excavate through any floors. Most ceramics date to the Terminal Classic period, indicated by various factors, including the varied rim treatments of Caya Unslipped jar rims. We mostly found jars and serving vessels, but did not find censers or individual serving vessels per se. In general, the assemblage was comprised of large vessels, including large flat, thick sherds (e.g., up to 1.9 cm thick). Vessels are quite open; jars comprise the widest range of vessel sizes, from 10 to 45 cm diameter (average, 17.4 cm)—we measured orifice size rather than rim size to better gauge access. The Maya may have used the smaller jars for pouring and transporting water, especially since larger vessels filled with water would have been prohibitively heavy and cumbersome to carry any distance (see Pendergast 1974:42). We also recovered large open bowls (many with remnant polychrome designs) with orifices ranging from 20 to 50 cm (average, 36.4 cm); dishes from 40 to 50 cm (average, 45 cm); and plates from 29 to 45 cm (average, 37.4 cm). These large serving dishes may have been used in public feasts at the temple.

In general, there are not many artifacts given the amount of material we excavated. However, we still need to excavate the 4-6 remaining rooms; at least two rooms have been lost to looting and collapsing into the *cenote*.² We noted lots of vault stones, but barely any stucco. From slabs to sherd clusters, many things appear to be purposefully broken/removed and placed. In fact, nothing is complete (i.e., everything broken or dismantled and placed).

While we recovered blue chert, we did not find much in the way of stone tools, and found only a single obsidian blade fragment and a few hammerstones (1.2). We did find, however, several stones that sparkled (crystalline/quartzite—purple, brown, blue, etc.), especially from room excavations. We also found together two fine-grained water-worn stones: an oval flat stone (serpentine?) (5 x 4 cm, 2 mm thick) and a cylindrical stone c. 12 cm in length and c. 2 cm diameter, both near the doorway c. 5-10 cm above the floor surface in Room 2 (Figure 1.26).

Table 1.2. Structure 1 lithics (unless otherwise noted, material is chert)

Location	Count	Description
East platform, N side, collapse	7	2 bifaces- 1 adze, 3 flakes, 2 cores
East wall	1	1 notched obsidian blade with striations
	13	1 pinkish granite mano fragment, 1 blade, 1 core, 10 flakes, cylindrical tufa
East wall, 2.35 m from SE corner	8	4 mano fragments: 1 pink mottled granite tip, 3 gray/green granite (1 tip, 2 medial), no use wear; 3 flakes, 1 chunk
Rm 1 collapse	2	Limestone chunks
Rm 1 Strat 101 topsoil/collapse	1	Tufa fossil?
	29	1 fire-cracked brown flake, 1 fire-cracked red flake, 7 flakes, 2 cores (1 fine-grained brown), 18 chunks
Rm 2, S face, North wall divider	1	Blue chert chunk
	1	Tufa fossil?
Rm 2 collapse	1	1.2 cm blue chert core
Rm 2 Strat 101 topsoil/collapse	100	11 flakes (2 fire-cracked red chert), 2 fire-cracked chert, 10 blue chert (7 chunks, 3 flakes), 4 chert biface, 2 hammerstone, 6 chunks,
	21	3 sedimentary rock, 1 dark aggregate, likely from <i>cenote</i> , 1 shaped limestone, 3 burnt limestone, 1 shiny limestone, 3 burnt stone, 7 shiny stones, 2 red stones
	7	Tufa fossil?
	15	Tufa/bone? Small flat fragments of tufa look like bones and it is difficult to distinguish them from each other; one completely burned; also pieces look almost half wood and half tufa
Rm 2 Strat 101, near doorway c. 5-10 cm above floor	2	River stones, possibly smoothers for ceramics—or ceremonial?; one is flat (5 x 4 cm, 3 mm thick), one cylindrical 13 cm long and c. 2+ cm diameter
Rm 2 floor near Cluster 3	1	Mano (c. 70% complete), green/gray granite near Cluster 3
Rm 2, Strat 103	4	2 flakes, 2 chunks
Top center topsoil	3	2 flakes- 1 blue, 1 chunk
Spine wall, West side, collapse	1	Flake
SE summit, collapse	2	Chunks
South edge of slab collapse, summit	12	3 flakes, 1 biface, 2 cores, 6 chunks- 1 fire-cracked red chert with geode with purplish crystals
South end roof collapse	2	1 core, 1 burnt limestone
South platform, East edge, topsoil	1	Core
South side, collapse	10	2 cores- 1 blue, 4 flakes, 2 chunks, 2 tufa
South wall, collapse	42	14 flakes, 31 chunks (1 blue)
West wall topsoil	11	7 flakes, 2 cores, 2 chunks
West wall	44	1 c. 5 cm long cylindrical serpentine or slate? 1 fire-cracked red chert flake, 16 flakes, 13 chunks-3 blue, 1 blue chert

		hammerstone, 2 cores (1 blue), 1 blade
SW Looters Trench, collapse clean-up	22	2 cores, 7 chunks- 2 blue, 13 flakes



Figure 1.26 Room 2 river stones

Most of the bone recovered was too fragmentary to identify (Table 1.3) (Figure 1.27). A noticeable bone type are the two possible fossils we found, one consisting of what appears to be a 5 cm long tooth of some kind, and a long bone fragment (Figure 1.28). As far as we know, the only known fossils are found 22 m/70 feet underwater in fossil beds along the *cenote* walls.

Table 1.3. Structure 1 bone and fossils

Location	Count	Description
East platform, N side, collapse	20	6 long bone fragments, 1 burnt bone
East wall	9	3 long bone
Rm 1 Strat 101 (topsoil/collapse)	6	1 long bone frag
	1	Fossil tooth or claw c. 4 cm long, 3.2 cm tall with root exposed
	1	Tufa fossil?
Rm 2, S face, North wall divider	1	Possible long bone fossil fragment
	1	Tufa fossil?
	1	Large long bone 6 cm fragment
Rm 2 collapse	22	2 completely burnt long bones
Rm 2 Strat 101 topsoil/collapse	12	Rodent/human tooth, 5 bird bone
	7	Tufa fossil?
	15	Tufa/bone; small flat fragments of tufa look like bones and it is difficult to distinguish them from each other; one completely burned; also pieces look almost half wood and half tufa
Rm 2, Strat 103 east wall excavations	1	3 cm fragment
Spine wall, collapse	2	1 bone, 1 burned bone
South wall, collapse, SW corner upper structure	34	Armadillo scutes, likely a 9-banded armadillo (<i>Dasyus novemcinctus</i>)
	3	Bone fragments, including bird bone c. 0.8 cm diameter and c. 4 cm long; distal end of a large mammal—human or deer?
South edge of slab collapse, summit	1	8 cm long
South end roof collapse	170	Miscellaneous bone fragments, some large long bones;

		some likely are tufa
South wall, SW side, collapse	74	Human, mammal, bird
South wall, marked by nail	1	Large mammal long bone frag
West wall	12	Including 1 large tooth, 2 completely burnt bones



Figure 1.27 A sample of Str. 1 bones



Figure 1.28 Str. 1 fossils; top: Room 2; bottom, Room 1 possible tooth or claw

The final major artifact class recovered was freshwater and marine shell (Table 1.4). All specimens are found on the east side of room excavations, which is to be expected given they were closer to the water where ceremonies and feasting took place. The Room 2 freshwater shell was found in association with Cluster 3 (and perhaps Cluster 4) (Figure 1.29).

Table 1.4. Structure 1 freshwater and marine shell

Location	Type	Description
East platform, N side, collapse	Marine	Originally identified as bone, but part of spiral; in photo with bones
East wall	Marine	Opalescent clam piece
Rm 2 Strat 101 topsoil/collapse	2 Marine	One spiral section, one large fragment c. 1 cm thick
Rm 2, Cluster 1	Freshwater	Pomacea
Rm 2, Cluster 2	7 Freshwater	Pomacea
Rm 2, Cluster 3	178 Freshwater	<i>Pomacea</i> found at north wall over Cluster 3



Figure 1.29 Str. 1 Marine and freshwater shell. *Pomacea* shells were near Room 2 Cluster 3

One of the last projects we did was to lay out all of the ceramics in the conference room at Banana Bank Lodge in a layout similar to where they were found. It highlighted several patterns including fire clouding on vessels; fitted sherds from different parts of the building; and purposefully broken vessel parts.

The first notable pattern is the number of jars with extensive fire clouding, especially on those from exterior wall excavations (Table 1.5). This pattern, in addition to the lack of censers, suggests

the Maya used jars to burn offerings. In fact, there is not much evidence for much burning beyond the jars other than a few burned limestone pieces, a few fire-cracked flakes and chunks, and burnt bone.

Table 1.5. Sherds with fire clouding

Catalog #	Location	Sherd type
1066	S. wall exterior platform fill	Cayo Unslipped jar rim, quite black on both sides
1076	E. wall collapse	Cayo Unslipped jar rims
1069	East wall 2.3 m from SE corner, stacked ceramics, topsoil	Unslipped jar rim
1068	East wall, stacked sherds at SE corner	Blackened unslipped jar rim and neck sherds
1080	East wall, central, upper, collapse	Cayo Unslipped jar rim
1087	East wall, SE corner, sherd concentration	Thick body sherds
1057	W. wall, n. side collapse	Red-slipped ring base with fire clouding on both sides
1060	W. wall, s. side	Cayo Unslipped blackened jar rim
1093	S. end roof collapse	Cayo Unslipped rim, Cayo Unslipped neck sherds
1097	South edge of slab collapse, summit	Body sherds
1096	Room 2 collapse	Body sherds
1099	Room 2 Strat 101	Base, sherds

We were also able to piece sherds together that were found in different parts of the structure (Table 1.6). The question, of course, is whether or not these instances were the result of natural or cultural formation processes. Natural processes could have resulted in this pattern, but it seems pretty consistent. If the Maya did purposefully break and place vessels, was it part of a termination rite, or does this behavior reflect something else altogether? Another telling pattern is how most of the refits involve Room 2 ceramic clusters.

Table 1.6. Sherds possibly from same vessel in different locations

Catalog # and location	Catalog # and location
1059, South wall, SW corner, collapse rim and body →	2003, Room 2 Cluster 3, Indian Creek polychrome bowl sherds
1065, S. wall topsoil plate rim fits with →	2002, Room 2 Cluster 2 Vaca Falls body sherds
2002, Room 2 Cluster 2, Vaca Falls straight sided bowl with medial flange and body sherds →	2003, Room 2, Cluster 3 rim and body sherds
1097, S. edge slab summit collapse rim fits with →	1099, Room 2 Belize Red 'center' dish cluster
1097, S. edge summit slab collapse sherds may come from same vessel as →	1098 Room 1 Strat 101 two brown sherds and tecomate rim

We also noted that many sherds appeared to be purposefully broken (Table 1.7) (Figure 1.30), perhaps signifying an aspect of a termination ritual or some other kind of 'ending' ceremony. That said, they are found on the summit, East wall, and Room 1—in other words, the 'business' end of the temple toward the water.

Table 1.7. Sherds purposefully broken

Catalog #	Location	Sherd type
1075	East platform, N side, collapse	2 unslipped jar rims, 2 neck sherds
1080	East wall, central, upper, collapse	Cayo Unslipped jar rim

1077	East wall, jar cluster, collapse	Large, open neck sherd
1083	East wall, 2.35 m from SE corner	Unslipped jar rim, volcanic ash, red slip orange paste dish
1084	East wall, S. side, collapse	Unslipped jar rim
1093	South end roof collapse	2 unslipped jar rims
1097	South edge of slab collapse, summit	4 Cayo Unslipped jar rims
1089	Room 1 collapse	Cayo Unslipped tan paste neck sherd



Figure 1.30 Possible purposefully broken jars

Summary of the main elements of Cara Blanca Pool 1 Str. 1:

Things water: proximity to water, freshwater snails, marine shell, tufa, water jars, sedimentary and other aggregates from the pool, water symbolism, blue chert, possible fossils from the deep. Also, Str. 1 may have mirrored the *cenote* edge.

Things lacking: no individual serving vessels, no stone tools to speak of, no metates, no censers, little burning, no spindle whorls, no barkbeaters, and only one piece of obsidian. In other words, the major function of Str. 1 was not residential.

Community feasting: several bird bones, bone fragments of all sizes, including a few thoroughly burned bones—but no individual serving vessels. Over 180 *Pomacea* freshwater snails, similarly sized, suggesting that they were selected, sorted, and prepared for feasting. There are also the large prep/storage and serving vessels.

Discussion and Concluding Remarks

Ceramics from Str. 1 tell an interesting story, especially when comparing them with ceramics from other regions. Cayo Unslipped jars are the most frequent Terminal Classic storage jar, along with Sibun Red Neck jars, in the Sibun Valley (Harrison-Buck 2007:255; see also Thompson 1939:125, Figure 66a-p; see also p. 216), of which we have found several (e.g., Room 1, Strat 101 and

Room 2 Strat 101). In assessing the Cara Blanca collection, Eleanor Harrison-Buck (pers. comm., June 2013) noted that while Gifford et al. (1976) highlight several different types of Cayo Unslipped jar rim treatments, she rarely sees them all represented in the same assemblage (for other comparisons with the Sibun area, see Harrison-Buck 2007:Figure 5.1; for San Jose, see Thompson 1939:98-99, 125-126, 240, Figures 66f-g, plate 15b, e, I, 3).

Laura Kosakowsky, who examined Cara Blanca ceramics at the 2007 BAS ceramic workshop, noted that they are more similar to ceramics in the Petén area and northern Belize than to the Belize River valley. The Cara Blanca assemblage, in turn, is more similar to Yalbac's, a medium size center 8 km southwest of Pool 1. For example, we have yet to find any Mt. Maloney (black slip) bowls from Yalbac or Cara Blanca, a type common in the upper Belize River Valley area. Also, there are more striated jars than one finds in the Belize valley. Kinkella also noted that Cara Blanca ceramic forms are comprised of "a mix of those of the Belize Valley and Northern Belize" (2009:184), and may even be more similar to northern assemblage (p. 185).

Similar to Yalbac and Cara Blanca, Saturday Creek, a minor river center on the north bank of the Belize River 11 km south of Pool 1, also lacks Mt. Malony Black ceramics (Conlon and Ehret 2002). Achote Black is the preferred black style of choice Saturday Creek, Yalbac, and Cara Blanca. Dolphin Head Red sherds at these three sites also are different than the Belize River Valley in that they are slipped on the exterior in these assemblages rather than on the interior as found elsewhere in the Belize Valley. Terminal Classic red-slipped jar rims and necks are more common at Saturday Creek than, for example, Barton Ramie, as well as at Cara Blanca and Yalbac.

In discussing Pool 1 with John Morris, he asked which center would have controlled the pilgrimage area. Cara Blanca's similarity to Yalbac's assemblage (not to mention finding tufa and blue chert at Str. 3C.; see below) may indicate that Yalbac's political and religious leaders played a role in maintaining/controlling Cara Blanca. Yalbac also is the closest and most accessible center; San Jose and Saturday Creek each are 11 km distant from Cara Blanca and do not have direct access via a waterway like Yalbac does via Yalbac Creek. Labouring Creek c. 350 m south of Pool 15 and c. 2 km southwest of Pool 1 c. 6.5 km northeast of Yalbac.

Other interesting patterns in the ceramic assemblage include the fire clouding found on jars found in many contexts, especially the exterior walls. The lack of incensarios suggests that the Maya used jars to burn their offerings. Also interesting are the dispersed sherds from Room 2 cluster vessels, and the purposefully broken jar necks, which are found in the two rooms, summit, and east wall (i.e., the business end of the temple). This pattern likely reflects their use in public events on the plaza near the water. Finally, there are the five ceramic clusters themselves in Room 2, of which Clusters 1-4 are found on the north wall and includes the Jaguar vessel, while Cluster 5 is found in the southeast corner. Did the Maya purposefully place them as we found them? Where are the rest of the vessels? Will we find more refitted sherds outside of Room 2? And if we do, what does this breaking and depositing behavior indicate? Could it have been similar to the tufa, perhaps part of a termination ritual? While it is not yet possible to answer these questions as of yet, the implications are nonetheless intriguing.

Also intriguing are some of the other artifacts that indicate Str. 1's function as a water temple. Beyond the water-related objects (blue chert, shell, symbolism, water jars, etc.), the multitude of bone fragments from nearly all context likely represent faunal remains—and likely their consumption as part of the ritual feasting. Most of the other 'interesting' artifacts come from the water temple's east side and rooms, including the shell.

The possible fossils from Rooms 1 and 2 are of particular interest, especially if they are found to come from the fossil bed 20+ m underwater. In an analysis of architectural features of several of Palenque's temples, Riquelme et al. (2012) not only found evidence for the use of crushed fossils in mortar and plaster, but the use of slabs with visible fossils (referred to as *coquina*) in the architecture, including fossil shark teeth and stingray spines. There are several outcrops around Palenque, from within its environs to c. 110 km distant. One of the most intriguing uses of fossils in plaster and mortar is found on steps 11-41 leading down to Pakal's tomb in the Temple of the Inscriptions. To the

authors, “these finding[s] may suggest a significant link with the mythical episode inserted in the Maya conceptions of the world creation because they are related to the ancient sea environment” (p. 633). In the upper Pasión area of Guatemala, archaeologists working in the Cancuen area noted several caves with fossil outcrops (e.g., conical sponges that look like stars in profile) (Woodfill et al. 2003). More significantly, they recovered coral fossils in plaza excavations and fill deposits at the small hilltop site of La Caoba Vieja. Clearly the Maya purposefully extracted fossils from caves, indicating not only a connection to the underworld, but one to the watery world.

The Maya constructed the water temple for worship and pilgrimage. To build it, they used materials from the sacred waters, particularly tufa, and even fossils. Since tufa size and number noticeably diminish as we excavated into the rooms, instead of it having served as fill, it is possible that the Maya covered the temple with tufa, or used it in roof construction? Or did they use it as part of a termination rite? The diverse ceramic styles at Pool 1 originate from different areas—the Belize River Valley, northern Belize, eastern Belize, the Petén and the Yucatán suggest that people were coming to Pool 1 from all over to participate in water ceremonies and public feasts.

Interestingly, we have also recovered tufa at Yalbac from Plaza 1, Plaza 2, and Plaza 3 excavations, further indicating their close ties (Table 1.8); these are all public areas with monumental public buildings.³ In addition to tufa at Str. 3C, we also recovered large vessels (e.g., thick sherds), blue chert, and red-rimmed Cayo Unslipped jar sherds. Did the Maya at Yalbac get the tufa from Cara Blanca pools? If this was the case, it is further indication of Yalbac’s close ties to Cara Blanca.

Table 1.8. Tufa at Yalbac

Location	Context and ceramic dates	Reference
Temple 2A, Unit 2, Strat 101	Topsoil, Late Classic	Baltus 2009:Table 3.2; Lucero 2009:9
Temple 2A, Unit 1, Strat 101	Topsoil, Late Classic	Baltus 2009:34
Platform 2F TP, Strat 110	Plaster Floor, Late Preclassic	Baltus 2009:47
Platform 2F TP, Strat 114	Fill, Late Preclassic	Baltus 2009:51, 55
Str. 3C, Strat 150	Floor and ballast, Late/Terminal Classic	Olszewski 2011:Table 8.1
Str. 3C, Strat 155	Floor and ballast, Early Classic	Olszewski 2011:122
Plaza 3 Platform test pit, Strat 102	Cobble and boulder surface, Late/Terminal Classic	Haneberg 2011:Table 7.2; Lucero 2011:9
Plaza 1 Test Pit, Strat 101	Topsoil, Late/Terminal Classic	Lucero 2005:14
Plaza 1 Test Pit, Strat 104	Floor, ballast, Early Classic	Lucero 2005:14

In conclusion, increasing evidence from surface and underwater excavations show that Pool 1 at Cara Blanca was a sacred place, likely for pilgrimage and rain ceremonies. As mentioned, nearly all the ceramics date between 800 and 900 C.E., a period when the Maya experienced at least eight multiyear droughts lasting three to 18 years according to results of the isotopic analysis of speleothems from Yucatán caves (Medina-Elizalde et al. 2010). In response, progressively more and more people came to Cara Blanca from the north, south, east and west to supplicate ancestors and water deities, especially the rain god Chaak, who the Maya believed lived in *cenotes* and other openings in the earth. The Maya brought offerings to the temple, and casted them into the sacred waters.

Notes:

1. Ellie Harrison-Buck informed me that Gifford et al. (1976) mistakenly placed an illustrated of a Silver Creek Impressed as a Paxcaman. She also stated that she had never seen this kind of impressed design.
2. There is still a chance that part of Str. 1 could have served as a sweatbath (see Kinkella 2009:147-159; cf. Thompson 1939:59-60 on Str. C5, Figure 9; Helmke 2006; Satterthwaite 2005[1952]; see also Harrison-Buck 2007 chapter 4 on sweatbaths, pp. 159-199).

3. In her summary of Str. 3C excavations, Olszewski (2011:134) wrote of the “notable amount of vascular tubular limestone” during excavations, which we now realize is tufa. Further, Joanne Baron recovered three possible speleothem fragments in the ballcourt alley excavations she ran in 2004 and 2005 (Baron 2006:33, Table 1); these ecofacts may also represent calcified termite nests (Cameron, pers. comm. to Baron, 2004).

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Appendix: 2013 VOPA Artifacts

Description	Artifact Type	Count	Additional Information	Orifice diameters (cm)
East platform, N side, collapse	Rims	10	2 unslipped jar rims (both purposefully broken), 2 red slip VA bowl-same vessel, 1 red slip VA plate, 2 unslipped jar rims, 1 unslipped plate	2 15 cm from same unslipped jar, 2 20 cm from same VA bowl, VA plate 30 cm, unslipped jar 45 cm, unslipped plate 40 cm
	Necks	15	Two purposefully broken	
	Bases	4	2 from same vessel, 2 ring	
	Body	114	Wall thickness: .9 cm, 1.5 cm, 1.1 cm, 1.17 cm, 1 cm. Length: 9.7 cm, 11.56 cm	
	Bone	20	6 long bone fragments, 1 burnt bone	
	Marine shell	1	Originally identified as bone, but looks to be part of spiral; in photo with bones	
	Lithics	7	2 bifaces- 1 adze, 3 flakes, 2 cores	
East wall	Rims	18	2 VA red slip plate triangular sherd, 2 pieces of same red slip VA plate, 5 unslipped jar rim (Cayo Unslipped)—1 with slight fire clouding and purposefully broken 1 VA red slip bowl, 1 VA red slip plate, 6 unslipped jars, Cayo Unslipped, some with fire clouding	VA plate with 2 pieces 30 cm, VA plate 35 cm, jar 15 cm, jar 30 cm, jar rim 25 cm, jar rim 25 cm, jar rim 15 cm VA red slip bowl 50 cm, two tan paste jar rims 15 cm, tan paste jar 10 cm, red slip VA plate 40 cm, tan paste jar 20 cm, tan paste jar 20 cm, tan paste jar 25 cm, 15 cm
	Necks	12	Some thick	
	Base	1		
	Body	258	Wall thickness: .92 cm, .93 cm, 1.07, .98, .89, .85, 1.3, 1.4 cm, length 13.31, 7.3, 6.5 cm	
	Bone	9	3 long bone	
	Obsidian	1	1 notched blade with striations	
	Marine shell	1	Opalescent clam piece	
	Lithics, groundstone	13	1 pinkish granite mano fragment, 1 blade, 1 core, 10 flakes, cylindrical tufa	
East Wall, stacked sherds at SE corner	Rim	1	Unslipped jar rim, blackened; from same vessel as below	15 cm
	Neck	3	All from same vessel as rim, blackened	
East wall, 80 cm from SE corner, stacked vessel sherds	Rims	3	Stacked c. 4 cm thick; 1 VA red slip bowl- 2 sherds from same vessel, 1 unslipped plate with exterior twist appliqué design c. 3 cm from rim	VA red slip bowl 45 cm; unslipped plate 29 cm
	Neck	1	Large jar sherd with oily stain on shoulder (lipids?)	25 cm
	Body	2	c. 1 cm thick jar sherds	
East wall, jar	Rims	3	VA red slip plate, VA red slip plate	VA plate rim 30 cm,

cluster, collapse			triangular sherd, unslipped dish (but no jars, yet most body and Necks are)	triangular VA plate Rim 45 cm, dish 50 cm
	Necks	4	Large, open, 1 purposefully broken	
	Body	96	Lengths: 10.49 cm, 10.5 cm, 7.55 cm. 8.73 cm, 9.3 cm	
East Wall, SE corner, sherd concentration	Body	8	Wall thickness .96 cm, fire clouding	
East Wall, 2.35 m from SE corner	Rims	4	1 VA red slip orange paste dish (~purposefully broken), 1 VA red slip orange paste plate (2 pieces, with repair hole), 1 VA red slip tan paste bowl, unslipped jar rim purposefully broken	VA dish 45 cm; VA plate 40 cm, VA bowl 30 cm, jar 15 cm
	Necks	3	Two red-rimmed on interior	
	Body	104	Wall thickness: .88 cm, .78 cm, .68 cm, .89 cm, .87 cm, .99 cm. Four sherds have what appears (in photos) to be oily stains (lipids?)	
	Lithics, grounds tone	8	4 mano fragments: 1 pink mottled granite tip, 3 gray/green granite (1 tip, 2 medial), no use wear; 3 flakes, 1 chunk	
East wall, stacked ceramics 2.3 m from SE corner	Rims	2	Unslipped jars with everted rims, fire clouding on interior rim	Both jars 25 cm
	Necks	3	From same vessel as rims	
Rm 1 collapse	Rims	4	1 VA red slip possible bowl, 1 unslipped jar, 2 tan paste Cayo unslipped jars	Cayo jars 20, 23 cm
	Necks	3	1 black slip bowl (3 sherds), 1 unslipped jar, 1 Cayo Unslipped tan paste with purposeful breaks at shoulder	
	Body	8	Wall thickness: .64, .69, .71 cm	
	Lithics	2	Limestone chunks	
Rm 1 Strat 101	Rims	18	2 Achote black (one bowl, one tecomate that is the same as #1097) 9 Cayo Unslipped jars, 1 VA red slip bowl, 1 VA red paste jar, and a few Sibun Red Neck jars 2 Belize Red dish, red slip VA dish	Both 50 cm
	Necks	16	Unslipped jars	
	Medial flange	1	Unslipped	
	Body	99	Cayo Unslipped, 8.6 cm length, wall thickness .79 cm; 2 brown sherds might be the same as #1097; Orange paste, slip has worn off; remnant designs; 6.92 cm length, .70 cm thickness	
	Bone	6	1 long bone frag	
	Fossil	1	Fossil tooth c. 4 cm long, 3.2 cm tall with root exposed	
	Tufa fossil?	1		

	Lithics	29	1 fire-cracked brown flake, 1 fire-cracked red flake, 7 flakes, 2 cores (1 fine-grained brown), 18 chunks	
Rm 2, S face, North wall divider	Rims	2	1 Cayo Unslipped jar (1 cm thick), 1 unslipped bowl	jar 20 cm, bowl 25 cm
	Body	15	1 Body has a molded design. Wall thickness: .89, .35, .93, .81 cm	
	Fossil	1	Fossil!	
	Lithic	1	Blue chert chunk	
	Tufa fossil?	1		
	Bone	1	Large long bone 6 cm fragment	
Rm 2 collapse	Rims	2	1 VA red slip bowl, 1 polychrome bowl rim with orange paste	
	Necks	8	Unslipped, 3 are jars	
	Base	1	Unslipped annular plate base	
	Body	15	1 polychrome-tan paste (different vessel than polychrome rim), wall thickness: 1.45, .95, and 8.24 cm long	
	Bone	22	2 completely burnt long bones	
	Lithic	1	1.2 cm blue chert core, near possible vessel	
Rm 2 collapse possible vessel	Body	99	40 tan paste self-slipped striated wall thickness .63 cm, 59 fire-clouded tan paste wall thickness .72 cm	
	Rims	3	Cayo Unslipped jar rims	
	Neck	1	Unslipped jar neck	
Rm 2 Strat 101	Lithics	100	11 flakes (2 fire-cracked red chert), 2 fire-cracked chert, 10 blue chert (7 chunks, 3 flakes), 4 chert biface, 2 hammerstone, 6 chunks,	
	Ground stone, other	21	3 sedimentary rock, 1 dark aggregate, likely from <i>cenote</i> , 1 shaped limestone, 3 burnt limestone, 1 shiny limestone, 3 burnt stone, 7 shiny stones, 2 red stones	
	Bone	12	Rodent/human tooth, 5 bird bone	
	Tufa fossil?	7		
	Marine shell	2	One spiral section, one large fragment c. 1 cm thick	
	Tufa/bone	15	The small flat fragments of tufa look like bones and it is difficult to distinguish them from each other; one completely burned; also pieces look almost half wood and half tufa	
	Rims	34	Sibun Redneck jar, same vessel; Sibun Redneck, same jar, 1.07 cm thick; 2 Sibun Redneck jar, same vessel; 2 Sibun Redneck jar; 5 Sibun Redneck jar; VA orange paste polychrome, 1.2 cm thick, serving dish; Unslipped bowl; 7 VA orange paste polychrome 1.67 thick same slightly; 4 Cayo Unslipped jar; 8 Cayo	Sibun Red jars 18 cm, 2-20 cm, 15 cm, 25 cm Unslipped bowl 38 cm Orange incurved bowl 30 cm

		Unslipped; Belize Red plate;	Cayo Unslipped 20 cm	
Necks	40	Sibun Redneck jar, same vessel; 7 Sibun Redneck, same jar, 1.07 cm thick; 3 Cayo Unslipped jar; Cream paste, unslipped jar; 10 Cayo Unslipped jar, 1 Sibun Redneck jar; 12 Cayo Unslipped jar		
Body	400	7 shoulder/Body, VA red slip, same vessel-tecomate? ~13 from same Cayo Unslipped jar vessel(s); 3 Cayo Unslipped, same vessel, .86 cm thick; 17 Cayo Unslipped, same vessel, .55 cm thick; 13 Cayo Unslipped, same vessel, .77 cm thick; 26 Tutu Camp Striated, .75 cm thick, same vessel; 6 VA brown slip, 1/2 cream 1/2 red paste, bowl? Same vessel; Cream paste, unslipped jar; 2 Sibun Redneck, same jar, 1.07 cm thick; 11 Unslipped tan paste, .84 thick, 9.34 cm long; Unslipped bowl .84 cm thick; 55 Cayo Unslipped, .6, .65 cm thick, 10 cm, 10.5 cm long, same vessel; 101 Cayo Unslipped (.87, .73 cm thick, 13.5 long), 2 Tutu Camp Striated, 1 brown slip, 1 Belize Red (.82 thick); 10 VA orange paste polychrome 1.67 thick slightly incurved bowl; 115 Cayo Unslipped (.6, .73 cm thick, 9.3, 10 cm long); 5 VA brown slip .52 cm thick 1 Belize Red plate; 3 Cayo Unslipped, .54 cm thick; 2 Belize Red, .74 cm thick, same vessel as Center dish?		
Bases	6	Ring base, cream paste, unslipped jar same as body and neck; Unslipped bowl, medial flange—possible slab foot; Cayo Unslipped, flat base; 1 Belize Red ring base		
Rims	3	Dolphin Head Red, Silver Creek Impressed dish with stick impressed design on basal break, same vessel	40 cm	
Rm 2 Strat 101 Center dish	Rims	3	Center dish Belize Red; actually rimless; looks almost sheared off; might be the same as #1097	
	Bases	2	Center dish Belize Red	
	Body	11	Center dish Belize Red, .79 cm thick	
Rm 2 Strat 101, near doorway c. 5-10 cm above floor	Lithics	2	River stones, possibly smoothers for ceramics—or ceremonial?; one is flat (5 x 4 cm, 3 mm thick), one cylindrical 13 cm long and c. 2+ cm diameter	
Rm 2, 10 cm above floor	Rims	19	Cayo Unslipped jar rims, some red-rimmed; Unslipped bowl; 2 Sibun Redneck jars; 3 Polychrome, orange paste, same vessel, .65 cm thick; 1 VA red slip incurving bowl	15 cm, 18 cm, 20 cm

	Necks	5	Large Cayo Unslipped jar necks	
	Body	133	Polychrome, orange paste, same vessel, .65 cm thick; 5 Unslipped; 10 Dolphin Head Red, Silver Creek Impressed dish with stick impressed design on basal break, same vessel; 1 VA orange slip, 5.35 cm long, .48 cm thick; 5 VA brown slip .37 cm wall thickness; 108 Cayo Unslipped body sherds with lots of striations	
Rm 2, Strat 102, Cluster 1	Rims	3	Cayo Unslipped jar (inverted), 4 pieces refit, same vessel	18 cm
	Neck	1	Cayo Unslipped jar, same vessel as rims and Body	
	Body	38	Cayo Unslipped jar, same vessel as rims and Necks, 10.9 cm long, .36, .46 cm wall thickness	
	Rims	2	Dolphin Head Red, Silver Creek Impressed dish with stick impressed design on basal break, same vessel	40 cm
	Body	1	Dolphin Head Red, Silver Creek Impressed dish with stick impressed design on basal break, same vessel, .56 cm wall thickness	
	Shell	1	Pomacea	
Rm 2, Strat 102, Cluster 2	Shell	7	Pomacea	
	Rim	1	Vaca Falls Red, Vaca Falls var. (2 pieces refit) with medial flange. Straight sided bowl, same as #2003 bowl.	45 cm
	Body	29	Vaca Falls Red, Vaca Falls var., part of bowl, same as #2003 bowl. 9.84 cm, 11.2 cm long, .86, .87 cm wall thickness	
	Body	11	VA bowl slip Body from same vessel. 11.8 cm long, .83 cm thick; looks like they go with plate rim (#1065)	
	Body	14	Cayo Unslipped jar Body, same jar as 2001?	
Rm 2, Strat 102, Cluster 3	Rim	1	Vaca Falls Red, Vaca Falls var. bowl, 2 sherds refit, same as #2002 VF bowl.	45 cm
	Body	13	Vaca Falls Red, Vaca Falls var. bowl, same as #2002 VF bowl. Wall thickness: .77 cm, .83 cm. 15.5 cm length	
	Rims	3	Indian Creek polychrome bowl, jaguar design, rims refit with base, same as #1059	45 cm
	Body	5	Indian Creek polychrome bowl, jaguar design, rims refit with base, same as #1059	
	Shell	178	<i>Pomacea</i> found at north wall over Cluster 3	
Rm 2 floor	Ground	1	Mano (c. 70% complete), green/gray	

near Cluster 3	stone		granite near Cluster 3	
Rm 2, Strat 103	Rims	2	Unslipped tan paste shallow inverted bowl, 2 pieces refit; Shallow inverted bowl, unslipped, brown	Tan bowl 35 cm
	Body	19	Belize Red, 11.8 cm long, .71 cm wall thickness—same vessel? 16 Cayo Unslipped, 8.77, 8.49 cm length, .92, 1.09 cm wall thickness; several with cross-hatchings, striations	
	Lithics	4	2 flakes, 2 chunks	
	Bone	1	3 cm fragment	
Top center topsoil	Lithics	3	2 flakes- 1 blue, 1 chunk	
Spine wall, West side, collapse	Neck	1	Unslipped jar	
	Body	4	Unslipped	
	Lithic	1	Flake	
Spine wall, collapse	Rims	4	1 VA red slip, 1 unslipped bowl, 2 unslipped jars	VA bowl 30 cm
	Necks	8	Wall thickness: 1.31, .72, 1.01, 1.21, .99, 1.06 cm	
	Bases	2	1 VA red slip basal break, 1 possible drum base or fluted neck: 3 sherds, remnant slip	
	Body	38	1 VA orange slip; .31, .87, .8, .81 cm wall thickness	
	Bone	2	1 bone, 1 burned bone	
SE summit, collapse	Rim	1	Unslipped jar rim, 1+ cm thick, likely Cayo Unslipped	15 cm
	Body	28	Wall thickness: .99 cm, 1.12 cm, largest sherd 10.5 cm length	
	Neck	1		
	Lithics	2	Chunks	
South wall, collapse, SW corner upper structure	Armadillo scutes	34	Likely a 9-banded armadillo (<i>Dasypus novemcinctus</i>)	
	Bone	3	Bone fragments, including bird bone c. 0.8 cm diameter and c. 4 cm long; distal end of a large mammal—human or deer?	
South edge of slab collapse, summit	Rims	8	Cayo Unslipped jar rims from 5 different vessels, all with everted rims, 4 with purposeful breaks; one rim almost a chocolate brown between 75YR43 and 33—might be the same as brown sherds in #1098; one rim might match up with #1099 Rm 2 Center Red Belize dish.	5 15 cm, 1 20 cm, 1 25 cm
	Necks	3	1 Cayo Unslipped jar, wall thickness: .77, .96cm	
	Body	47	Many have fire clouding on their external surfaces, some clearly from same vessels including those with thickest walls (including jar neck). Some of thinner	

			sherds striated in different directions (thinner than usual according to Ellie). Tecomate sherd might be same as #1098. Wall thickness: 1, .92, .89, 1.02, .90 cm	
	Bone	1	8 cm long	
	Lithics	12	3 flakes, 1 biface, 2 cores, 6 chunks- 1 fire-cracked red chert with geode with purplish crystals	
South end roof collapse	Rims	7	4 unslipped jars (1 with fire clouding, 2 purposefully broken including Tu-Tu Camp Striated rim), 1 VA red slip plate, 1 unslipped bowl	Jars 15 cm, 15 cm, 18 cm; unslipped bowl 23 cm
	Necks	5	All unslipped, 2 jars- 1 fire clouded; same Cayo Unslipped vessel as several Body	
	Body	13	All unslipped, some same vessel as fire clouded jar neck	
	Lithics	2	1 core, 1 burnt limestone	
	Bone	170	Miscellaneous bone fragments, some large long bones; some likely are tufa	
South platform, South of South edge	Necks	2	Thick	
	Body	4	Thick	
South platform, East edge, topsoil	Rims	4	1 unslipped jar rim, 2 unslipped fragmented likely everted jar rims, 1 unslipped bowl. 1+ cm thick	Likely jar 15 cm, jar 15 cm, smallest likely jar rim 20 cm, bowl 25 cm
	Necks	5	Thick as well	
	Body	28	Wall thickness .88 cm	
	Lithic	1	Core	
South platform, S wall fill of exterior extension	Rims	2	Cayo Unslipped jars, only artifacts found in wall fill; heaving fire clouding on one (black)	30 cm, 18 cm
South side, collapse	Rims	5	2 unslipped jar, 3 unslipped bowls	Both unslipped bowls rectangular sherds 40 cm, dark paste unslipped jar 15 cm. light paste unslipped jar 40 cm, unslipped bowl triangular sherd 35 cm
	Bases	2	1 ring base	
	Necks	3		
	Body	71	Wall thickness: .75 cm, .82 cm. Large sherd is 8.8 cm long, .73 cm thick	
	Lithics	10	2 cores- 1 blue, 4 flakes, 2 chunks, 2 tufa	
South wall, collapse	Rims	7	1 VA maroon/red slip plate, 1 VA red slip bowl with medial angle, 1 unslipped possible fragmented everted jar rim, 3 unslipped jar. Looks like the plate rim goes to a Cluster 2 (#2002) vessel found without rims (but 11 Body); Unslipped jar	VA plate 35 cm; 2 unslipped jars 20 cm
	Necks	5		
	Body	114	Wall thickness: 1.09 cm and 8.6 cm	

			length, .88 cm and 8.7 cm length, .87 cm; many more thick	
	Bases	2		
	Lithics	42	14 flakes, 31 chunks (1 blue)	
South wall, SW corner, collapse	Rim	1	Indian Creek polychrome bowl, glyphs, same vessel as Body, same vessel as #2003	45 cm
	Body	1	Indian Creek polychrome bowl, glyphs, wall thickness ranges from 0.8-1.6 cm, same vessel as Rim, same vessel as #2003	
South Wall, SW side, collapse	Body	1	Orange slip, large	
	Bone	74	Human, mammal, bird	
South wall, marked by nail	Bone	1	Large mammal long bone frag	
West wall topsoil	Rims	2	1 VA red slip dish, 1 unslipped jar	VA dish 30 cm
	Necks	3		
	Body	26	Wall thickness: .68 cm, .78 cm	
	Lithics	11	7 flakes, 2 cores, 2 chunks	
West Wall	Rims	14	2 unslipped jar rims; 1 VA red/brown slip plate, 1 VA polychrome tecomate, 2 unslipped small jar rims. Thin-walled orange paste tecomate with faded black designs ~Dos Hermanos Red (early Hermitage, p. 160, c. 300-400/450 C.E.) 3 jar Rims fit together (1+ cm thick); 3 VA bowl rims, 1 is red slipped bowl Cayo Unslipped jar with blackened rim (fire-clouding?); VA red slipped plate rim, unslipped plate	15 cm, 15 cm Brown slip VA plate 30 cm, tecomate 45 cm Unslipped jar 25 cm Unslipped VA bowl 45 cm Jar rim 23 cm; VA plate 35 cm
	Necks	5	Wall thickness: 1.0, .78, .99 cm	
	Body	101	Bag includes 3 body; wall thickness: .85, 1.07, .86 cm; length 9.9 cm	
	Bases	4	2 VA red slip (1 ring, 1 flat), 1 ring orange paste, VA red slipped annular ring base, fire clouding on both sides	
	Lithics, grounds tone	44	1 c. 5 cm long cylindrical serpentine or slate? 1 fire-cracked red chert flake, 16 flakes, 13 chunks-3 blue, 1 blue chert hammerstone, 2 cores (1 blue), 1 blade	
	Bone	12	Including 1 large tooth, 2 completely burnt bones	
SW Looters Trench, collapse clean-up	Rim	1	Unslipped everted jar rim	15 cm
	Body	12	Unslipped	
	Lithics	22	2 cores, 7 chunks- 2 blue, 13 flakes	
CB Pool 7, surface collection	Lithics	7	1 hammerstone, 6 flakes- 1 blue	
	Ground	2	1 pinkish mano fragment, 1 dark metate-	

	stone		shaped material, likely from underwater	
	Rims	15	2 red slip VA bowl, 2 red slip VA plates, 3 unslipped bowl, 3 unslipped jars, 1 brown slip VA dish, 1 black slip bowl, 1 VA red slip dish, 1 unslipped bowl,	VA red slip dish 30 cm, 1 black slip bowl 18 cm, 1 unslipped jar 25 cm, 2 unslipped jars 30 cm, unslipped jar 40 cm, 2 unslipped bowl 40 cm, unslipped bowl 20 cm, VA red slip bowl 40 cm, unslipped bowl 25 cm
	Necks	11		
	Bases	4	1 drum base, 2 ring,	
	Body	63		
Yalbac survey surface collection treefall #3	Rims	7	1 red slip jar, 2 unslipped jar, 1 red slip dish, 1 brown paste dish, 3 VA red slip plates (? Two rims too small to be certain)	Red slip jar 50 cm, thick unslipped jar 50 cm, unslipped jar 25 cm, red slip dish 25 cm, red slip plate 40 cm, brown paste dish 18 cm
	Necks	5	Necks and bowl sides	25 cm
	Handles	2	Dark orange paste—early? Handle c. 3+ cm long at base	
	Bases	3	1 ring, one basal flange with red slip above flange	
	Body	47	Wall thickness: .86 cm, 1.28 cm	

Chapter 2

Identifying Sacred Space and Community through Ceramics from the Water Temple of Cara Blanca Pool 1, Structure 1

Jessica Harrison
University of Illinois Urbana-Champaign

The summer 2013 research project of the Valley of Peace Archaeology Project focused on excavating Cara Blanca Pool 1 Structure 1. Our goal was to map and begin excavating to better understand the architecture of Str. 1, a water temple. The structure was severely damaged by two looters trenches (see chapter 1 for a discussion of the trenches) that have greatly compromised the stability of the northeastern quadrant of the building. In addition, Str. 1 was built so close to Pool 1 that a millennium of erosion has actually caused the northern and eastern-most walls to fall into the pool as the limestone edge of the pool collapses in and the *cenote* expands in size due to erosion and the fragile limestone of the pool walls. This natural erosion, coupled with the damage of looting, makes it imperative that we understand the architecture of the temple before any more damage is done.

Cara Blanca Pool 1 is a deeply sacred place. For the prehispanic Maya, natural features such as mountains and caves were living connections to the ancestors and the gods. Openings in the earth, such as a cave or *cenote* are some of the most significant features of the sacred landscape, serving as portals to the underworld as well as sources of sacred water (Brady 1997:603). Sacred water sources became even more crucial to prehispanic Maya ritual during the Terminal Classic, when the region suffered several prolonged droughts (Ashmore 1991; Brady 1997; Chase and Chase 1998; Dunning, et al. 1999; Harrison-Buck, et al. 2007; LeCount 2001; Lucero 2010; Moyes et al. 2009). Pool 1, a *cenote*, is charged with meaning and forms a vital place in the animate landscape of the prehispanic Maya. Str. 1 is a significant place that may have drawn pilgrims from across the Belize Valley, perhaps even bring people from communities much further afield. Sacred places center communities and transcend the “multiple layers of the cosmos [linking] the present with the past and future” (Dunning et al. 1999:657). Such places at once ground people and create a space of simultaneity in which living people are physically linked to ancestors and supernatural beings through materials. Sacred places are part of the living landscapes that create and reaffirm the identity of people. Visiting a sacred site remakes people and draws them into a unique engagement with the palimpsest of history, future, the supernatural, ancestors and the living. Historically and today, people travel thousands of miles to visit sacred sites such as Santiago de Compostela and Mecca. Pilgrims bring with them objects from their homes, leaving material traces of far-flung places at the site of their pilgrimage. What things might Classic Maya pilgrims have carried? Any clothing, paper, feathers, or foods are long gone but the pottery they may have carried would have survived.

Structure 1 Ceramic Assemblage

Interestingly, we found that the ceramic assemblage is largely homogenous, with a few uniquely different vessels that stand out for their singularity. In order to understand the outliers, we must first examine the assemblage as a whole. Estimating the total number of vessels recovered based on rim sherds from different vessels (i.e., we could not refit them), the 2013 excavations recovered a total of 94 vessels. Of these, 51 were Cayo Unslipped jars, 8 were dishes, 12 were plates, 19 were bowls, and 4 were Sibun Redneck jars (Table 2.1)

Table 2.1 Str. Vessel types

Vessel Type	Frequency	Percentage of total	Orifice diameter range (cm)	Average orifice diameter (cm)
Cayo Unslipped jars	51	54.25%	10-45	19.5
Sibun Redneck jars	4	4.26%	15-25	19.6
Dishes	8	8.51%	30-50	43.0
Plates	12	12.77%	29-45	35.0
Bowls	19	20.21%	20-50	37.0

The vastly disproportionate number of jars found at Cara Blanca Pool 1 Str. 1 speaks to the special nature of this site. While feasting events, or even daily food consumption, is suggested by the presence of serving vessels, more than half of the ceramic assemblage is composed of non-slipped utilitarian storage jars. This has interesting implications for how the Maya used the temple. Str. 1 is not a place of daily habitation; it is not a space for daily practices. People did not live here; instead, the temple was a place for special, ritual moments. The ceramics of Str. 1 reflect the nature of its place in the sacred landscape.

Much can be learned from breaking down each vessel type and looking at orifice diameters individually. Cayo Unslipped jars, which are large unslipped storage vessels with tan to light-brown paste and vary in temper and have everted rims, range in size from 10 to 45 cm in diameter, with an average of 20 cm (Gifford 1976:276-282; Harrison-Buck 2007:216) (Figure 2.1). Of the 51 vessels, 23 are 15 cm in diameter. The proliferation of narrow orifice vessels may provide some clues as to the use of these vessels. Unslipped jars are used to store goods, such as food or liquids. Solid food items, including maize, are most accessible from a jar with a wide orifice. Liquids, on the other hand, are best poured from a container with a narrow orifice as a wide orifice is prone to spilling (Lucero 2001:15). Were these Cayo Unslipped jars used to store sacred water from the *cenote*? Perhaps some were used for brewing and containing ritual beverages such as *balche* (LeCount 2001). This question can be better addressed in future seasons, perhaps through such analytical methods as stable isotope mass spectrometry. I am currently working with Dr. Stanley Ambrose at the University of Illinois Urbana-Champaign to conduct an analysis of food residue in Classic Maya pottery, as well as to compare direct and indirect methods of pretreating carbonate-temper vessels to prepare them for mass spectrometry.

Cayo Unslipped Jar Orifice Diameters

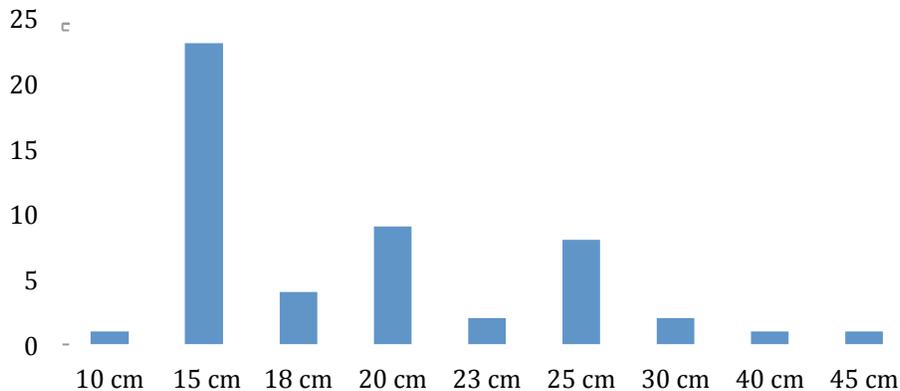


Figure 2.1 Distribution of Cayo Unslipped jar orifice diameters (cm). While there is a great range of variation, most of the jars have narrow orifices suitable for pouring liquids.

A second type of storage jar, Sibun Redneck, also occurs. Sibun Redneck jars are large storage jars with a thin red slip applied to the neck and tan paste, as well as everted rims. Sibun Redneck is a type that appears only in the Terminal Classic, suggesting that the temple was integral to Terminal Classic water ritual (Harrison-Buck 2007:255). Sibun Redneck and Cayo Unslipped storage jars are most common in Terminal Classic households within the Sibun Valley (Harrison-Buck 2007:254), suggesting that pilgrims may have brought these vessels north to Cara Blanca. This is further supported by the lack of Sibun Redneck jars in Terminal Classic sites in the Upper Belize River Valley (Aimers 2002). A total of 5 jars of this type were recovered from a single context, Room 2 Stratum 101. The jars range from 15 to 25 cm in orifice diameter, with an average of 20 cm. The Sibun Redneck jars are somewhat larger on average than the Cayo Unslipped jars. Unlike Cayo Unslipped jars, which are the most ubiquitous ceramics and occur in all contexts, Sibun Redneck jars are restricted to Room 2, above the floor. Are the producers of the Sibun Redneck jars from a different community than the producers of Cayo Unslipped? Do they represent a single even or visitation or are Sibun Rednecks more common in lower stratum? Further excavation is needed to explore the significance of Sibun Redneck jars and do determine if they are a limited phenomenon or if the vessels are more common than they currently appear.

Bowls are the second most common vessel form, representing 19 of the vessels recovered (Figure 2.2). Bowl orifice diameters range from 20 to 50 cm, with an average of 37 cm. The most common bowl diameter is 45 cm. These vessels are large, and have a capacity to hold food for multiple people. Are large bowls used in feasting or ritual events at the water temple? These vessels are probably not intended for the use of individuals, but are rather meant for communal use. Events in which these large bowls are used, such as feasts or celebrations of marriages, births, etc., bring together several people in a shared moment.

Plates are the third most common vessel form, composing 12 of the 94 likely vessels. Though plates range from 29 to 45 cm in diameter, they tend to be smaller, with an average diameter of 35 cm. The most common plate size is 30 cm, which is smaller overall than bowls and dishes. Dishes, the least common vessel form, represent 8 of the total vessels. Dishes are large, ranging from 30 to 50 cm in diameter. The average dish size is 43 cm, while 40 and 50 cm diameters occur most commonly. Dishes are massive compared to plates and bowls. These serving vessels are for communal use, with the capacity to hold large quantities of food, and would have been used for

community-wide rituals and celebrations. At such events, the different statuses and identities of community members would be displayed and renegotiated, while simultaneously creating a sense of shared identity. Events using these dishes would have brought multiple individuals together in an occasion of shared social, political, and ritual meaning.

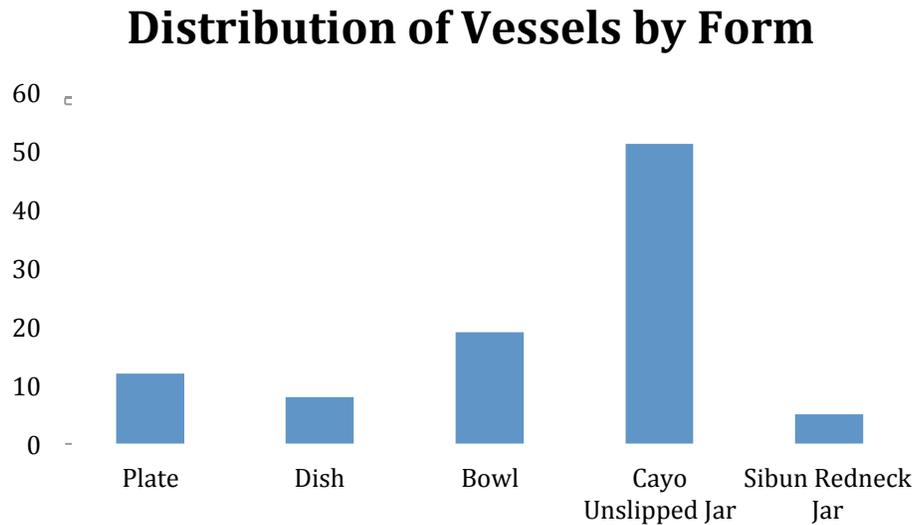


Figure 2.2 Distribution of vessel forms. Cayo Unslipped jars are far more common than serving vessels.

A discussion of vessel size can illuminate the social significance of different vessel types. We can speculate about the materials stored in utilitarian jars based on orifice diameters. In the case of Cara Blanca Pool 1 Str. 1, it seems that the majority of Cayo Unslipped jars were used to store liquid, perhaps water from the sacred pool. Likewise, we can look at the size of serving dishes and suggest whether these vessels were used by one or several people. The serving vessels recovered from the water temple imply that Str. 1 was not a place for individual events, but was the focus of communal events. A 50 cm diameter dish is far too large for a single person to use, but eating from this dish would bring several people together in a shared moment. Feasting and associated ritual at Str. 1 were not the realm of individuals; instead, Str. 1 was a place for community-building and sharing.

What evidence is there to suggest that people may have traveled from different communities to visit the pools? One Achote Black tecomate (pyriform bowl) and one bowl were recovered from Room 1, in the collapse above the floor, with a body sherd from the tecomate recovered from the same stratum in Room 2. Achote Black vessels are distinguished by a crazed black slip and grey paste, typically with thin walls (Gifford 1976:248). Achote Black vessels are largely produced in northern coastal Belize and Quintana Roo, rather than the Belize Valley (Harrison-Buck 2007:300). The rims of these small vessels were too fragmentary to get an orifice diameter measurement, but they were clearly small, narrow orifice bowls. The Achote Black are fragile, with noticeably thin walls. The vessels are different, daintier than Achote Black produced in central Belize; in fact, they bear a marked resemblance to Petén-style Achote Black (Harrison-Buck 2007:303). Did pilgrims from the Petén bring these vessels to Cara Blanca Pool 1 Str. 1? A second indication of visitors from far-flung places is the Indian Creek polychrome we recovered in a deposit at the base of the wall dividing Rooms 1 and 2 (see discussion of ceramic clusters). Indian Creek polychrome is among the most common serving vessels reported for the Sibun Valley region, suggesting further ties between the temple and pilgrims throughout the region (Harrison-Buck 2007:254). The massive bowl, with a 45 cm orifice, is decorated with a jaguar and emblazoned with a sky band below the rim and water

iconography on the body (see Chapter 1 for further discussion). The jaguar vessel resembles the polychromes of Yucatán more than those of central Belize or the Petén (Harrison-Buck 2007:244). Did Maya from the Yucatan travel to Cara Blanca? Certainly the vessels maker had knowledge of foreign styles, whether they came from the north or chose to paint in a new style is harder to ascertain.

Even the utilitarian vessels from the 2013 assemblage speak to the possibility of different communities engaging with the temple. The Cayo Unslipped jars, which make up more than half of the assemblage, differ in paste color and rim treatment (Figure 2.3).



Figure 2.3 Cayo Unslipped Rim Treatments

While all of the jars have a relatively straight everted rim typical of the Late/Terminal Classic (Gifford 1976:276-282), there is much variation on the theme. The width of the everted rim varies, as does the slight angle of the rim. Some rims are a few degrees above the horizontal, while others are slightly below the horizontal. We did not make counts of this, but in the 2014 field season, this will be a focus of lab analysis. Likewise, the different colored paste may result from communities using different clay sources. Without a better understanding of how standardized these differences in rim treatment are, we can only speculate that the different treatments reflect different communities with different ceramic making traditions and stylistic preferences.

Intentionally Broken Vessels

A number of contexts revealed purposely broken rim and neck sherds. These breaks are clearly intentional, rather than accidental. The purposeful breaks are markedly different from breaks caused by smashing or collapse- the breaks are caused by someone taking the vessel and using his or her thumb to snap off pieces along the neck or rim (Figure 2.4).



Figure 2.4 Purposeful Breaks

Every sherd identified as having purposeful breakage shows a similar break pattern that could only occur if someone used their thumb to snap off small pieces. This break pattern is unexpected. The Maya would kill vessels to remove the powerful life force of the object by separating parts of a vessel, however, the expected pattern is to find the rim broken off rather than the shoulder and body removed (Lucero 2010:145). Vessels are also commonly terminated by smashing them (Harrison-Buck et. al. 2007). Again, the pattern we find at Pool 1 Str. 1 is quite distinct. In addition, the vessels selected for termination are often fine ware serving vessels, rather than the unslipped jars we recover. Another distinguishing characteristic of these sherds is the type of vessel that was treated this way. Only Cayo Unslipped jars were selected for this type of breakage. While a diverse array of vessel forms and types were recovered from Str. 1, Cayo Unslipped jars are unique in having been intentionally broken in this distinctive manner. Perhaps the Maya chose to kill Cayo Unslipped jars in this way because of the special role they served at Str. 1, possibly as receptacles for the sacred water of Pool 1.

Intentionally broken vessels were distributed throughout our excavation contexts, but the vessels seem to be particularly focused on the east wall and southern edge of the structure's summit. While this distribution may be the result of our focus on excavating the intact eastern and southern areas of Str. 1, the purposefully broken jar rims and necks may be related to the eastern, pool-side, and southern, plaza-side, of the structure. Unfortunately, the entire northeastern portion of Str. 1 has collapsed into Pool 1, but the summer 2014 excavations can further explore the possibility that the western and northern areas of Str. 1 are not the focus of intentionally broken Cayo Unslipped jars. If the pattern holds true, this will have implications for considering the social and ritual significance of killing and disposing of the jars by snapping off the body and shoulder from the neck.

Another interesting aspect of purposefully broken rim and neck sherds is that three of the six contexts that have purposeful breaks also show marks of fire clouding (Figure 2.5).



Figure 2.5 Fire Clouded Jar Rim

The presence of fire clouding on the upper portion of the jars suggests that they were exposed to a large fire. Cooking vessels are often fire clouded on the lower portion of the body as a result of cooking over a fire. These fire clouded jars, on the other hand, must have been exposed to a fire much larger than people would use for cooking, as the fire clouding reaches up to the rim. Clearly these vessels were burned in a large fire for reasons other than food preparation. Why did the Maya do this? Termination offerings are often burned or broken (Chase and Chase 1998), and the vessels that we found are both broken and burned. Were the vessels terminated in a fire and then further killed by breaking the jars and scattering the sherds of the body? Purposefully broken Cayo Unslipped jars are an intriguing find that leave many questions to be answered in future seasons.

Stacked Sherd Deposits

Another interesting arrangement of sherds is the series of stacked sherds placed at the base of the east wall. A series of four arrangements of stacked sherds running from the southern corner of the east wall to 2.5 m north of the southern corner was found at the base of the wall, below the layer of collapse. At the southeast corner of the east wall, we recovered a rim and three neck sherds from the same blackened vessel, a Cayo Unslipped jar. The jar had a narrow orifice (15 cm) and showed fire clouding from burning. Eighty centimeters north of the corner, a deposit of stacked sherds including a volcanic ash red slip bowl rim, an unslipped plate rim with an applique design, a purposefully broken Cayo Unslipped neck, and unslipped body sherds with fire clouding was recovered. We recovered unslipped jar rims and necks 2.3 m from the corner that are from the same fire clouded vessel with an orifice diameter of 25 cm. Finally, a jar cluster with two volcanic ash red slip plate rims that measured 30 and 45 cm in diameter, an unslipped dish rim measuring 50 cm in diameter, and purposefully broken Cayo Unslipped fire clouded jar neck and over 100 body sherds from the same jar was placed at the base of the eastern wall (Figure 2.6).



Figure 2.6 Stacked sherd deposit

The locus of these four stacked sherd deposits is the southern edge of the east wall. Each of the deposits includes a fire clouded Cayo Unslipped jar. Why did the Maya include a burned jar in each deposit? These stacked sherds are at the base of the wall, facing the pool. They are buried beneath collapse, but were placed on top of the surface at the base of the wall. Are the stacked sherd deposits related to the termination and abandonment of Str. 1? The presence of purposefully broken necks and fire clouded sherds suggest that these vessels were ritually killed. We do not yet have a clear understanding of the chronology of the water temple to answer this question with certainty; however, these sherds are part of a ritual practice of termination. All of the jars included in the stacked sherd deposits are Late Classic Cayo Unslipped, indicating that the deposits were placed during the Late to Terminal Classic. This correlates with a time of social, political, and environmental turmoil brought on, in part, by severe droughts (Medina-Elizalde et al. 2010). At this time, other sacred watery places, such as caves, were the focus of greatly intensified ritual performances (Moyes et al. 2009). Was Cara Blanca Pool 1, and its water temple, also a part of this ritual intensification? Again, while we can speculate that the temple was indeed part of the complex of Terminal Classic water ritual,

further field seasons will allow us to address the question of the role of Cara Blanca Pool 1 Str. 1 in local communities' experiences of political and environmental upheaval.

Room 2 Clusters

Three clusters of ceramics were placed in Room 2, at the base of the dividing wall between Room 1 and Room 2 (Figure 2.7).



Figure 2.7 Room 2 Clusters

Cluster 1 included 2 vessels, a Cayo Unslipped jar and a Dolphin Head Red: Silver Creek Impressed dish. Dolphin Head Red: Silver Creek Impressed vessels are distinguished by a thick red slip, orange paste, and impressed decorations on the basal break (Figure 2.8).



Figure 2.8 Cluster 1, Dolphin Head Red: Silver Creek Impressed dish

Dolphin Head Red is exceedingly rare in the Terminal Classic (LeCount 1996:158), so these vessels may be heirlooms reserved for special occasions that were deposited in a mixed Late and Terminal Classic deposit at the temple. The Cayo Unslipped jar was inverted, with a relatively narrow orifice (18 cm). When refit, the rim was nearly complete, but only one neck sherd and 38 body sherds were recovered from the cluster (Figure 2.9).



Figure 2.9 Cluster 1 Cayo Unslipped jar

The Dolphin Head Red: Silver Creek Impressed dish was large, with a 40 cm diameter, and has a stick impressed design along the basal break. And as mentioned in chapter 1, E. Harrison-Buck (pers. comm., 2013) has not seen this type of punctate design before. Two rim sherds and 1 body sherd were recovered from this vessel. These vessels are incomplete, raising the question of whether sherds were purposefully removed and relocated elsewhere. The nearly complete jar rim particularly suggests that the remaining pieces of these vessels were deliberately removed to a secondary context after the vessels were terminated.

Cluster 2 included a Vaca Falls Red: Vaca Falls variety straight-sided bowl with a 45 cm rim diameter. Vaca Falls Red: Vaca Falls vessels have red slip on brown to tan paste and are slipped to the basal break on the exterior (Gifford 1976:235). Vaca Falls Red bowls and plates are serving vessels, although Harrison-Buck notes that Gifford incorrectly labels Sibun Redneck jars as Vaca Falls Red (Harrison-Buck 2007:257). One rim sherd and 29 body sherds were recovered from this large serving vessel. In addition, several Cayo Unslipped body sherds were mixed into this cluster. These body sherds likely belong to the jar placed in Cluster 1, to the west of Cluster 2.

Cluster 3 also included two vessels, a Vaca Falls Red: Vaca Falls variety bowl rim and several body sherds, as well as an Indian Creek polychrome bowl. The Indian Creek polychrome is characterized by a light orange paste over tan or buff temper, and our vessel has black and dark red painted designs of a jaguar with a sky band and other watery elements (see discussion in Chapter 1).

The Vaca Falls bowl rim refits with the Cluster 2 vessel, and the body sherds also belong to the same bowl. The Maya clearly redistributed pieces of the cluster vessels amongst the clusters, mixing the deposits that were carefully placed at the base of the northern wall of Room 2. The Indian Creek polychrome, our jaguar vessel, is striking for its size and its design. The jaguar vessel is massive, with a 45 cm orifice. 1 rim and 13 body sherds were recovered from Cluster 3, and an additional rim and body sherd were recovered from the southwest corner of the South wall. When the sherds were refit to constitute one quarter of the original vessel, the bowl is too massive to support in one hand. This was no ordinary vessel, and its inclusion in the Room 2 deposits speaks to the importance of the room within the temple and the temple within the sacred landscape.

Interestingly, each of the clusters includes sherds that refit across contexts. The Cayo Unslipped jar, Vaca Falls Red bowl, and Indian Creek jaguar vessel were each broken and distributed in other deposits. While fragments of the vessels we can refit are scattered across Room 2 and the South wall, the vessels themselves are restricted to Room 2. Each of the vessels with sherds that refit or likely come from the same vessel was found below the collapse, on top of the floor of Room 2. Was Room

2 a particularly special place within the structure? Was this perhaps the last room to be terminated? Further excavations will help address the many questions raised by the clusters.

Discussion and Concluding Remarks

The temple is oriented facing east, overlooking Pool 1. Ritual deposits of vessels at Str. 1 are focused on the eastern and southern facing areas of the temple. East is the direction of the rising sun, associated with day and light, while South is the direction of Venus, possibly associated with male power (North, conversely, is direction of the Moon and female power) (Ashmore 1991:212). Throughout the Maya world, structures are oriented to face east. In the case of Cara Blanca Pool 1 Str. 1, this orientation is reinforced by the pool, which is at the base of the eastern wall. For the northern extent of the temple, erosion and looting have literally merged the eastern side of the structure with the pool below, as the platform and walls gave way and fell into the water. The apparent focus of ritual vessel deposits on the east and south reflects the nature of ritual and symbolic importance of Str. 1. East is the water; east is life- both of which are crucial to the daily lives of farmers. South faces the plaza and other structures, and is vital to the public life of Cara Blanca Pool 1. This is not to suggest that the Maya necessarily emphasize the southern over the northern side of the temple; however, very little remains of the northern side. What vessel deposits might have been placed on the northern, female, Moon-oriented side? Certainly female fertility and power are vital elements in the daily and ritual lives of Classic Maya farmers. With most of the north wall eroded into the pool, we can only speculate that the north-south axis was most likely one of ritual parity.

The 2013 field season leaves us with many questions to pursue in our 2014 research. The ceramic assemblage of Cara Blanca Pool 1 Str. 1 suggests that the temple was a place of pilgrimage, where communities came together to engage the sacred landscape. The pool, and its water, was at once a source of life and death, ancestors and the living. The structure is a manifestation of water and stone, binding together the underworld and the world of the living. As a place of pilgrimage, the temple also tied different communities together through shared experience and memory. People may have ventured far from home to visit the temple, or at least the ideas and materials of far-away communities found their way to Cara Blanca Pool 1 Str. 1. Future excavations will help us address questions such as: What communities came to the temple? Were the ritually killed Cayo Unslipped jars part of the termination of the temple? Does the role of the temple change or intensify during the drought?

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Chapter 3

Botanical Surveys from Yalbac to Cara Blanca Pool 6

Colleen Lindsay
University of Illinois Urbana-Champaign

The goal of the botanical research around Yalbac and Cara Blanca is to provide a glimpse into the botanical communities surrounding ceremonial centers and regions as well as household residences. The surveys conducted over winter break (Dec. 2012-Jan. 2013) documented the botanical communities surrounding house mounds, the ceremonial mounds of Yalbac, cenotes of Cara Blanca, and control locations free of past settlement and perceived usage. The goal of these surveys is to explore my research hypothesis:

If the Classic Maya were modifying their botanical landscape, then the patterning and species composition of present-day landscapes of the Yalbac/Cara Blanca area will reflect management strategies prior to the Classic Period diaspora.

Combining a botanical and archaeological approach, I investigated key sites around the Classic Maya center of Yalbac in Belize from December 21, 2012 through January 10, 2013. I surveyed house gardens, looking for plants indicative of household use, such as ramón (*Brosimum alicastrum* Sw.), pacaya (*Chamaedorea* spp. Liebm. ex Mart.), cohune palm (*Attalea cohune* Mart.), the broom tree (*Cryosophila stauracantha* Heynh.), and tie-ties (vines). I surveyed ceremonial sites, such as locations adjacent to natural cenotes, or pools used to tender offerings to the gods. An example of a ceremonial plant likely used near these cenotes would be copal (*Protium copal* (Schltdl. & Cham.) Engl.). I surveyed non-mound locations, free of visible human construction, for control groups. I expected these areas to contain deleterious plants, such as poisonwood (*Metopium brownei* (Jacq.) Urb.), or a combination of plants not determined to benefit human consumption or use. Finally, since there was both a fire and severe hurricane since my preliminary 2010 surveys (discussed below), I resurveyed locations around Yalbac proper to determine any botanical changes that could be pinpointed to these natural (non-anthropogenic) changes on the landscape.

I first summarize 2010 results (see Lindsay 2011a, 2011b), followed by a detailed description of 2012-2013 results.

Yalbac and 2010 Botanical surveys

Plants were collected from seven plots in three distinct areas around Yalbac: monumental buildings, small settlement mounds, and forested areas free of obvious human occupation (Lindsay 2011a). Nine areas were sampled during this time, using large circular plots (20 m radius) and small circular plots (1 m radius) (Table 3.1). Given the distance traveled, difficulty of finding certain mounds, and the intemperate weather, we were only able to survey 12 days.

Table 3.1: Four-step plant collection method

Radius	Collection type
20 m	Tall trees
10 m	Trees >1 m tall
5 m	Saplings >1 m tall
1 m	Herbaceous plants

Over 200 distinct plant specimens were collected, using established methods tailored by UIUC plant biologists David S. Seigler and John E. Ebinger, described briefly here. These methods were used along the first kilometer of the 11 km transect (Kinkella 2009). Different sizes of concentric

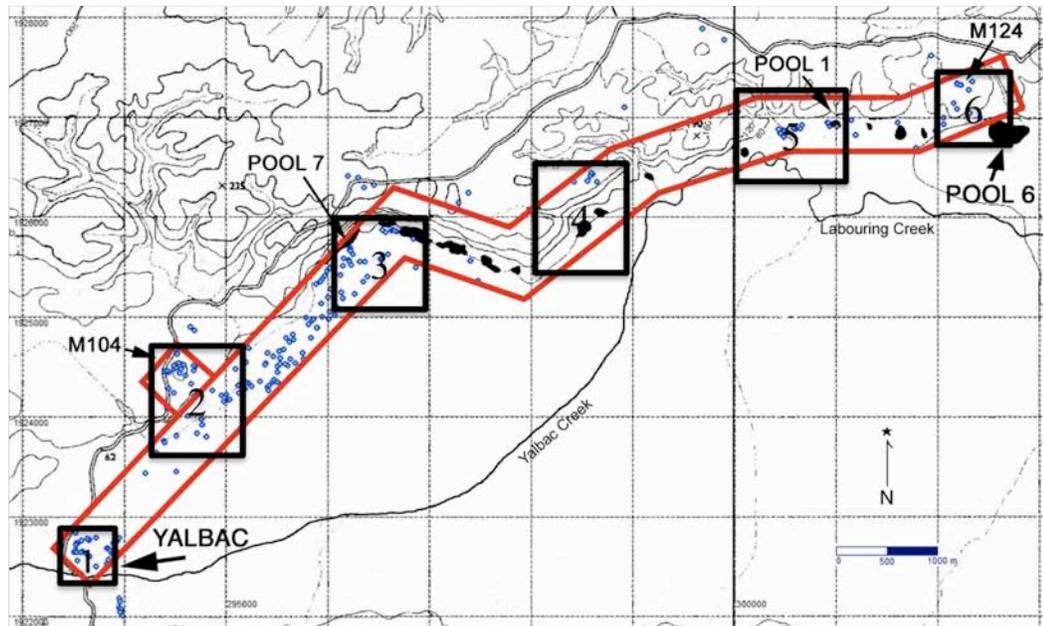
circles were set up within the transect. The large plots (20 m radius) (0.1256 hectare) were surveyed to record all trees, shrubs, saplings, vines and herbaceous plants; each sample was further plotted to assess inter-species relationships¹. In small plots (1 m radius) (0.000314 hectare), I collected samples of herbaceous plants less than 1 m tall. GPS locations were taken from the center of all survey circles and from the centers of each of the house mounds, particularly the ones not previously noted by Kinkella (2009). The locations for the plots were chosen based on location and the transect map. A photo was taken of each plant from which a specimen was taken to indicate the original condition of the plant and the habitat in which it grew. Plant uses were determined through ethnographic interviews with Cleofo Choc, a Mopan Maya field assistant².

First, we collected specimens near high-density sites (denoted by large ceremonial structures). Two monumental structures located in different plazas in Yalbac were surveyed. We surveyed around Str. 2D (60 x 10 m, 4 m in height) (Plot 1) and Str. 3C (7 x 3 m, 1 m in height) (Plot 2). Then, we surveyed low-density sites (denoted by small house mounds) in close proximity to Yalbac (Plots 6, 7, 8). The first house-mound collection was conducted between two mounds in a three-mound group (Plot 6) near an old logging road. The next mound group selected was near a 2002 excavation (Lucero and Graebner 2003) (Plot 7). The final settlement survey region was located on the other side of the 400-meter transect from the previous two settlement selections, approximately 1 km from the Yalbac center (Plot 8). Last, we conducted surveys in the forest, away from any known settlement (Plots 3 and 5). These surveys were located 500 m and 1 km from Yalbac, and provide a comparison between settlement and non-settlement botanical compositions. Finally, for a modern comparison, I mapped Cleofo's garden. Cleofo's information about plants collected during the course of the plant survey and the rationale for his garden construction are important for determining more about the Maya plants and past vs. present forest garden composition.

Throughout the collection process, I noted habitat and distinctive features of plants collected. The useful properties of these plants, conveyed by Cleofo, were recorded, in addition to the common names of the plant in English, Spanish, Mopan, and Queqchi' if known. Common names were compared with floristic indices, and each collected specimen compared with UIUC herbarium specimens, to determine the botanical identification.

2012-2013 Botanical Surveys

I surveyed in Belize from December 2012-January 2013, with the help of US field biologist, Robert Lindsay, field assistants, Cleofo and Stanley Choc, and Jose Ernesto Vasquez. I also submitted a survey plan to the Yalbac Ranch for my upcoming surveys (Figure 3.1) which I later revised given field conditions (Table 3.2).



SURVEY PLAN Dec. 21-Jan. 10

Dec. 21: survey #1, 2 Yalbac temple mounds

Dec. 22: survey #1, 2 house mounds

Dec. 24: survey #2, including 1 randomly selected house mound, and a randomly selected non-inhabited region

Dec. 26: survey #3, including 1 randomly selected house mound, and a randomly selected non-inhabited region

Dec. 27: survey #4, including 1 randomly selected house mound, and a randomly selected non-inhabited region

Dec. 28: survey #5, including 1 randomly selected house mound, and a randomly selected non-inhabited region

Dec. 29: survey #6, including 1 randomly selected house mound, and a randomly selected non-inhabited region

Dec. 31: allowed open for rainy days during other field days or the possibility that my progress might not be as quick as I plan

Jan. 1: allowed open for rainy days during other field days or the possibility that my progress might not be as quick as I plan

Jan. 2-5, 7-10: survey Valley of Peace house gardens and milpas

Figure 3.1 Preliminary survey plan for December 21, 2012 – January 10, 2013 (map courtesy of A. Kinkella), sent to Yalbac Ranch Oct. 2012

Table 3.2 Survey Plan, Yalbac. Actualized: Dec. 2012 – Jan. 2013

Date	Survey #	Survey Box (see Figure 3.1)	Survey Site	New Plant Collections
22-Dec	1	1	Mound 3 (M3)	173-204
24-Dec	2	1	Mound 25 (M25)/ Mound 18 (M18)	205-214
24-Dec	3	1	Mound 2D (M2D)	215-221
26-Dec	4	2	House Mound	222-238
26-Dec	5	2	100 m South from Survey 4 mound (still near mounds)	239
26-Dec	6	2	100 m South from Survey 5 (non-mound location)	240-251
28-Dec	7	6	Mound (M281212)	252-262
28-Dec	8	6	Non-Mound site, 100 m South of Survey 7	263-282
28-Dec	9	6	Pool 6 site near Pool survey	233
31-Dec	10	5	Structure 1, Pool 1	284-288
31-Dec	11	5	Pool 1 site, South of Str. 1, near Pool survey	289-294
31-Dec	12	5	Non-Mound, 100 m West of Survey 10	295-303
1-Jan	13	3	Mound	n/a
1-Jan	14	3	Non-Mound, 100 m South of Survey 14	304-306
2-Jan	15	1	Mound 73 (M73)	307-309
2-Jan	16	KM 1-2	Mound (M2113) and Mound (M2113B)	310
2-Jan	17	KM 1-2	Hole Maya Dug	311-313

Because the Yalbac area had been effected by both a hurricane (October 2010) and an intensive fire (April 2011) since my surveys in 2010, I resampled from the two ceremonial mounds (Strs. 2D and 3C) of Yalbac and two of the house mounds (Mound 25 and Mound 18; Mound 73), one close to Yalbac and the other approximately 1 km distant from the main site (Figure 3.2). In 2010, I had sampled behind M3, a mound that was under excavation during the 2010 field season. This area had radically changed in the two years since the 2010 season, with shrubby growth overtaking not only the wooded landscape, but also the remains of the mounds. M2D and M25/M18 were in similar states of overgrowth. In fact, it took us an hour to locate M25/M18, a house mound group that took approximately 15 minutes to walk to in 2010. M73 was left for the last day of Yalbac surveys because it was also difficult to locate given the new shrubby growth.

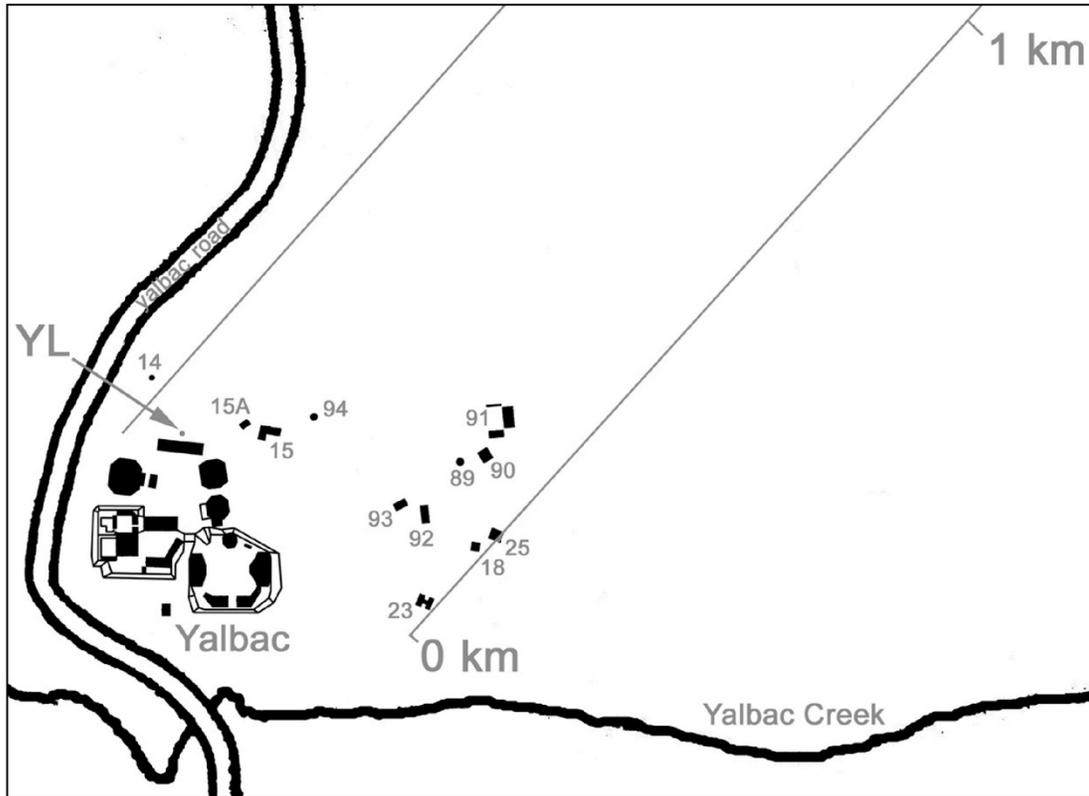


Figure 3.2 Ceremonial Mounds and House Mounds near Yalbac

The field site had changed botanically since the 2010 hurricane and subsequent 2011 fires. Trees had been uprooted, and in their place the lower canopy had been overgrown with small saplings and other shrubby or herbaceous plants. As a result, it was very difficult to locate and reach the mounds, especially those that had not been plotted with a GPS location in 2010. However, the plants with the greatest ties to Classic Maya subsistence, pacaya (*Chamaedorea* spp. Liebm. ex Mart.) and ramón (*Brosimum alicastrum* Sw.), had returned with more numerous saplings than the 2010 surveys. Therefore, despite predicted disturbances to the region since Classic Maya occupation, the selected and important tree species continue to emerge.

Additionally, I continued sampling along the previously surveyed 11 km transect from Yalbac toward the Cara Blanca pools. Through the guidance of John Taft, a well-recognized plant ecologist and botanist at the Illinois Natural History Survey at the University of Illinois, I sampled every other kilometer, except for the fifth kilometer, from Yalbac to Cara Blanca, and continued to use 20 m radius circles to assess the vegetation of each plot. I sampled at least one mound per kilometer sampled, and one non-mound location 100 m in a randomly determined direction from the mound location. I included in this survey plants that reached above waist-height (approx. 1 m) and some herbaceous plants if they were abundant in my survey plot.

We accessed the sites by traveling along a logging road that runs along the perimeter of the transect. Per kilometer surveyed, we sampled at least one house mound and one non-inhabited region. We selected the non-inhabited region by measuring 100 m either north, south, east, or west, with the direction being chosen at random.

In addition to the Yalbac surveys, we sampled modern house gardens from the Valley of Peace village, Buena Vista, and a garden at the Banana Bank Lodge (Table 3.3). Banana Bank is owned by US expats (John and Carolyn Carr) who have lived in Belize for almost 40 years and have adopted

many of the habits of the local inhabitants. I used their garden as a test for the influence of local Maya garden constructions on incoming populations. Cleofo and Stanley Choc and Jose Ernesto Vasquez were utilized as local decedent Maya informants, and Robert Lindsay was my botanical informant.

Table 3.3 Survey Plan, Modern Maya House Gardens

Date	Survey #	Survey Site Name	Plot Collection Type	Village
27-Dec	1	Ernesto's Garden	Cultivated list	Valley of Peace
30-Dec	2	Sa'xch'ool Organic Garden	Drawn map	Banana Bank
1-Jan	3	Cleofo's Milpa	Drawn map/ Cultivated list	Valley of Peace
3-Jan	4	Cleofo's Sister's House Garden	Drawn Map	Valley of Peace
8-Jan	5	House Garden	Drawn Map	Buena Vista

Windblown Treefall Surveys

Another interesting facet of the winter survey was the windblown tree falls near mounds. Those that had fallen close to mounds or on mounds contained many pottery sherds (Tables 3.4 and 3.5, Figure 3.3). Since time was limited, I was only able to spend approximately 10-15 minutes per tree fall scraping it with a trowel for potential remains. These pottery fragments are archaeologically significant because they contain a great number of sherds that have not been surfaced in at least 50-100 years, depending on the size of the tree.

Table 3.4: Windblown Treefall Survey Plan, Yalbac

Date	Survey #	Survey Box (as noted in Figure 3.1)	Survey Site	Tree Bases Collected from
22-Dec	1	1	Mound 3	3
26-Dec	2	2	Roadway, 2-3 km from Yalbac	1

Table 3.5: Treefall artifacts from Yalbac and Pool 7

Location	Type	Count	Artifacts	Additional information
Yalbac survey surface collection treefall #3	Rims	7	1 red slip jar, 2 unslipped jar, 1 red slip dish, 1 brown paste dish, 3 VA red slip plates (? Two rims too small to be certain)	Red slip jar 50 cm, thick unslipped jar 50 cm, unslipped jar 25 cm, red slip dish 25 cm, red slip plate 40 cm, brown paste dish 18 cm
	Necks	5	Necks and bowl sides	25 cm
	Handles	2	Dark orange paste—early? Handle c. 3+ cm long at base	
	Bases	3	1 ring, one basal flange with red slip above flange	
	Body	47	Wall thickness: .86 cm, 1.28 cm	



Figure 3.3 Windblown Tree Falls near Yalbac.



Relation to other surveys

A recent study (Ross 2008; Ross and Rangel 2011) determined that the trees present around the El Pilar Archaeological Reserve in western Belize indicated a persistence of useful forest garden species. These useful species had persisted even in regions that had been abandoned for centuries. Further, tropical trees often survive over 200 years, thus many individuals of the current tree population will only be five to six generations distant from the Classic landscape. Based on comparisons of floristic composition adjacent to dense ancient settlement versus areas with little to no previous settlement, abundance differences in more than 20 indicator tree species were noted.

The plants present within Maya sites today often reflect past landscape modifications (Ford 2008; Ford and Emery 2008; Ford and Nigh 2009; Gómez-Pompa 1987; Lentz et al. 2010). The Maya modified their natural surroundings to maintain selectively important native plants (Lentz et al. 1996; Rico-Gray and Garcia-Franco 1991). These pre-hispanic Maya landscape practices have been maintained in modern forest gardens constructed throughout Central America. Descendent Maya communities provide an outlet to explore how the techniques of the past have been preserved into the present.

In forest gardens across Central America, we find evidence for conscientious botanical patterning. In small garden plots, where chemical modifications cannot be afforded, and crop production helps meet basic food requirements, traditional practices learned from millennia of interacting with the natural environment reap a more beneficial harvest (Lindsay 2011b). This botanical landscape pattern often can be documented in clustering of species, indicating potential synergistic interactions within these species clusters (Ross 2008).

2013 Botanical Field Season at Pool 1

The Pool 1 survey (see Figure 3.1, box 5, Figure 3.4), which bordered Structure 1 before we began excavation, identified several plants key to the maintenance of a ceremonial center (Table 6). High concentrations of subsistence, medicinal and construction plants suggest the continued use of this location as a ceremonial center. Concentrations of plants differed significantly from general house mounds, control plots free of human settlement and even the mounds of Yalbac. Significant differences in floristic composition documented at Pool 1 suggest that this was a unique location in the Cara Blanca/Yalbac region, as I detail below.

Subsistence plants

Brosimum alicastrum Sw., commonly known as ramón, was found in high concentrations across the survey region. This plant was commonly consumed before, during and after the Classic Period. One example of a key subsistence plant that was used throughout Maya history is ramón (*Brosimum alicastrum*). Ramón is a native Maya tree (Puleston 1982) whose dried fruits were easily stored (Turner and Miksicek 1984) and used as a staple crop before the introduction of maize (Gillespie et al. 2004). This tree still occurs near Classic Maya sites, including Yalbac, suggesting that the Maya maintained this native tree around their centers. Since the caloric intake of ramón is high and the labor input is low, the tree could have continued to be a staple in the Classic Maya diet despite the growing importance of maize. The major Classic center Tikal, Guatemala, is surrounded by ramón trees (Peters 1983, 2000). Unlike wild ramón groves that produce fruit once annually, the Tikal ramón produce fruit twice annually. Furthermore, whereas forest ramón are dioecious, with male and female flowers occurring on different trees, the ramón trees at Tikal are monoecious, with male and female flowers on the same tree. This evidence suggests that the Maya created a new cultivar of ramón, a tree of both sexes that can both pollinate and bear fruit.

Two vines, the Ch'uuy-b'ak (*Philodendron* sp. Schott.) and water vines (*Vitis tiliifolia* Humb. & Bonpl. ex Schult.), were found across this survey. They were found in other survey regions, but the presence of the water vine is notable because it is not exceptionally common in other surveys. Evidence suggests that the leaves and berries of many *Philodendron* species are part of the normal dietary selection, while other members of this species are used ceremonially and medicinally. The water vine could further have been important to a water shrine because of its importance in providing water to weary forest travelers.

Not pictured in Figure 3.4, an Allspice tree was found near Structure 1, further indicative of human-plant interactions. Allspice Trees (*Pimenta dioica* (L.) Merr.), whose berries were used ceremonially in making cacao and medicinally for treatment of gastrointestinal ailments, were also used in iconography and ceramics (Weiss-Krejci 2012). In addition to these common uses, the leaves are also used for tea and soup seasonings, and the plants antimicrobial properties might have resulted in its use in mortuary contexts. Allspice was also depicted in iconography and ceramics. Dry allspice leaves are depicted pictorially on rulers clothing, and aromatic slices from the branches of allspice trees appear on ceramics that were most likely used for ceremonial purposes.

Medicinal and Ritual plants

Wild Yam (*Dioscorea villosa* L.) was found, not only during the December surveys, but also during this summer field season across the Structure 1 excavation area, suggesting the prominence of this plant in this region. Wild Yam is also used as a medicine, particularly in the treatment of cancer, Crohn's disease, and whooping cough.

The We'te' (*Costus guanaiensis* L.) produces edible beans, and was found during this survey. This plant also contains compounds that can be used, even in modern times, in the production of steroids; so it might be assumed that it was used in similar fashion in the past as well.

Copal (*Protium copal* (Schltdl. & Cham.) Engl.) was found at Pool 1, which is used for various rituals across the Maya region. According to the Popol Vuh, the Maya were required to burn the hearts of animals as a ritual practice. Copal was sometimes formed into the shape of these hearts and

used as a non-blood sacrifice substitution (FLAAR 2008a). It has maintained its ritual usage, being incorporated as an incense in religious ceremonies both in the Classic Maya period and in the present-day Catholic church.

I also found a woody plant locally referred to as the “trumpet tree or *k’och*” (*Cecropia peltata* L.), which is commonly found across the Yalbac and Cara Blanca region. This plant provides a lodging for a species of stinging ants whose painful stings prompt botanists to consider trumpet tree a dreadful scourge. On a more favorable note, the top shoot of the tree is sometimes used medicinally to treat arthritis, and the trunks of this tree can be fashioned into house walls (Nations 2006).

Plants as Construction Materials

Both the bayleaf palm (*Sabal* spp. Adans.) and cohune palm (*Attalea cohune* Mart.) are used in thatch roof construction, and both were found across this survey region.

Black Ironwood (*Leucaena leucocephala* (Lam.) de Wit) is commonly used as a lumber tree today, and it was found during this survey. The Ironwood tree is additionally used for cattle fodder and its pods are sometimes eaten.

The high concentration of Gumbolimbo (*Bursera simaruba* (L.) Sarg.) in this survey was surprising, given that it was not commonly found in other survey groups. As a tree whose medicinal properties aid the sufferers of Poisonwood, it would have been beneficial to travelers visiting this ceremonial compound who have had to cross forested regions, which could account for the common name “tourist tree” ascribed to this species. It also serves as a source of natural fenceposts that can be vegetatively propagated. In addition, this tree could be used as incense in Maya ceremonies.

The Cotton Tree (*Bombacopsis quinata* (Jacq.) W.S.Alverson), used for living fenceposts, was found throughout this survey. The Cotton Tree also has suggested ritual importance as well, and often members of this genus have emerged on sacred Maya ceramics. In one of these depictions, this plant forms a headdress of an elite male, as depicted on a cacao pot (Zidar and Elisens 2009). In another, the Bombacoid flower is pictured with the corn god on a cacao pot. In addition to cacao pots, the Bombacoideae family is depicted on incensarios and burial urns. Various animals, including cranes and hummingbirds, are also depicted next to this important family. The depiction of a tree on a large, jaguar ceremonial vessel (discussed in chapter 1), could possibly have been a member of this genus.

The family Bombacoideae was also used for many purposes across the Maya region, including nutrition and the fermenting of intoxicating beverages; medicinal and ritual purposes; fiber, stuffing, fuel, and oil; as well as in floral ornamentation

Finally, the Asnic (*Vitex gaumeri* Greenm.), used for construction, was encountered. The high concentration of plants used for construction and roofing suggests the possibility of additional house and ceremonial mounds nearby.

Pool 1

Unique to the Pool 1 2012-2013 botanical surveys was the presence of Wild Papaya (*Carica papaya* L.), Jackass Bitters (*Neurolaena lobata* (Linnaeus) R. Brown), the Bullet Tree (*Bucida buceras* L.), and the Wild Pineapple (*Bromelia pinguin* L.). Jackass Bitters was used medicinally, including treating malaria. Wild Pineapple’s fruit can be dug out and eaten; and the entire plant can be soaked and beaten, resulting in a fiber that can be used for thread. The Wild Papaya produces another fruit that is commonly eaten. All of the above species were not found in earlier surveys, indicating that Structure 1 differs from general residences by the presence of unique medicinal plants. Also, the presence of large quantities of gumbolimbo trees further sets Structure 1 apart from typical residential flora assemblages.

The botanical surveys suggest that Pool 1 was a unique location, structurally, ritually, and botanically. It does support some of the more common species typical of other locations around the Yalbac and Cara Blanca regions, but in concentrations not documented at these sites. In addition,

Pool 1 incorporates species unique to the area sampled, those species associated with medicinal or ritual use.

In addition, Pool 6, another pool in the Cara Blanca system located approximately 1 km from Pool 1, was analyzed for preliminary pollen concentrations in the lab of Surangi Punyasena, of the Department of Plant Biology University of Illinois Urbana-Champaign. Pine pollen, notable for its two pollen sacs or air bladders used for wind dispersal, was seen in the upper layers of the pollen core. Those layers corresponded to dated samples from 690 C.E. (1260 BP) and 1730 C.E. (220 BP). Pine was used throughout the Maya region as incense (FLAAR 2008a), and it was used near the Cara Blanca pools from the Classic Period until well after the Postclassic Period. Pine has not been found in any botanical surveys in the Cara Blanca or Yalbac area, and is assumed to be an imported plant. It was used ritualistically near the pools in times of plenty and in crisis, indicating the persistence of the pools as sites for ceremonial rituals, and destinations for ritual and religious pilgrimages.

Discussion and Concluding Remarks

The botanical surveys illustrate the significance of this ceremonial region. The unique groupings of plants, coupled with the 2013 excavations, further define this location as one full of ceremonial importance. Given that Str. 1 near Pool 1 was used ritually in the past as a ceremonial center for the surrounding region, we expect to find additional plants in future surveys adjacent to other regions of the pool that corroborate this finding.

Palenque, home to the Classic Maya ruler Lord Pakal, with its various inscriptions, both on temples and in the sarcophagus of the ruler, reflect the importance of plants in Maya ritual practices. Adorning the body of Pakal were necklaces and bracelets of beads carved into the shapes of both flowers and fruit; including cacao (*Theobroma cacao* L), pumpkin, squash and maize (Scherer 2012). The avocado (*Persea Americana* Mill.) tree also emerges from Pakal's sarcophagus, along with Lady Kanal-Ikal and evidence of a tended forest garden (Landon 2009).

In addition, the Ceiba (*Ceiba sp.* Mill.) tree of life, an important mythological plant to the Classic Maya, appears in Pakal's tomb, the iconic "Palenque cross" and in depictions on clay burners, sculptures and paintings across the Maya region (Callaway 2006; Scherer 2012).

Sacred to the Maya, Balche (*Longchocarpus longistylus* Pitter) was commonly used in ritual drinks. Cacao was also used ritually and prepared as a beverage. This plant was mixed with annatto to dye the beverage red. Annatto was found during the 2013 botanical surveys.

Since these plants played important roles in the Maya worldview, particularly their ritual life, we assume their prevalence (or evidence of their previous existence) will be manifested in future excavations and surveys around Pool 1. We expect future surveys to continue to emphasize the distinctiveness of Pool 1, in contrast to other inhabited and non-inhabited regions, through the identification of additional botanical species that are considered important in Maya ritual.

Table 3.6 Plants found in Pool 1 survey

Col. #	Family	Latin Name	Reference	Common Name	Maya Common Name	Use
1	Apocynaceae	Stemmadenia donnell-smithii	(Rose ex J.D.Sm.) Woodson	Horseballs	ton tzimin	Chewing gum
2	Moraceae	Brosimim alicastrum	Sw.	Ramón	oox	Food
4	Arecaceae	Attalea cohune	Mart.	Cohune Palm	tutz	Thatch
6	Burseraceae	Protium copal	(Schltl. & Cham.) Engl.	Copal	pom	Incense

9	Cecropiaceae	Cecropia peltata	L.	Trumpet Tree	xk'o'och	
11	Anacardiaceae	Spondias radlkoferi	Donn.Sm.	Wild Plum	pook'	Fruit
17	Arecaceae	Sabal mauritiiiformis	Adans.	Bayleaf Palm	xa'an	Thatch
18	Nyctaginaceae	Pisonia aculeata	L.	Cross Prickle Vine		Tea from bark
22	Piperaceae	Piper aduncum	L.		puchuch	
26	Fabaceae	Acacia gentlei	Standl.		sub'in	
27	Arecaceae	Philodendron sp.	Schott.		ch'uuy-b'ak	Used for tying
37	Simaroubaceae	Simarouba glauca	DC.	Negrito		
38	Vitaceae	Vitis tiliifolia	Humb. & Bonpl. ex Schult.	Water tie-tie	aak' yaan u-ja' (lit. vine that has water)	Water
48	Fabaceae	Leucena leucocephala	(Lam.) de Wit	Black ironwood	quebracho / tzälam	Lumber
49	Sapotaceae	Pouteria campechiana	(Kunth) Baehni	White Sapitilo	tz'ätz' ya'aj	
52	Dioscoreaceae	Dioscorea villosa	L.	Wild Yam		Tuber
65	Burseraceae	Bursera simaruba	(L.) Sarg.	Gumbolimbo	chäkaj	Medicine
75	Marantaceae	Thalia sp.		Huachump/Waha leaf		
81	Unknown			Anatto	chimun	Lumber
82	Costaceae	Costus guanaiensis	L.		we'te	
116	Bombacopsis	Bombacopsis quintata	Jacq.) W.S.Alverson	Cotton Tree		Lumber
119	Verbenaceae	Vitex guameri	Greenm.	Asnic	yaax-nik	
169	Piperaceae	Piper sp.		"big leaf" pu-chooch		
183	Caricaceae	Carica papaya	L.	Wild Papaya		Fruit
186	Asteraceae	Neurolaena lobata	(Linnaeus) R. Brown	Jackass Bitters		Medicine
190	Unknown					
220	Convolvulaceae	Merremia tuberosa	(L.) Rendle	Potato vine		
222	Unknown					
232	Cactaceae	Epiphyllum phyllanthus	(L.) Haw.			
235	Poaceae	Tripsicum dactyloides		K'Kan grass		
267	Polygonaceae	Coccoloba belizensis	Standl.	Wild Grape		
276	Arecaceae			Palm		
289	Combretaceae	Bucida buceras	L.	Bullet Tree	Puc'tey	Lumber
290	Araceae	Xanthosoma robustum	Schott		Cho-cho	Food

291	Sapindaceae	<i>Allophylus cominia</i>	(L.) Sw.			
292	Bromeliaceae	<i>Bromelia pinguin</i>	L.	Wild Pineapple		Fruit
293	Asclepiadaceae	<i>Mateleia</i> sp.				

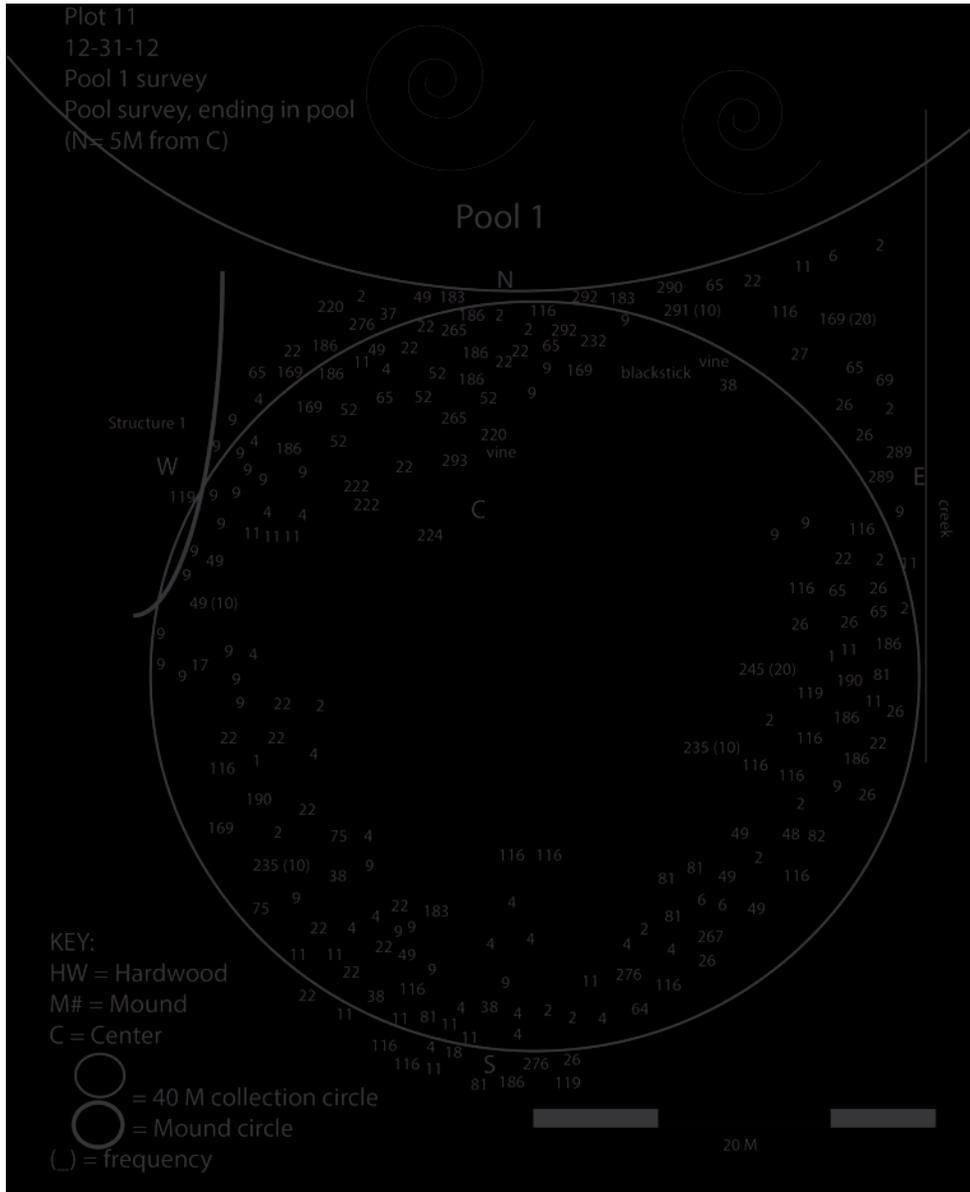


Figure 3.4 Pool 1 botanical survey

Notes:

1. See the full table of over 200 species identified during the 2010 field season in Lindsay 2011b (Appendices I-III).
2. I will refer to Mr. Choc as “Clefo” in proceeding references. Clefo gave me written permission to use his real name.

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